KC BIB 2018
Kangaroo Care Annotated Bibliography and References to Videos, Books, Webinars, Wraps, Researchers, etc.

United States Institute for Kangaroo Care. www.kangaroocareusa.org
Made possible by Susan Ludington, Ph.D., RN, CNM, CKC, FAAN
GREAT NEWS July 29, 2015!! The Bill and Melinda Gates Foundation has funded Bjorn Westrup (PI), Barak Morgan, & Nils Bergman’s randomized controlled trial of Birth Kangaroo Care for Preterm Newborns in 7 different countries.

The entire August 2011 issue of Current Women’s Health Reviews is about KC.

Page numbers are probably off as the bib is updated frequently and the page numbers are not changed that often, but the content sequence is not.

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The annotations are done by Dr. Susan Ludington and do not represent the opinions or reviews of other members of the International Network of Kangaroo Mother Care, United States Institute for Kangaroo Care, or anyone else.

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Kangaroo Care BIBLIOGRAPHY

Developed by Dr. Susan Ludington  Updated: April 5, 2018 ©2006-2018
Ludington-Hoe SM and United States Institute for Kangaroo Care

The following is a list of published articles and materials related to Kangaroo Care. For professionals, the resource that will be easiest and most comprehensive to have about Kangaroo Care is Dr. Susan Ludington’s book called “Kangaroo Care: The Best You Can Do for Your Preterm Infant,” that was published in 1993 by Bantam Books. You can buy a copy from any e-reader book seller, from Dr. Ludington at Frances Payne Bolton School of Nursing, 10900 Euclid Ave. room 322D, Cleveland, OH 44106-4904, from La Leche League at 1400 N. Meacham Rd., Schaumburg, Ill. 60173, or from Amazon.com for about the same cost. As of Sept. 2011 the book is available on ereader services such as Nook, Amazon.com, etc. For consumers, the best book to have is Jill Bergman’s book, (2011). Hold Your Preemie. Captetown: New Voices Publishing, Pp. 1-144. It is a wonderful book for parents, interactive, helpful, practical advice, clear guidelines, and eases anxiety about the preterm birth experience as well. Now available from Geddes Productions in Los Angeles. Contact them at http://www.geddesproduction.com or orders@geddesproduction.com. Thank you.

Kangaroo Mother Care: Baby’s Right – Mother’s Delight! (Kangaroo Mother Care Initiative of India – see Alims et al., 2004 and Parikh et al., 2004).

Mrs. Kangaroo, is it true
You are hiding someone new
In the pocket part of you?
There must be someone new and growing
It’s little ears have started showing.

In talking to the kangaroo,
Its opinion would be
To care “for your child as
My mother cared for me.”
In order to be stable,
When you are able,
“Care for your child the way
My mother cared for me.”
Close to her heart –
Warmth, gentle beating,
Love unceasing.
Research shows it’s so,
This Kangaroo Care.
No matter what the species,

“Keep them bare for Kangaroo Care”. Created by Kellie Kinas, RN of Fairview Hospital, Cleveland, OH.

Oh, tiny baby a few minutes old
All bundled up to fight off the cold,
Kangaroo care, or skin-to-skin,
Much more resembles the past world within.
Before I take a needed rest
I want to place you on my chest,
This will calm you and help you grow,
Keep you safe from things you don’t know
This world is so big to one so small,
My breathing and heartbeat you can recall.

Skin-to-skin and close to my heart,
In my memory forever, will not part.
Although life’s not easy, I can attest
Yours will be healthier when fed at the breast.
This new phenomenon called Kangaroo Care
Has been with us forever, we weren’t aware.

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So rest little one, close to my heart
And know you are loved, right from the start. Sandra D. Brown, RN, IBCLC

Close and warm, skin-to-skin
Is a loving way for life to begin.
Parent and baby make a loving pair
Sharing the embrace of Kangaroo Care. Intensive Wear, Rt 2, Box 4310, Berryville, VA 22611 (540) 955-9513 or (800) 556-4230.

A kiss may just be a kiss, a sigh may be just a sigh, but a touch like Kangaroo Care can change your life (or at least your nervous system!).

CONFERENCES:

Meeting the Mandate: Fast Track to Breastfeeding. A four hour course of essentials to get every member of health staff on board with the Joint Commission’s mandate that begins Jan. 1 2014 that every healthy term infants should be exclusively breast milk fed by discharge. This cannot happen without Kangaroo Care and the course relates the effects of KC on breastfeeding, how it all occurs, how to conduct safe kangaroo care at birth, how to support the first breastfeeding, and safe kangaroo care throughout postpartum for continuing breastfeeding, and how to manage breastfeeding problems. Good for 4 hours of CEUs and 4 hours of Baby Friendly USA credit too. Contact the US Institute for Kangaroo Care at www.kangaroocareusa.org or Dr. Susan Ludington at Susan.ludington@case.edu. This course has been exceptionally well received with perfect scores from those attending in 2013.

June 5-6, 2017. 13th Annual International Intensive Kangaroo Care Certification Course by the U.S. Institute for Kangaroo Care at Fairview Hospital on Lorain Avenue in Cleveland. Starts Saturday morning and continues through Sunday (8-6:00 on Saturday and 8:30-3:45 on Sunday) of certification lectures, demonstrations, skills labs, question and answer periods and group work on Kangaroo Care science tasks and developing an implementation plan and planning solutions to implementation barriers. Approx. 19 Contact hours and 19 CERPs and 4 hours of Baby Friendly USA credit. For more information contact US Institute for Kangaroo Care at www.kangaroocareusa.org or info@kangaroocareusa.org or USIKC2010@gmail.com or register on-line at www.kangaroocareusa.org or at USIKC, 3850 Ellendale Road, Moreland Hills, OH 44022-1124, USA. Participants at past courses, which have included 12 neonatologists, have said the course was “AWESOME,” “FABULOUS,” “REALLY STRETCHES YOUR MIND,” “Everyone in maternity and neonatal care should take this course!!!” “The best course I have EVER taken,” “Don’t ever stop teaching this fantastic course,” and “Phenomenal – I learned so much and want to make Kangaroo Care happen for all infants now.”


2020. The 14th Biennial International Network of Kangaroo Mother Care Workshop and Conference may be in Turkey, Vietnam or South Africa.

Past Meetings of Note:
Nov. 14-17, 2016 The 20th Anniversary of the International Network of Kangaroo Mother Care (INK) is actually the 11th Workshop and Congress of the International Network of Kangaroo Mother Care. The theme of the meeting is “Kangaroo Mother Care: 20 Years Later.” There are two meetings: the first is a Workshop on Nov. 14 and 15 for 70-100 people can be accommodated. Representative of health institutions representing different countries who will present and discuss in detail and share experiences that will hopefully lead to improved implementation of KC around the world. The second part on Nov. 16-17 is a Congress with presentations across 3-4 different themes by keynote speakers and other speakers and posters not selected for presentation. There is no honorarium for any attendee; each must cover their own expenses entirely and REGISTRATION cost is expected to be 100 Euros for 4 days and 50 Euros for 2 days. If you want to participate, please contact alessandrea.knowles@burlo.trieste.it or Adriano.cattaneo@gmail.com . The website for information and registration is http://www.aleittamesi.com/eventos/congreso.asp?cod=279. The tentative schedule as of Feb. 29, 2016 is:

KMC 20 years later, Trieste, Italy, 14 to 17 November 2016. Objectives of the Workshop were to gather and discuss experiences with the implementation of the programme at different levels of health systems and to provide ideas for future improvements (coverage, quality) and the expected outcomes of the workshop were sharing Experiences on what we have learned that is now pract. Identification of key gaps and obstacles, and ways to fill and overcome them. Proposals for plans of action and Identification of areas that need research – basic and operational Objectives of the Conference were to: review the progress in KMC research and development worldwide, identifying the main determinants of success and sharing best practices and the expected outcomes were dissemination, through participants and KMC websites, of research and development results, to promote and activate scale up KMC universally.

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NEO-BFHI. May 19-20, 2015, Uppsala, Sweden by the Nordic and Quebec Working Group. More information and registration on meeting’s website: http://www-conference.slue/neobfhi2015/ A revised draft of the Baby Friendly Hospital Initiative program has been adapted for neonatal wards (NW) often called NICUs, so the draft is called BFHI-NICU, and is available on the website. The expert group drafted the BFHI-NICU External Assessment Tool which was tested in Brazil in 2014 by Kerstin Nyqvist who was hired by the Bill and Melinda Gates Foundation to get BFHI-NICU started in Brazil. Pilot testing was originally scheduled to be conducted, preliminarily in Quebec (Canada), Finland, and Sweden in 2013, but did not occur. The final tool was completed and tested in 2014 in Brazil. This tool will be available from the UNICEF web site in the same way as the original BFHI tool. On the UNICEF website, there will be a link to the BFHI-NW (Neonatal ward) or BFHI-NICU document at another web site yet to be determined.

THE KANGAROO CARE BIBLIOGRAPHY

This bibliography contains original articles from all around the world, published abstracts, published articles in foreign languages, a list of sample pamphlets and protocols that are available and a list of researchers in the area and what they are studying. Some of the articles listed are annotated. The bibliography is available online at the website of the United States Institute for Kangaroo Care (www.kangaroocareusa.org) go to the Resources page of from Susan M. Ludington, CNM, Ph.D., FAAN Walters Professor of Pediatric Nursing, FP Bolton School of Nursing, Case Western Reserve Univ. 10900 Euclid Ave. Room 322D Cleveland, OH 44106-4904 (216) 368-5130 Email: Susan.ludington@case.edu

Terminology: KC = Kangaroo Care; KMC = Kangaroo Mother Care (KC given by mother); KFC = Kangaroo Father Care (KC given by father); KPC or PKC = Kangaroo Parental Care (KC given by mother and father and data reported as results of parental KC); KSC = Kangaroo SURROGATE Care (KC given by someone other than biological parents). PT = preterm; FT = fullterm; KCBF = breastfeeding while in Kangaroo Care position, BF = breastfeeding, RCT= randomized controlled clinical trial.

ORIGINAL ARTICLES


_______ (2015-June), Achieving skin to skin contact in theatre for healthy newborns. Pract Midwife. 18(6):9-10, 12. The evidence base is supportive of early skin to skin contact (SSC) for optimal newborn-physiological adaptation, bonding and breastfeeding, and national guidelines encourage SSC as soon as possible, regardless of mode of birth. With an ever-rising caesarean (CS) rate, implementing SSC in theatre stands to benefit an increasing number of mothers and babies. While it may be best practice, in reality there is a lot of variation from trust to trust, and many hospitals do not facilitate it, citing numerous reasons as to why it is not possible. Midwives may feel that they should focus on normal birth, but it is our role to provide holistic care and normalise birth in all settings. This article looks at current evidence and the role of the midwife around facilitating SSC in theatre with an example of practice of how change has been implemented so that mothers and babies get the best start in life. PT, Rev, cesarean KC, implementation. Not on Charts

_______2014 PT, survey of 129 NICU nurses beliefs about almost continuous SSC and how those beliefs and barriers should be considered to improve implementation. This appeared in Neonatal Network, so need to get full citation

_______, (2013-June). Hospital celebrates skin to skin contact to raise awareness. Nursing of Children and Young People. 25(5):5. doi: 10.7748/nccyp2013.06.25.5.5.s6. Neonatal nurses at Birmingham’s City Hospital have been celebrating the benefits of skin to skin contact with premature babies. They held a week of celebrations in the unit last month, in which they promoted the kangaroo care technique and breastfeeding to parents. PT, practice report

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Evaluation of the Effects of Kangaroo Mother Care on Mental and Psychomotor Development in Very Low Birth Weight (VLBW) infants. *International Journal of Nursing Studies*. Few longitudinal studies with VLBW infants have been reported, so a retrospective panel cohort study was used that included 5 cohorts of VLBW infants (n=631 cases) who were born between 2003 and 2007 in one hospital in Taiwan. Bayley MDI and PDI at 6, 12, and 24 months were performed on 63.23% of infants who completed the study (there were 96 deaths and 136 missing cases). KMC group had 219 infants, and 180 infants got no KMC. AT start of study KMC infants had lower GA, lower birthweight, and more cases of chronic lung disease, but still at all three time periods the KMC infants got higher MDI and PDI scores than non-KMC infants. Birthweight was a predictor of MDI and PDI at 24 months, but no interactions were present. KMC has good long-term effects on mental and physical development. Authors recommend that KMC be included in routine care and actively promoted for VLBW. *Retrospective qualitative study, KMC, development, mental and motor development, micropreemie*


______, (2007). Better births feature continuous care for moms: “Kangaroo” care for kids. *Medical News*. 2007. Available from [http://www.newswise.com/articles/view/531475/?sc=wwhr](http://www.newswise.com/articles/view/531475/?sc=wwhr). Released July 12, 2007. Author may be “newswise” or “health behavior news service”. 30 studies with 1925 mother-infant pairs were reviewed in this updated meta-analysis of KC immediately after birth and within 30 minutes of birth. Pairs who had early skin-to-skin contact were more likely to breastfeed and to breastfeed for longer than those who did not. The review also showed that babies who had KC immediately after birth “interacted more with their mothers, stayed warmer, and cried less.” See following citation which is very similar. Review of new Cochrane (Moore et al., 2007) results, BirthKC, VEKC, Breastfeeding, crying, interaction, fullterm

______, (2007). Better births feature continuous care for moms, “Kangaroo” care for kids. *Health Behavior News Service*. July 12, 2007. Available from [http://newswise.com/articles/view/531475/](http://newswise.com/articles/view/531475/). This is a review of two recent publications, one being Hodnett’s review of 16 studies and 13,391 women showing that continuous supportive one-on-one care throughout labor and massage (i.e doula care) has many benefits and “should be the norm, rather than the exception.” The second study reviewed is Moore et al.’s 2007 Cochrane review of 13 randomized controlled trials and 1,925 subjects (some were in control groups so not all were KC). Relates that Moore says time immediately after birth is a sensitive period for programming future infant behavior and maternal behavior. Some near term infant studies were included in Moore’s Cochrane of 2007. Review, full term infants, meta-analysis, BF, near term (late preterm)

______, (2006). Management of asymptomatic hypoglycaemia in healthy term neonates for nurses and midwives. *Australian Nursing Journal*, 13(2) (June), pg. 13. Evidence Based Practice report. An increasingly litigious society has caused the lower level of euglycemia to rise from that which existed in the original work by Hartmann and Jaudon in 1937 (i.e. the limits are within 2 standard deviations of population mean for both healthy term and preterm infants). “Healthy term newborns that are breastfed on demand need not have their blood glucose routinely checked and need no supplementary foods or fluids” is a WHO 1997 recommendation that is still considered a grade A recommendation. Other WHO 1997 recommendations that still have grade A best practice status are: “Thermal protection (the maintenance of normal body temperature) in addition to breastfeeding is necessary to prevent hypoglycaemia” and “Given the importance of thermoregulation, skin to skin contact should be promoted and “kangaroo care” encouraged in the first 24 hours after birth.” The standards for evidence based practice used in this article are those of the Joanna Briggs Institute ([www.joannabriggs.edu.au](http://www.joannabriggs.edu.au)) and are: Grade B=$('#efficacy established to a degree that suggests application; Grade C= effectiveness established to a degree that warrants consideration of applying the findings, Grade D= Effectiveness established to a limited degree, Grade E= Effectiveness not established. Recommendations, hypoglycaemia, breastfeeding, birth KC, evidence-based guidelines, fullterm.


______(2001). Third International Workshop on Kangaroo Mother Care: Indonesia November, 2000. Report and abstracts from the meeting. *Meeting report, PT How do we access these?


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Aagaard H, Uhrenfeldt L, Spliid M, Fegran L. (2015-Oct). Parents' experiences of transition when their infants are discharged from the Neonatal Intensive Care Unit: a systematic review protocol. JBI Database System Rev Implement Rep., 13(10):123-32. doi: 10.11124/jbirs-2015-2287. The objective of this review is to identify, appraise and synthesize the best available studies exploring parents' experiences of transition when their infants are discharged from the Neonatal Intensive Care Unit (NICU). The review questions are: Giving birth to a premature or sick infant is a stressful event for parents. The parents' presence and participation in the care of the infant is fundamental to reduce this stress and to provide optimal care for both the premature or sick infant and family. A full term pregnancy is estimated to last between 37 and 40 weeks. Preterm infants born before 28 week (5.1%) are defined as extremely preterm, while those who are born between 28 to 31 weeks (10.3%) are defined as very preterm. The majority of the preterm (84.1%) are born between 32 to 37 week and may have significant medical problems requiring prolonged hospitalization. The prevalence of preterm birth is increasing worldwide. More than one in ten babies are born preterm annually. This is equal to 15 million preterm infants born globally and the second largest direct cause of deaths in children below five. The highest rates of preterm birth are in Sub-Saharan Africa and South Asia (more than 60%) and the lowest rates are in Northern Africa, Western Asia, Latin America and the Caribbean. The preterm birth rates in the developing countries vary widely and follow a different pattern than in high income countries. The preterm birth rate has increased between 1990 and 2010 with an average of 0.8% annually in almost all countries. Morbidity among critically ill newborn and preterm infants vary widely from no late effects to severe complications, such as visual or hearing impairment, chronic lung disease, growth failure in infancy and specific learning impairments, dyslexia and reduced academic achievement. Full term infants may also experience significant health problems requiring neonatal intensive care. The most common reasons for a full term infant to be admitted to a NICU after birth are temperature instability, hypoglycemia, respiratory distress, hyperbilirubinemia and neonatal mortality. Admission of a full term newborn infant from home within the first four weeks after birth is due to jaundice, dehydration, respiratory complications, feeding difficulties, urinary tract infection, diarrhea and meningitis. The last two to three decades, technological advances in neonatology have improved the survival rates of critically ill and preterm infants. Two major issues have influenced the design of the NICU wards: i) the increased volume of preterm infants with extremely low gestational age who need neonatology assistance, and ii) the impact of the parents' presence in the NICU to support the infant's development. The health status of preterm babies can have a significant impact on the family wellbeing and function. The separation between the preterm infant and the parents is a threat to the attachment and bonding process. Worldwide, there has been a paradigm shift in the NICUs over the last decade, inviting parents to be admitted together with the infant or at least to spend most of the day together with their critical ill and preterm infant in the NICU. Parental involvement increases the performing of Kangaroo Mother Care during the admission in the NICU and increases parental preparedness for discharge to home. This change prepares the parents to take over tasks such as nurturing and feeding. The parents are the most important caregivers for the infant during the admission in the NICU and their co-admission increases the bonding and prepare the parents for the transition discharged to home. Family centered care (FCC) based on a partnership between families and professionals is described as essential in current research on neonatal care. Family centered care is facilitated by parent involvement, communication based on mutual respect, and unrestricted parental presence in the NICU. According to Mikkelsen and Frederiksen, the central attribute of FCC is partnership with the core value of mutuality and common goals. A NICU is a high-tech setting where highly specialized professionals care for premature or critically ill infants. During the infants' hospitalization, the relationship between parents and nurses evolves through an interchange of roles and responsibilities. However, this collaboration is challenging due to a discrepancy between parents' and nurses' expectations of their roles. To facilitate parents' skin-to-skin contact and involvement in their infant's care, NICUs are now redesigned to facilitate parents' '24-hour' presence, also called "rooming-in". Seporo et al. describes several benefits with "rooming-in" the NICUs. Staying in the same room increases infants' and parents' possibility for "skin-to-skin care". This improves the infant's sleep time and temperature regulation, decreased crying and need for oxygen, increases parental confidence and positive infant-parent interaction. Parents' experience of "skin-to-skin care" and "rooming in" may help parents to be acquainted with their infant and thus prepare for the transition to home. However, despite these positive effects of rooming-in, some negative effects, e.g. less sleep and lack of privacy, have been described by parents who have stayed with their child in a pediatric unit. The hospitalization may challenge the normal attachment process and parents' confidence as caregivers; parents' preparation for bringing the infant home is thus essential. The infant's discharge from the NICU is experienced as a moment of mixed feelings. Going home is a happy event, but at the same time it is combined with parental anxiety. Parents' pervasive uncertainty, medical concerns and adjustment to the new parental and partner-adjustment role are common concerns. To make parents confident and prepared for taking
their infant home tailored information, guidance and hands-on experience caring for their baby before discharge is crucial. During the literature research we became aware of a systematic narrative review protocol by Parascandolo et al., ‘s concerning nurses’, midwives’, doctors’ and parents’ experiences of the preterm infants’ discharge to home. The aim of our comprehensive review is to perform a metasynthesis on parents’ perspectives and their experiences of transition from discharge from NICU to home. We will include qualitative primary studies to offer a deeper understanding of the parent perspective. PT, Review, maternal involvement, separation - 2015. Not on charts 11-2015

Abadía-Barrero CE. (2018-Jan). Kangaroo Mother Care in Colombia: A Subaltern Health Innovation against For-profit Biomedicine. Med Anthropol Q. 2018 Jan 24. doi: 10.1111/maq.12430. [Epub ahead of print] This ethnographic study presents the origins, growth, and collapse of the first Kangaroo Mother Care (KMC) program, a well-established practice for neonatal care created in 1978 in Colombia. The WHO and UNICEF praised this zero-cost revolutionary technique for its promotion of skin-to-skin contact between premature and low-birth-weight newborns and family members. KMC facilitates early hospital discharge, brings many clinical and psychological benefits, and constitutes an excellent alternative to placing babies in incubators. However, these benefits and political potential against biomedical interventions were undermined after being relabeled as a “reverse innovation,” a business concept that encourages corporate investments in low-income countries to develop technologies that can both solve global health problems and boost multinational corporations profits. In response, I propose “subaltern health innovations” as a label for KMC that accounts for the power dynamics in global health between health care initiatives that originate in the Global South and neoliberal configurations of for-profit biomedicine. Not on charts 3-25-2018. Article on office electronicKC articles.

Abdel Razek, A & Az El-Dein, N. (2009). Effect of breast-feeding on pain relief during infant immunization injections. International Journal of Nursing Practice, 15(2), 99-104. doi: 10.1111/j.1440-1425.2009.01728.x Quasi-experimental study of FT infants under 1 year of age coming to Jordan clinic for immunization. 60 infants in (short duration? Less than 5 minutes? Unspecified in study but says that shot was given as soon as infant had full areola in mouth and that KC occurred before, during and after the study) KC group (private room, seated, reclined mom, awake infants in arms, no cloth, with clean diapers, cradled during breastfeeding to maintain full body skin-to-skin contact during immunization. 60 infants in control group. Control was routine (mom in room and clothed infant seated on table not breastfeeding, not being held, just touched by mother for positional support, nurse give shot). Pain measured by Facial Pain Rating Scale and Neonatal/Infant Pain Scale before, during and after injection. HR measured before (KC=129; control = 125) and after (KCs= 149; Control = 162) injection – text says there was significant difference between groups but the table reports a p = 1.33 which is not significant, so I do not know the effect on HR between groups except to guess that HR after injection was lower in KC group than controls (Pg. 101, 102) and the variability in HR for KC group was half that for the control group in both before and after measurements. Stopwatch for crying from insertion of injection up to cessation of crying duration of crying was shorter in breastfed + KC group during and after injection (M=125.33) than control (M=148.66 seconds (10 KC infants had audible cry vs. 39 controls, so fewer KC infants cried than controls), also KCers spent 16.7% of time crying and controls spent 65.3% of time crying (pg. 103), free cry and end cry were also measured but not explained as to what they meant (pg. 102). Crying time was shorter in KC Breastfed group (duration of crying shorter during and after KC (Residual effect). No changes in HR, NIPS, or facial coding scale scores. NIPS pain scores consistently lower in KC than controls (no significance level computed), and more facial pain in KC group than control (p<0.05, pg. 103). KC and breastfeeding significantly reduce crying during immunization. On page 103 it says that crying was reduced in BF+KC group because “this reflects the peculiarity of BF over other types of pain reduction as destruction of attention.” What this means is beyond me! Does also say that “function of mother-infant interaction serves as a means of preventing and/or reducing pain and stress among infants” pg. 103 and cites Barr R, Young S. 1999. A two phases model of the soothing taste response implication for temperament and emotion regulation, soothing and stress. Hillsdale, NJ: Erlba Um. (This is an incomplete reference). Quasi-experimental (no randomization to groups), HR, stability, crying, NIPS, pain, FT, facial coding. Not on Charts yet 4/30/09

Abolyan, L.V. (2006). The Breastfeeding Support and Promotion in Baby-Friendly Maternity Hospitals and Not-as-Yet Baby Friendly Hospitals in Russia. Breastfeeding Medicine, 1(2), 71-78. Randomized evaluation of 741 mothers (383 experimental mothers) and 358 controls from not as yet Baby Friendly Hospitals interviewed about infant breastfeeding rates. Mothers in Baby Friendly Hospitals had positive effect of BFH on increased rate of exclusive BF, duration of BF; mothers and baby’s health, and maternal knowledge about BF. BFH moms liked rooming-in, BF on demand, taking care of baby by themselves. Initiation and one year BF rates higher in BFH group. Baby Friendly Hospitals in Russia have a few shortcomings: frequent use of labor anesthesia, insufficient placing of newborns on the mother’s abdomen (birth KC), rooming-in insufficient, and insufficient intiating of breastfeeding immediately after birth, and a short length of “skin-to-skin” contact (<30 minutes total). But, Russia is in compliance with Baby Friendly Initiative Goals for the country. RCT, fullterm, Breastfeeding duration and exclusivity, birth KC. Not on Charts.

Abouabib, V., Vu-Vroy, L., Al Hawari, S., Attier, S., & Chourak, J.P. (2007). Is there a risk with skin-to-skin practice at baby’s birth? Archives de Pediatrie, 14(11), 1368-1369. Two case studies in France of healthy, normal APGAR, full term infants, one boy and one girl, who were given Birth KC and then had cessation of breathing while on the mother’s chest. The baby girl was placed in Birth KC

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immediately after birth and in the first few minutes experienced cyanosis, cessation of breathing and was hypotonic. She was taken from the mother’s chest and given oxygen by mask and stimulation and recovered quickly and did not go to the NICU. The baby boy was also placed in Kangaroo Care immediately after birth and at 45 minutes post birth was seen to have palor and be hypotonic and was treated with stimulation and oxygen by mask, but persistence of palor and bad coloring required him being taken to the NICU where his lactate was elevated to 8.7 mmol/l. He recovered rapidly and the mother was very tired. Birth KC is a risk factor for apparent life threatening events. Pediatricians and obstetricians believe that observation of the newborn is very important and that this responsibility is the nurses’ and is particularly important for mothers during the immediately postpartum period. Nurses should not abstain from vigilant observation. Case studies, Birth KC, Fullterm, life threatening events,

Abouelfettoh, A., & Ludington-Hoe, S.M. (2014). Preterm twins cardiorespiratory, thermal, and maternal breast temperature responses to shared kangaroo care. International Journal of Nursing and Midwifery, 20(4), 25-28. This is a descriptive study of 5 mother-twin triads who all got Kangaroo Care for 1.5 hours. Baseline (5 minutes) and KC measures were taken every 30 seconds throughout. No difference in HR, RR, SaO2 and infant temp between baseline in incubator and KC periods, but maternal breast temperatures were highly, positively, and significantly related to infant temperatures and behaved independently of each other. PT, Temp, HR, RR, SaO2, breast temp, Twins, multiples, shared KC

Check if on charts

Abouelfettoh A., Ludington-Hoe, S.M., Burant, C., & Visscher, M. (2011). Effect of skin-to-skin contact on preterm infant skin barrier function and hospital-acquired infection. Journal of Clinical Medical Research, 3(1), 36-46. Doi: 10.4021/jocme479w Descriptive study (N=10) of infants 30-32 wks GA tested within 9 days of birth and without signs of infection who received 5 days of KC (1.5 hours/day). On Days 1 and 5 pretest (incubator) values of stratum corneum hydration and TEWL (transepidermal water loss) were taken and compared to values at beginning, middle, and end of KC session and then posttest values were taken too. Stratum corneum hydration and TEWL increased during KC, indicating a higher humidity environment, better skin barrier function (increased stratum corneum hydration), and the expected higher humidity (transepidermal water loss – water in the skin-to-skin interface) in the enclosed interface occurred. No infant had any infection while hospitalized after KC had begun and no mothers reported signs of infection within the first month post-discharge. PT, pretest-test-posttest within subjects control descriptive (or quasi-experimental) study, skin hydration, TEWL, infection, barrier function, separation.


Academy of Breastfeeding Medicine (2002). Peripartum breastfeeding management for the healthy mother and infant at term. Academy of Breastfeeding Medicine Protocols, protocol #5, 1-2. All protocols are on their website. “The healthy newborn can be given directly to the mother for skin-to-skin contact until the first feeding is accomplished. The infant may be dried and assigned APGAR scores and the initial physical assessment performed as the infant is placed with the mother. Such contact provides the infant optimal physiologic stability, warmth, and opportunities for the first feeding. Delaying procedures such as weighing, measuring, and administering vitamin K and eye prophylaxis (up to an hour) enhances early parent-infant interaction”. Available from website: www.bfmed.org/ace-files/protocol/FTFULL TERM, BF, Birth KC, guideline

Academy of Breastfeeding Medicine Protocol Committee. (2007). ABM clinical protocol #7. Model breastfeeding policy. Breastfeeding Medicine, 2(1), 50-55. This is an excellent protocol article that endorses birth KC by saying “At birth or soon thereafter all newborns, if baby and mother are stable, will be placed skin-to-skin with the mother. Skin-to-skin contact involves placing the naked baby prone on the mother’s chest. The infant and mother can then be dried and remain together in this position with warm blankets covering them as appropriate. Mother-infant couples will be given the opportunity to initiate breastfeeding with 1 hour of birth. Postcesarean birth babies will be encouraged to breastfeed as soon as possible, potentially in the operating room or recovery area. The administration of Vitamin K and prophylactic antibiotics to prevent ophthalmia neonatorum should be delayed for the 1st hour after birth to allow uninterrupted mother-infant contact and breastfeeding.” (pg. 52). FULL TERM, BF, Birth KC, guidelines NOT ON charts

Academy of Breastfeeding Medicine Protocol Committee. (2010). ABM clinical protocol #7. Model hospital policy. Revision 2010. Breastfeeding Medicine, 5(4), 173-177. This is an update of the 2007 Model breastfeeding policy listed above. It is also an EXCELLENT article on directions to give new mother about breastfeeding while we are doing immediate Birth KC. Protocol #7 has several things to say about KC: “At birth or soon thereafter all newborns, if baby and mother are stable, will be placed skin-to-skin with the mother. Skin-to-skin contact involves placing the naked baby prone on the mother’s chest. The infant and mother can then be dried and remain together in this position with warm blankets covering them as appropriate. Mother-infant couples will be given the opportunity to initiate breastfeeding within 1 hour of birth. Postcesarean birth babies will be encouraged to breastfeed as soon as possible, potentially in the operating room or recovery area. The administration of Vitamin K and prophylactic antibiotics to prevent KC
ophthalmia neonatorum should be delayed for the 1st hour after birth to allow uninterrupted mother-infant contact and breastfeeding.”

(pg. 173). Breastfeeding mother-infant couples will be encouraged to remain together throughout their hospital stay, including at night (rooming-in). Skin-to-skin contact will be encouraged as much as possible. (pg. 173-174). “After 24 hours of life, skin-to-skin contact will be encouraged.” (pg. 175). Fullterm, cesarean, BF, Birth KC, Postpartum KC, guidelines (not on charts)

Academy of Breastfeeding Medicine. (2010). Clinical Protocol Number #23: Non-pharmacologic management of procedure-related pain in the breastfeeding infant. Breastfeeding Medicine 5(6), 1-5. DOI: 10.1089/bfm.2010.09978. It states on page 1: “Coordinating a breastfeeding session with the timing of the procedure is best, but, if this is not possible, skin-to-skin contact can comfort infants undergoing a procedure such as heel lance. Skin-to-skin contact also gives the mother a caretaking role during the procedure that is unobtrusive, and by Cong infant stress, it can increase maternal confidence as to her value to the infant (based on Gray, Watts & Bass). “Sucrose and pacifier can both be combined with the skin-to-skin component of parental contact”. On page 2 it says “Skin-to-skin contact provides effective pain reduction for premature infants.” PT, FT, Guidelines, Pain, Not on Charts


Academy of Breastfeeding Medicine Protocol Committee. (2004). Protocols #6, 7, and 20. Peripartum breastfeeding management for the healthy mother and infant at term. Revision, June 2008. Breastfeeding Medicine, 3(2), 129-133. This is available from www.guideline.gov and type in Perinatal Breastfeeding management and several guidelines will come up, but the first one is from Academy of Breastfeeding medicine and it is NGC:006817. This is an update of the 2002 protocol #5. These revised guidelines state that prenatal education should be given to the mother, give group discussions, and peer counseling. Under labor and delivery it says that” women who benefit from the continuous presence of a close companion (doula) throughout labor and delivery”pg. 129. Under immediate postpartum it states “1. The healthy newborn can be given directly to the mother for skin-to-skin contact until the first feeding is accomplished. The infant may be dried and assigned Apgar scores, and the initial physical assessment performed as the infant is placed with the mother. Such contact provides the infant with optimal physiologic stability, warmth, and opportunities for the first feeding. Extensive skin-to-skin contact may increase the duration of breastfeeding.” (pg. 129-130). Under #2. It speaks to separation: “Whenever possible, mothers and infants are to remain together during the hospital stay. To avoid unnecessary separation, infant assessments in the immediate postpartum time period and thereafter are ideally performed in the mother’s room” (pg. 130). FT, Guidelines, BF, Birth KC, non-separation Not on Charts

Acolet D, Sleath K, & Whitelaw A. (1989). Oxygenation, heart rate, and temperature in very low birthweight infants during skin-to-skin contact with their mother. Acta Paediatrica Scandinavica, 78, 189-193. KC for 10 minutes in 14 very low birth weight infants 6-134 days old and between 1000-1200 grams (five infants had BPD; two on nasal cannula, and 9 had no lung disease). When asleep, infants placed prone in incubator or prone 60° incline on mom’s chest. 5 minutes of stabilization and then VS every 30 seconds for 10 minutes. Then positions were changed (KC went to incubator; incubator went to KC) for another 10 minutes. During KC HR rose significantly within normal limits, BPDers had significant rise in transectaneous P02, no infant had apnea, bradycardia during KC, all maintained their temperature. Concluded KC was safe for BPD babies. No change in RR, States they do not do KC with infants having serious apnea/bradycardia. Descriptive comparative (Cross-over Study), PreTerm, VLBW (Micropreemie), BPD, Nasal cannula, HR, RR, SaO2, Axillary Temp, Bradycardia, apnea, Safety

Adam T, Lim SS, Mehta S, Bhutta ZA, Fogstad H, Mathai M, Zupan J, & Darmstadt GL. (2005). Cost effectiveness analysis of strategies for maternal and neonatal health in developing countries. British Medical Journal, 31(7525), 1107-1113. Descriptive study of the cost of 21 interventions (ie. Screening for pre-eclampsia, management of LBW babies by giving feeding support, additional warmth, close monitoring, and treatment with oxygen if necessary). Kangaroo Care or skin-to-skin contact is not mentioned per se anywhere in the article, but is ASSUMED to be referred to by the “additional warmth for LBW infants” because of Zupan’s and Darmstadt’s inclusion as authors. The researchers took trials and expert opinion papers and WHO guidelines and assigned costs to the 21 interventions. Concluded that preventive interventions at community level for newborn care are highly cost effective (pg. 3 of 6) followed by antenatal screening. Evaluative Descriptive, Fullterm, preterm Community-based interventions (may include KC for warmth).

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Adams, S (2017-May) Pediatric Experts Find Aromatherapy Effective for Promoting Infant Healing, NAS Recovery. *UK Now: University of Kentucky News*, May 12, 2017. A summary of a study. Available from [uky.edu/uk4ky, #uk4ky #seeblue](http://nursing.advanceweb.com/Article/JointCommissionIntroducesPerinatalCareCoreMeasuresSet.aspx). This is a review of the perinatal care core measures set (see also Joint Commission for Accreditation of Health Care Organizations citations in this bibliography). This review lists the exclusively breastmilk fed by discharge for healthy term infants and says that skin-to-skin contact is the key to 

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exclusive breastfeeding and should be the new vital sign for maternity care. Review, Guidelines, BF, Exclusive breastfeeding, birth KC. Vital Sign, maternal feelings [Not on charts 9/9/2011]. See also US BF Committee that put out many things to help hospitals achieve this new guideline.

Affonso, D.D., Bosque, E., Wahlberg, V., & Brady, J. (1993). Reconciliation and healing for mothers through skin-to-skin contact provided in an American tertiary level intensive care nursery. Neonatal Network, 12(3), 25-32. Mothers interviewed two years after preterm birth who had KC during hospitalization had better resolution of the birth experience and were able to move on better than control mothers who were still asking basic questions about the hospitalization experience. KC helps closure over preterm birth. Mothers and fathers expressed a very special and unique sense of joy and happiness doing KC. PT, Qualitative, maternal feelings.

Affonso, D.D., Wahlberg V., & Persson, B. (1989). Exploration of mothers’ reactions to the Kangaroo method of prematurity care. Neonatal Network, 7, 43-51. Mother’s have lots to say about preterm birth as it is very stressful to them, and KC helps with the maternal “psychological hemorrhage” associated with preterm birth (pg.50). Mothers felt relaxed when doing KC and were fascinated with infant’s movements and competence in looking around. PT, Descript. Maternal confidence, psychological stability.

Aghdas, K., Talat, K. & Sepideh, B. (2014, Mar). Effect of immediate and continuous mother-infant skin-to-skin contact on breastfeeding self-efficacy of primiparous women: A randomized control trial. Women and Birth, 27(1), 37-40. pii: S1271-5192(13)00401-0. DOI:10.1016/j.wombi.2013.09.004. Purpose was to determine effect of immediate skin-to-skin contact after birth on primip mom’s breastfeeding self-efficacy (at 28 days post birth; self efficacy in KC group was 53.42 +/-8.57; in control was 49.85+/-.5; p=0.0003) by randomized controlled trial with 92 (47 dyads in KC; 45 in routine care group) 18-35 year old Iranian women with healthy infants after normal spontaneous vaginal delivery in Iran. Successful BF initiation rate was 56.6% in KC, 35.6% in controls (p=0.02) and mean time of first breastfeeding was 21.98 +/-9.10 minutes in KC vs. 66.55+/-.20.76 minutes in control (p<0.001). Skin to skin contact at birth is easy, available method of enhancing BF self-efficacy. High breastfeeding self efficacy increases EXCLUSIVE breastfeeding duration. Full term, BF, Exclusive/exclusivity of BF, BF self-efficacy, RCT. Not on charts 12/24/2011 EBS-1105


Aguilar Cordero, M.J., Batran Ahmed, S.M., Padilla López, C.A., Guisado Barrilao, R., & Gómez García, C. (2012). [Breast feeding in premature babies: development-centered care in Palestine]. Nutr Hosp. 27(6):1940-4. doi: 10.3305/nh.2012.27.6.5995. [Article in Spanish]. In addition to its important role in the initiation of breastfeeding, early skin-to-skin contact benefits both mothers and their babies. Objective was to inform all mothers of premature babies about the importance of skin-to-skin contact and breast-feeding in order to foment a closer bond between mother and child (development-centered care). A prospective cohort study was conducted in various hospitals on the West Bank in Palestine during 2008-2011 where there were an estimated average of 2,500 childbirths per year in each hospital. All of the subjects in the sample population of n = 252 (SML question: over three years in more than one hospital with 2,500 births per year of which 250 at least would have been premature, they only got/studied 252 subjects? Why so few?) babies had a gestational age of less than 37 GWS, and had weighed less than 2,500 grams at birth. For health reasons, they were hospitalized in neonatal care units. In Palestine, young women tend to breastfeed their babies and have skin-to-skin contact with them more often than older mothers. Once the new mothers were informed of the advantages of these practices, they showed greater interest in learning how to care for their babies in the neonatal care units.Breastfeeding premature babies as well as having skin-to-skin contact with them was made possible by informing and teaching new mothers about the advantages of this type of infant care. This research has had widespread impact and has been very well received by the female population in the country. This is the first study of its kind to be carried out in Palestine. 3rd world, PT, descriptive study, just teaching KC increased KC, implementation, developmental care

Ahmed, S., Mitra, S.N., Chowdhury, A.M., Camacho, L.L., Winikoff, B. & Sloun, N.L. (2011). Community kangaroo mother care: implementation and potential for neonatal survival and health in very low income settings. Journal of Perinatology, 31(5), 361-7. doi: 10.1038/jp.2010.131. Immediate Kangaroo Mother Care (KMC), an intervention following childbirth whereby the newborn is placed skin-to-skin (STS) on mother's chest to promote thermal regulation, breastfeeding and maternal-newborn bonding, is being taught in very low-income countries to improve newborn health and survival. Existing data are reviewed to document the association between community-based KMC (CKMC) implementation and its potential benefits. New analyses of the sole randomized controlled study of CKMC in Bangladesh and others’ experiences with immediate KMC are presented. Newborns held STS less than 7 h per day in the first 2 days of life do not experience substantially better health or survival than babies without being held STS. Most women who were taught CKMC hold their newborns STS, but do so in a token manner unlikely to improve health or survival. Serious challenges exist to provide effective training and postpartum support to achieve adequate STS practices. These challenges must be overcome before scaling up Community KC, Birth KC, mortality. Not on Charts 2/17/2011

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Ahmed A.H. & Sands L.P. (2010). Effect of pre- and post-discharge interventions on breastfeeding outcomes and weight gain among premature infants. *Journal of Obstetric, Gynecologic, and Neonatal Nursing (JOGNN)*, 39(1), 53-63. A systematic review of 310 studies, only 8 were Randomized controlled trials of infants <37 weeks GA that measured breastfeeding and weight. Kangaroo care (based on Hake-Brooks & Anderson, 2008), peer counseling, and in-home breast milk intake measurement and postdischarge lactation support improved breastfeeding outcomes among preterm infants, and that maternal satisfaction improved with post-discharge interventions. KC during hospitalization was associated with increased EXCLUSIVITY and DURATION of BF (pg. 58). Also tested cup feeding before discharge and found no differences in BF outcomes and a high non-compliance rate with cup feeding. Late preterm infant costs are 3 times higher (12,247.00) than term infant costs (4069.00) (McLaurin K Ket al., 2009. Persistence of morbidity and cost differences between late-preterm and term infants during the first year of life. *Pediatrics* 123(2), 653-659). Review, preterm, BF, Exclusivity, Duration, post-discharge intervention, COST of Prematurity, cup feeding, peer counseling. Not on Charts as of 6/19/2010 LOOK AT FOLLOWING CITATION

Ahmed AH & Sands LP. (2010). Effect of pre- and postdischarge interventions on breastfeeding outcomes and weight gain among premature infants. *Journal of Obstetric, Gynecologic, and Neonatal Nursing, 39*(1), 53-63. 310 studies were reviewed and 8 met inclusion criteria (<37 wks GA, RCT in English, in developed countries and had BF and weight gain outcomes). The systematic review of 8 RCT's revealed that KC (along with peer support, in home breast milk intake measurement, and postdischarge lactation support) improved breastfeeding outcomes, maternal satisfaction improved with postdischarge interventions, and no difference in weight gain found between pre and post discharge interventions. Used Hake-Brooks & Anderson 2008 for the KC RCT and says that national "guidelines are now available and provide a protocol for implementation of KC by health professionals (pg. 58)" PT, BF, Meta-analysis

Ahn, J.Y., Lee, J., & Shin, H.J. (2010) Kangaroo Care on premature infant growth and maternal attachment and post-partum depression in South Korea. *Journal of Tropical Pediatrics, 56*(5), 3343-344. Experimental study of 10 sessions of 60 min KC for 5 weeks in a level III NICU. KC infants had increased length, larger head circumference but not weight differences. Maternal attachment scores were higher in KC group. KC has beneficial effects on infants and mothers but mood of mothers was not significantly different between the groups.

RCT yes, Experimental PT, weight, length, head circumference, postpartum depression, maternal mood

AIIMS - New Delhi, IOG – Chennai, KEM- Mumbai, KGMU-Lucknow, & PGII-Chandigarh. 2004. Presentation at “Workshops on Kangaroo Care at Neoncon 2004. XXIV NNFI Annual Convention at Chandigah, 28October, 2004” Available from file:///E:/KangarooMotherCareInitiative(KMCI).htm. This is a report of a KMC network in India that has the goals to disseminate awareness about KMC among health care providers by conducting workshop in the country and by providing knowledge and evidence for KMC through the website, to catalize initiation of KMC practice at selected hospitals by onsite training of personnel in outreach hospitals, to provide in service training opportunities about KMC for healthcare providers, and to promote research and generate evidence about feasibility of KMC in the community. The network gives support for implementation of KMC and wants KMC to spread around India. Policy report, Preterm, 3rd world, network, implementation. Not yet on charts

Aires LC, Santos EK, Costa R, Borek M, Custódio ZA. (2015). [Baby follow-up in primary care: interface with the third stage of the kangaroo method](Portuguese). *Rev Gaucha Enferm. 2015;36 Spec No:224-32, doi: 10.1590/1983-1447.2015.esp.56805*. To know the perceptions of health professionals in primary care on the follow-up of preterm and/or low birth weight babies and their families, and the interface with the third stage of Kangaroo Care. Exploratory and descriptive research with a qualitative approach, carried out in Basic Health Units in the municipality of Joinville, Santa Catarina, Brasil. The data collected were between September and October of 2014, through semi-structured interviews, with 31 health professionals. Data treatment was performed through content analysis technique, thematic modality. The following categories emerged: Segment organization in Primary Care; The enigmatic preterm and/or low weight baby and childcare in primary health care; The interfaces of the third stage of Kangaroo Care with Primary Care. The use of Kangaroo Care in Primary Care is still shy, caring for preterm babies is fraught with uncertainty and still focused on the biomedical model. Brazil, PT, qualitative study, little KC being done, barrier is biomedical model of care, not family integrated nor humane. Not on charts, I have full article for better review if I can read Portuguese

Akcan E, Yigit R, & Atici A. (2009). The effect of kangaroo care on pain in premature infants during invasive procedures, *Turkish J Pediatrics* 51(1): 14-18. No doi. Randomized controlled trial of 25 KC (30 minutes of KC before invasive procedure and then 10 minutes after procedure) vs. 25 controls (in incubator for invasive procedure). Infants were 26-36 weeks gestational age and 0-28 days postnatal age when tested once. No infant received narcotic analgesic. Behavioral (crying), physiologic (HR), and PIPP were measured. PIPP was significantly lower during and after the procedure in KC group so HR was not increased during KC. HR results???, crying was less???. KC is effective in decreasing pain during and after invasive procedure in preterm infants. PT, RCT, pain, HR, crying, PIPP, duration. Not on charts

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The time around labor and

In the paragraph entitled Interventions that Work, it says

‘Focusing on small or sick newborns could achieve the highest impact; interventions that reduce infection risk, thermal stress, and delayed/poor nutrition have the potential to prevent almost 600,000 newborn deaths by 2025. Much of this impact is possible in facilities without intensive care, with the MOST IMPORTANT BEING CARE OF PRETERM NEONATES INCLUDING KANGAROO MOTHER CARE AS AN ENTRY POINT AND ADJUNCT TO MORE COMPREHENSIVE NEONATAL CARE....‘ AND CITIES BHUTTA ET AL., 2014 (which is on this bib, too). Page S46 continues with “The time around labor and birth plus the first week is the most critical for maternal and newborn death and stillbirths, and for child disability. Intervening at this time is not only crucial for reducing deaths but also for decreasing the risk of life-long morbidities.” Page S48 relates “In addition, there is a clear need to improve the quality of care for mothers and newborns in healthy systems everywhere.” Two million stillbirths and newborns could be saved by care at birth and care of small and sick newborns, giving a triple return on investment at this key time. Commitment, investment, and intentional leadership from global and national stakeholders, including all healthcare professionals, can make these ambitious goals attainable.


Alenchery AJ, Thoppil J, Britto CD, de Onis JV, Fernandez L, Suman Rao PN (2018-Feb). Barriers and enablers to skin-to-skin contact at birth in healthy neonates - a qualitative study. BMC Pediatr. 18(1):48. doi: 10.1186/s12887-018-1033-y. Skin to skin contact (SSC) at birth is the standard of care for newborns without risk factors. However, implementation of SSC at birth has been far from optimal. A qualitative study was undertaken to determine the barriers, enablers and potential solutions to implementation of SSC at birth in healthy newborn infants in a level III neonatal-care facility in Bangalore, India. Consultants and residents/postgraduates (PG) from the departments of Obstetrics (n = 19) and Pediatrics (n = 14) and nurses (n = 8) in the labor room (LR) participated in the study. In depth interviews (IDI) and focus group discussions (FGD) were carried out with an interview guide and a moderators’ guide containing inbuilt probes. Subjects of FGD were homogenous. All IDI and FGD were audio-taped, transcribed and analyzed using N VIVO version 9 (using free and tree nodes). Two authors separately coded the transcripts. Major and minor themes were identified. Rigor was ensured by triangulation and theoretical saturation. Informed consent and ethical approval was obtained. All subjects were aware of SSC at birth, some of its benefits and had practiced SSC. The major barriers identified were lack of personnel (nurses), time constraint, difficulty in deciding on eligibility for SSC, safety concerns, interference with clinical routines, and interdepartmental issues. Recall of an adverse event during SSC was also a major barrier (SUPC???) Furthermore, we found that most participants considered 1 h as impractical; and promoted 5-15 min SSC. Minor themes were gender bias of the newborn and cultural practices. The participants offered solutions such as assigning a helper exclusively for SSC, allowing a family member into the LR, continuing SSC after initial routines, antenatal counselling, constant reminders in the form of periodic sessions with audiovisual aids or posters in the obstetrics ward, training of new nurses and PG, and inclusion of SSC in medical and nursing curriculum. The major barriers to SSC at birth are lack of personnel, time constraint and safety concerns. Training, designated health personnel for SSC and teamwork are the key interventions likely to improve SSC at birth. Full term FT, BirthKC, little KC being done, 3rd world, descriptive evaluative study, SUPC, barriers, enablers, implementation, need pictures and posters, duration of 1 hour is too long, Standard of care for newborns, routine, Not on charts 3-25-2018

Ali Z & Lowry M. (1981). Early maternal-child contact: Effects on later behaviour. Developmental Medicine and Child Neurology 23, 337-345. 50 fullterm healthy newborns given 45 minutes of skin-to-skin contact immediately after birth in Jamaica. These infants were compared to matched controls at 6 and 12 weeks age.More early contact moms Breastfed exclusively than non-contact moms, early contact infants were less likely to be crying or restless during 6 and 12 week interviews. At 12 weeks, early contact moms were more KCBib 2018
likely to rise and follow their babies when babies were taken from them, gazed more frequently at their infants, and were more likely to vocalize to the infants during interview. Early contact promotes a closer relationship between mom and infants.  RCT, Fullterm BF, Exclusive BF, Maternal Behavior, birth KC, 3rd world, crying, restless, Interaction.


Almutairi, W. & Ludington-Hoe, S.M. (2016-Nov). Kangaroo Care Education Effects on Nurses’ Knowledge and Skills Confidence. Journal of Continuing Education in Nursing. 47(11):518-524. Doi: 10.3928/00220124-20161017-11.  Less than 20% of the 996 NICUs in the United States routinely practice kangaroo care, due in part to the inadequate knowledge and skills confidence of nurses. Continuing education improves knowledge and skills acquisition, but the effects of a kangaroo care certification course on nurses’ knowledge and skills confidence are unknown. A pretest-posttest quasi-experiment was conducted. The Kangaroo Care Knowledge and Skills Confidence Tool was administered to 68 RNs at a 2.5-day course about kangaroo care evidence and skills. Measures of central tendency, dispersion, and paired t tests were conducted on 57 questionnaires. The nurses’ characteristics were varied. The mean posttest Knowledge score (M = 88.54, SD = 6.13) was significantly higher than the pretest score (M = 78.7, SD = 8.30; t (54) = -9.1, p = .000), as was the posttest Skills Confidence score (pretest M = 32.06, SD = 3.49; posttest M = 26.80, SD = 5.22; t (53) = -8.459, p = .000). The nurses’ knowledge and skills confidence of kangaroo care improved following a certification continuing education course, suggesting a need for continuing education in this area.  Quasi-Experiment, Nurses knowledge, skills, implementation, certification course.  Not on charts 11/5/2016 except for certification chart.

Als, H.B. & McAmulty, G. (2011). The Newborn Individualized Developmental Care and Assessment Program (NIDCAP) with Kangaroo Mother Care (KMC): Comprehensive care for preterm infants. Current Women’s Health Reviews, 7(3), 288-301 doi: 10.2174/157340411796355216. NICU has costly repercussions. Everyone caring for these infants needs to know about preterm infant personhood as well as the neuro-essential importance of the parents, otherwise even the best care jeopardizes infants’ long term potential and deprives parents of their critical role. This is time of rapid brain growth, conventional NICU contributes to long term physical and mental health problems and developmental disabilities. NIDCAP aims to prevent iatrogenic sequelae of intensive care and to maintain the intimate connection between infant and mother, one EXPRESSION of which is KMC. NIDCAP embeds the infant in the natural parent niche, avoids over stimulation, stress, pain, isolation and supports self-regulation, competence, and goal orientation. NIDCAP improves brain development, functional competence, health and life quality. It is cost effective, humane, and ethical, and promises to become the standard for all NICU care. (To Susie, this sounds like an advertisement for NIDCAP and puts KMC as only one feature of NIDCAP, and it is a separate, independent intervention that should be joined with KMC, not considered one piece of NIDCAP which has been previously identified as having 27 components to its program (Als, 1986). Not until 1992 did Als acknowledge that KMC could be different than skin-to-skin contact as she said at the International Conference of Infant Studies in Miami Beach in 1992, “having the baby at breast is skin-to-skin contact.” And then Susie got up and told her that skin-to-skin contact, and using those words, indicated chest-to-chest skin to skin positioning of the infant, not breastfeeding. And in fact, Als has failed to identify any parameters of frequency, duration, intensity of KMC as part of NIDCAP in any of her publications about NIDCAP and its results.)  PT, Review, developmental care, NICU environment. Not on Charts 10/2/2011.

Altimier L. (2001). Preface: Alternative therapies. Newborn and Infant Nursing Reviews 1(4), 204. This is an editorial introduction to the move from “minimal handling” to providing developmentally supportive care. She presents the Eichel article on KC with ventilated infants and an article by Jones and Karoosty in the same issue. The editor comments that KC benefits are improved oxygenation, stable heart rate and respirations, thermal synchrony, longer periods of sleep, and faster weight gain. Review, PT, comment, vent kc, wgt, HR, RR, stability, oxygenation, sleep, temp. Not on Charts Yet.


Aluvaala J, Nyamai R, Were F, Wasunna A, Kosgei R, Karumbi J, Gathara D, English M, & On behalf of the SIRCLE/Ministry of Health Hospital Survey Group. (2014, August). Assessment of neonatal care in clinical training facilities in Kenya. Arch Dis Child. vol. 77, pages 1-6. pii: archdischild-2014-306423. doi: 10.1136/archdischild-2014-306423. (Epub ahead of print) An audit of neonatal care services provided by clinical training centres was undertaken to identify areas requiring improvement as part of wider efforts to improve newborn survival in Kenya. Cross-sectional study using indicators based on prior work in Kenya. Statistical analyses were descriptive with adjustment for clustering of data. Neonatal units of 22 public hospitals and Neonates aged <7 days had their records studied. Quality of care was assessed in terms of availability of basic resources (principally equipment and drugs) and audit of case records for documentation of patient assessment and treatment at admission. All hospitals had oxygen, 19/22 had resuscitation and phototherapy equipment, but some key resources were missing—for example kangaroo care was available in 14/22. Out of 1249 records, 56.9% (95% CI 36.2% to 77.6%) had a standard neonatal admission form. A median score of 0 out of 3 for symptoms of severe illness (IQR 0-3) and a median score of 6 out of 8 for signs of severe illness (IQR 4-7) were documented. Maternal HIV status was documented in 674/1249 (54%, 95% CI 41.9% to 66.1%)
cases. Drug doses exceeded recommendations by >20% in prescriptions for penicillin (11.6%, 95% CI 3.4% to 32.8%) and gentamicin (18.5%, 95% CI 13.4% to 25%), respectively. Specifically related to KC on Page 2 of the online issue, in “Table 1. Availability of Essential Newborn Care Resources (n=22 hospitals). Kangaroo Mother Care (in any form)…n=14/22; %=64%; 5/14 units had designated space for providing Kangaroo Care” (pg. 2), and on page 5 it reads “Key resources were missing in some hospitals, for instance, alcohol hand rub, bag valve mask sets, and Kangaroo Mother Care (KMC). Although KMC is recommended for stable babies in national guidelines as it may reduce mortality and risk of sepsep and hypothermia (cities Conde-Agudelo et al., 2011), its implementation requires significant resources, including staff time. These resources are often not available likely explaining the challenges hospitals face in translating this policy into practice.” Basic resources are generally available, but there are deficiencies in key areas. Poor documentation limits the use of routine data for quality improvement. Significant opportunities exist for improvement in service delivery and adherence to guidelines in hospitals providing professional training. PT, FT, Descriptive retrospective evaluative study, Mortality, 3rd World, Essential care of newborn, guidelines, hypothermia, sepsis/infection, barriers, staff issues

Alvarez, Manny. (2016- Oct. 5). Fox News story about Utah Valley Hospital charging a Utah father, Mrl Rya Grasskey of Spanish Fork, Utah, $39.35 for skin-to-skin contact with his newborn. When he questioned this on his bill, complaining after spending $3,000 + for cesarean section, he was told that it was for observation of the newborn, a nursing charge. SML thinks this is a cheap price to pay to prevent SUPC. PT, Birth KC, cesarean KC, case report, SUPC, costs of KC Available from FoxNews.com

Amaliya S, Rustina Y, Agustin N. (2017). Comparison of Various Kangaroo Mother Care Carriers on Maternal Comfort: A Pilot Study. Compr Child Adolesc Nurs. 40(sup1):52-61. doi: 10.1080/24694193.2017.1346971. Kangaroo mother care (KMC) is an evidence-based approach that has been scientifically proven to have a positive effect on mothers and infants. One of the barriers to performing KMC at home is the absence of a special KMC carrier. The most widely used KMC carriers in Indonesia are kangaroo pouch, thari, wrap and traditional wraps in the form of a long strip of fabric. This study’s aim was to compare the level of maternal comfort when performing KMC with three different KMC carriers. The study used crossover design involving 20 mothers with low birth weight (LBW) infants as responders, selected through a consecutive sampling method. Data were collected using a maternal comfort questionnaire, maternal anxiety questionnaire, and KMC observation sheet. The results of repeated analysis of variance (ANOVA) showed that there was no significant difference in maternal comfort when performing KMC with any of three KMC carriers (maternal comfort p = .366, α = .05). Therefore, KMC can be implemented using any of the types of carriers including kangaroo pouch, thari, wrap, and traditional wrap. PT, descriptive comparative study, wraps,maternal feelings, comfort, observation study. GET THIS


Badir L. (2014- Sept-Oct). Brain-oriented care in the NICU: a case study. Neonatal Netw. 33(5):263-7. doi: 10.1891/0730-0832.33.5.263. With the advances of technology and treatment in the field of neonatal care, researchers can now study how the brains of preterm infants are different from full-term infants. The differences are significant, and the outcomes are poor overall for premature infants as a whole. Caregivers at the bedside must know that every interaction with the preterm infant affects brain development; it is critical to the developmental outcome of the infant. The idea of neuroprotection is not new to the medical field but is a fairly new idea to the NICU. Neuroprotection encompasses all interventions that promote normal development of the brain. There are ten neuroprotective interventions: pain relief, kangaroo care, reading avoidance cues, positive touch (such as massage, massaging the face, and deep pressure and massage techniques), parental involvement, titration of interactions according to the developmental capacity of the sensory systems, infant-driven feeds, and social conversation with the infant. The concept of brain-oriented care is a necessary extension of developmental care in the NICU. By following the journey of 26-week preterm infants through a case study, one can better understand the necessity of brain-oriented care at the bedside. (see also Tyebkhan’s 2015 response to this article). PT, nonproteective care, development, brain, neuroprotective interventions, parent involvement. Not on chart 8/20/2015

KCBib 2018
American Academy of Pediatrics. (2013). Expansion of recommendations for a safe infant sleeping environment. Available from pediatrics.aappublications.org/content/1615/1245.fall

American Academy of Pediatrics (2013). The changing concept of Sudden Infant Death Syndrome: Diagnostic coding shifts, controversies regarding the sleep environment, and new variables to consider in reducing risk. Pediatrics, 123(1), 1248-1257. On page 1251 it says “Mothers will copy at home behaviors seen in the hospital.” And In general, the new guidelines are: NO SIDE SLEEPING, NO SOFT BEDDING, soft objective in crib, NO sleeping with parent on parental bed. DO SLEEP IN SAME ROOM with infant’s bed proximal to parents, nor use Pacifiers, but if breastfeeding, wait until one month of age to introduce these (don’t worry about dental problems, they go away when child is five years). The most likely REASON FOR SIDS and Apparent Life Threatening Events in the first month of life is “certain infants, for reasons yet to be determined, may have a maldevelopment or delay in maturation of the brainstem neural network that is responsible for arousal and affects physiologic responses to life challenges during sleep. It has been found that the brain stem has a deficit in serotonin receptors in a network of neurons throughout the ventral medulla. The ventral medulla is responsible for arousal, chemosensitivity, respiratory drive, thermoregulation, and blood pressure (pg. 1251). On page 1252, under Recommendations, it says to keep head to one side for one week and then turn to the other side to reduce plagiocephaly. And it goes on to talk a bout ways to reduce plagiocephaly. It also says on page 1252 that sleep sacks can be recommended (left column) but then on right column it says to “avoid commercial products claiming to reduce SIDS because none has been sufficiently tested to make this claim.” Says in NICU nurses should adopt supine sleep ASAP. PT, FT, ALTE, Sudden Unexpected Postnatal collapse, pacifiers, model behaviors in hospital.

American Academy of Pediatrics 2013 statement on Back to Sleep in NICU is under Gelfer, P et al., 2013

American Academy of Pediatrics & American Heart Association (2000). Neonatal Resuscitation Textbook – 4th Edition, Washington, D.C.: American Heart Association. The change in this edition was “For all healthy babies, keep the baby with his mother and provide all initial evaluations and steps with the baby on the mother’s chest. This recommendation is for all healthy babies.” (Pg. 1.11) Fullterm, PT, guideline, Birth KC

American Academy of Pediatrics & American Heart Association, (2006). Neonatal Resuscitation Textbook – 5th Edition, (pp. 1-18) Washington, DC: American Heart Association. Lesson #1, page 18 states: “Nearly 90% of newborns are vigorous term babies with no risk factors and with clear amniotic fluid. They do not need to be separated from their mothers after birth to receive the equivalent of the initial steps of resuscitation. Thermoregulation can be provided by putting the baby directly on the mother’s chest, drying, and covering with dry linen. Warmth is maintained by direct skin-to-skin contact with the mother. Clearing of the upper airway can be provided as necessary by wiping the baby’s mouth and nose.”: Fullterm, Guideline, Birth KC.

American Academy of Pediatrics and American Heart Association (2011). Neonatal Resuscitation Textbook, 6th Edition, Washington, D.C.: American Heart Association. Page 258 it says “Consider using the mother as a heat source. Place the infant skin-to-skin with the mother, and cover both of them with one blanket.” There are new changes and they have been written up by Kattwinkel et al. 2010 and Zaichkin et al., 2011, and Perlman et al. 2010 (So see their explanation of how people should interpret what has been written in the 2011 NRP guidelines. Essentially saying that KC should be practiced immediately after birth if infant is not needing resuscitation, no matter whether preterm or full term. PT, FT, Guidelines, Birth KC, See also Zaichin article and Kattwinkel article in Circulation on this bib.


American Academy of Pediatrics & Canadian Paediatric Society. (2006). Prevention and management of pain in the neonate: An update. Pediatrics, 118(5), 2231-2241. On pg 2232 it says “…each neonatal unit should provide effective nonpharmacologic and/or pharmacologic pain relief for all procedures.” On page 2234 it states: “A variety of nonpharmacologic pain-prevention and relief techniques have been shown to effectively reduce pain from minor procedures in neonates. These include use of oral sucrose/glucose, KCBib 2018
breastfeeding, nonnutritive sucking, “kangaroo care” (skin-to-skin contact), facilitated tuck (holding arms and legs in a flexed position), swaddling, and developmental care, which includes limiting environmental stimuli, lateral positioning, use of supportive bedding, and attention to behavioral cues.” Page 2236 relates “Reducing Pain from Bedside Care Procedures. 2. Use of a combination of oral sucrose/glucose and other nonpharmacologic pain-reduction methods (nonnutritive sucking, kangaroo care, facilitated tuck, swaddling, developmental care) should be used for minor routine procedures. FT, PT, pain

American Academy of Pediatrics, Section on Breastfeeding. (2005). Breastfeeding and the use of human milk. Breastfeeding in full term healthy newborns. Pediatrics, 115 (2), 496-506. On page 498, as #3 of 15 recommendations, it is stated that “3. Healthy infants should be placed and remain in direct skin-to-skin contact with their mothers immediately after delivery until the first feeding is accomplished. The alert, healthy newborn infant is capable of latching on to a breast without specific instructions within the first hour after birth. Dry the infant, assign APGAR scores, and perform the initial physical assessment while the infant is with the mother (pg. 498). The mother is an optimal heat source for the infant. Delay weighing, measuring, bathing, needle-sticks, and eye prophylaxis until after the first feeding is completed. Except under unusual circumstances, the newborn infant should remain with the mother throughout the recovery period (pg. 499).” On page 500 there are “Additional Recommendations for High-Risk Infants: Hospitals and physicians should recommend human milk for premature and other high-risk infants either by direct breastfeeding and/or using the mother’s own expressed milk. Maternal support and education on BF and milk expression should be provided from the earliest possible time. Mother-infant skin-to-skin contact and direct breastfeeding should be encouraged as early as feasible.” (pg. 500). Guidelines, FT and PT, BF, birth KC, spontaneous search for nipple and latch. Not on charts yet.


American Academy of Pediatrics Section on Breastfeeding (2012). Breastfeeding and the use of human milk. Pediatrics, 129(3), e827-e841. Doi:10.1542/peds.2011-3552 “Breastfeeding and human milk are the normative standards for infant feeding and nutrition. Infant nutrition should be considered a public health issue and not only a lifestyle choice. The Academy reaffirms its recommendation of exclusive BF for about 6 months, followed by continued BF as complementary foods are introduced, with continuation of BF for 1 year or longer as mutually desired by mother and infant. Infant growth should be monitored with the WHO Growth Curve Standards (BMI) to avoid mislabeling as underweight or failure to thrive. HOSPITAL ROUTINES TO ENCOURAGE AND SUPPORT THE INITIATION AND SUSTAINING OF EXCLUSIVE BREASTFEEDING SHOULD BE BASED ON THE AAP-ENDORSED WHO/UNICEF “TEN STEPS TO SUCCESSFUL BREASTFEEDING”. (p.e727) National strategies supported by US Surgeon General Call to Action, Centers for Disease Control and Prevention, and The Joint Commission is involved to facilitate BF practices in US hospitals and communities. “Pediatricians… should be knowledgeable about the techniques for managing and supporting the breastfeeding dyad.” The 2010 and 2020 (respectively) Healthy People targets for breastfeeding are:Ever breastfed: 75% and 81.9%; BF at 6 mos= 50% and 60.5%; BF at 1 yr=25%, 34.1%; exclusive breastfeeding to 3 months=40%,44.3%; exclusive BF to 6 months= 17% ad 23.7%; formula used in first 2 days of life= no more than 15.6% by 2020 (pg. e828). Latest BF data from National Immunization Study show that WIC clients have low initiation (67.5%), Black=58.1%, Hispanics 80.6%, no-WIC clients=84.6%, low income non-Hispanic Black moms=37%; non-Hispanic Black moms <20 yrs=30% (the lowest). Over past decade, only a modest increase in rate of “any breastfeeding”at 3 and 6 months (pg. e828). Breastfeeding is associated with a 36% reduced risk of SIDS (e829) and positive effect of BF on SIDS is independent of sleep position. All preterm infants should receive human milk and mother’s milk can be stored at refrigerator temperature (4°C) for 96 hours (pg. e831). CONTRAINdicATIONS TO BREASTFEEDING ARE: infant galactosemia, phenylketonuria, maternal positive serum for human T-lymphotrophic virus type 1or 11, untreated brucellosis, active untreated TB, active herpes simplex lesions on breast (but expressed milk is okay in this case), mothers with varicella (separate from infant if she has had it from 5 days before to 2 days after delivery (expressed milk can be used), mothers acutely infected with H1N1 influenza who are febrile should be separated from infant until afebrile (can provide expressed milk)(pg. e832).Moms who take street drugs (PCP, cocaine, cannabis) should not breastfeed. If drinking alcohol, mom should have no more than 2 oz liquor, 8 oz wine, or 2 beers and wait 2 or more hours to breastfeed to minimize alcohol concentration in milk. On page e834 there is a section called HOSPITAL ROUTINES and it says, “In particular, emphasis is placed on the need to revise or discontinue disruptive hospital policies that interfere with early skin-to-skin contact, that provide water, glucose water, or commercial infant formula without a medical indications, that restrict the amount of time the infant can be with the mother,…” (e834). ONLY 27% of hospitals support breastfeeding mothers after hospital discharge; only 3.5% of hospitals practice 9-10 steps, 37% practice more than 5 of the ten steps. “ BREASTFEEDING SHOULD BEGIN within the first hour after birth(even for cesarean deliveries) and the infants must be continually accessible to the mother by rooming-in arrangements that facilitate around the clock, on-demand feeding for the healthy infant. Formal staff training should not only focus on updating knowledge and techniques for breastfeeding support but also should acknowledge the need to change attitude and eradicate unsubstantiated beliefs about the supposed equivalency of breastfeeding and commercial formula. Emphasis should be placed on the numerous benefits of exclusive breastfeeding. Thus Joint Commission has adopted the rate of exclusive breastfeeding as a Perinatal Care Core Measure (The Joint Commission: Specifications Manual for Joint Commission National Quality Core Measures. 2009. Available at http://manual.jointcommission.org/releases/JFC2011A/ The recommendation in Table 5 on page e835 states under recommendation 2)”Direct skin to skin contact with mothers immediately after delivery UNTIL THE FIRST FEEDING IS...
ACCOMPLISHED and encouraged throughout the postpartum period. Delay in routine procedures (weighing, measuring, bathing, blood tests, vaccines, and eye prophylaxis) until after the first feeding is completed.” (pg. e835) (Table 5, p.e835.). And that exclusive breastfeeding should be for 6 months (used to be just three months). FT, Guidelines, BF, Postpartum KC, WHO Charts, newborn procedures, exclusive BF til 6 months) Only 3.5% of hospitals do 9-10 steps (which would include step 4 for birth KC).

American College of Nurse Midwives. (2013-May/June). Promoting skin-to-skin contact. J. of Midwifery and Women’s Health. 58(3). 359-360. Doi: 10.1111/j.1523-5030.2013.02383.x This is a two page position paper posed in question format to help nurse midwives explain KC to their patients. The questions are: What is SSC? (placement on your chest instead of being wrapped in blanket). How do I have SSC with my baby? (Baby is placed directly on your chest and you heat him up). Why is SSC important? (you keep your baby’s temp normal, it is comforting, he knows your scent and touch, hour voice and rhythm of breathing are soothing. It is good for you and baby). When should SSC start? (right after baby is born and good later on by you and your partner which allows bonding). What are some benefits of SSC? (List, temp control, cardiorespiratory stability, shortened placenta delivery time, helps breastfeeding by helping baby smell and find nipple and you produce more milk, lowers stress hormones, builds confidence in parent and ability to take care of baby, less crying, more sleeping, longer quiet/awake periods, less likely to need NICU care, helps a sick baby heal). What are risks of SSC? (No risks in healthy moms and babies). When might baby need to be taken to incubator? (if he needs help breathing and keeping normal heartbeat in first minutes after birth). When can I expect my baby to be taken to incubator? (in some hospitals take baby to incubator in first hour after birth for exam, shots and eye ointment, but exam can be done in SSC and eye drops and vit K can be put off for a couple hours. If you want SSC, ask what the hospital’s usual practice is before you go into labor. Notify staff ahead of time you do not want to be separated from your baby in first hour after birth), and How do I let my nurse and provider know I want SSC? (discuss your birth plan before labor, when you get to hospital), FT, policy/guidelines/recommendation, separation, HR, RR, stabilization, temperature regulation, placenta delivery, BF, healing, stress, milk production, search nipple, relaxation, sleep, crying, quiet alert. Not on Charts 12/2/2016

American College of Obstetricians and Gynecologists Breastfeeding Expert Work Group. (2018). Committee Opinion: Optimizing support for breastfeeding as part of obstetric practice. Obstet Gynecol, vol?? Issue?. Pages???. In this opinion paper, the Committee has cited the USIKC’s Safe Positioning Checklist in Table ?? “Components of the Safe Positioning for the Newborn While Skin-to-Skin” and the components that they modified and have included from the original list (in Ludington-Hoe & Morgan, 2914) are: 1 “Infant’s face can be seen 2 Infant’s head is in “sniffing” position, 3 Infant’s nose and mouth are not covered, 4 Infant’s head is turned to one side, 5 Infant’s neck is straight, not bent, 6 Infant’s shoulders and chest face the mother, 7 Infant’s legs are flexed, 8 Infant’s back is covered with blankets, 9 Mother-infant dyad is monitored continuously by staff in the delivery environment and regularly on the postpartum unit, and 10) When mother wants to sleep, infant is placed in basinet or with another support person who is awake and alert.” Pg.130. ACOG SAFE POSITIONING STATEMENT

American College of Obstetricians and Gynecologists [ACOG] Committee on Health Care for Underserved Women and Committee on Obstetric Practice. (2007). Special report from ACOG. Breastfeeding: Maternal and infant aspects. ACOG Clinical Review 12(Suppl. 1), 1S-16S. retrieved May 31, 2007 from http://www.breastfeedingaskforla.org/ACOG%20statement%20on%20BF.pdf. Recommends KC from birth for better BF outcomes “Delivery. The immediate postpartum period should allow the woman and her newborn to experience optimal bonding with immediate physical contact, preferably skin-to-skin. The initial feeding should occur as soon after birth as possible, preferably in the first hour when the baby is awake, alert, and ready to suck. Newborn eye prophylaxis, weighing, measuring, and other such examinations can be done after the feeding.” (pg. 279.) Full term, Guideline, Birth KC

OR the same recommendation is in:


American Perinatal Association 2012 or 2013. New guidelines for KC being included in care of Late Preterm Infants. GET THIS

Amolo L., Irimu G., Njai D. (2017-Sept). Knowledge of postnatal mothers on essential newborn care practices at the Kenyatta National Hospital: a cross sectional study. Pan Afr Med J. 28: 97. doi: 10.11604/pamj.2017.28.97.13785. Of the 130 million babies born yearly, nearly 4 million die in the neonatal period. Kenya Demographic Health Survey (KDHS) 2014 places neonatal mortality rate at 22 deaths per 1,000 live births, well above the Sustainable Development Goal (SDG) 3 that aims to reduce these mortalities to at least 12 deaths per 1000 live births by 2030. The aim of the study was to assess maternal knowledge on selected components of essential newborn care: breastfeeding, cord care, immunisation, eye care and thermoregulation. A hospital based cross-sectional study KCBib 2018
was conducted on 380 postnatal mothers in Kenyatta National Hospital. Interviews were conducted using structured pretested questionnaires. A score of one was given for correct response and zero for incorrect. Data were analysed using SPSS version 18.

Modes of thermoregulation identified included kangaroo care (7%), warm room (4%) and warm clothing (93%). Almost all mothers knew of breastfeeding on demand, exclusive breastfeeding and colostrum use. Only 17.8% of mothers identified Bacillus Calmette-Guérin (BCG) and Oral Polio Vaccine (OPV) were birth vaccines. Only 4 mothers knew no substances should be applied to the cord. In logistic regression, factors significantly associated with poor knowledge included lack of education on newborn care during pregnancy, incomplete (less than 3) or no antenatal visits with an odds ratio (OR) of 3.3 (95% confidence interval (CI), 1.5 to 7.4), 2.5(1.5 to 4.2), 5.1(1.3 to 19.3) and p values of 0.003, 0.001 and 0.018 respectively. Knowledge gaps existed regarding cord care, eye care, and immunization. Mothers had good knowledge on breastfeeding practices. Those who fail to fully attend antenatal clinics should be targeted for newborn care education. FT, Essential Newborn Care, maternal knowledge, 3rd world. NOT ON CHARTS

Anand, K.J. (2008). Analgesia for skin-breaking procedures in newborns and children: What works best? Canadian Medical Association Journal, 179(1), 11-12. doi: 10.1503/cmaj.080834. This is a review and it says: “Healthy newborns routinely experience acute pain during blood sampling for metabolic screening, injection of vitamin K or hepatitis vaccine, or circumcision. Children are similarly exposed to acute pain due to skin-breaking procedures can lead to physiologic instability and behavioural distress, and it has downstream effects on subsequent pain processing, development and stress reactivity.1 Because of these detrimental effects, reduction or prevention of pain are worthy clinical goals that are also expected by most parents. Opioids, such as fentanyl and morphine, form the mainstay of pediatric pain management, but they may not be effective against injury-induced acute pain in newborns or children.5 Accumulating data suggest that opioids lead to harmful side effects, tolerance and possibly altered brain development.6 Other analgesic and anesthetic agents also appear to increase brain cell death in animal studies,7 fuelling concerns about their use, particularly in newborns. Such concerns have led to the development of nonpharmacologic therapies such as sucrose, massage and kangaroo care for neonatal pain, and distraction techniques, hypnosis and cognitive-behavioural interventions for pediatric pain. Abstract, page 11 for quote. Review, PT, FT, PAIN.


Ancora, G. (2010). The well-being of the newborn infant in neonatal intensive care. Minerva Pediatrics, 62(3 Suppl 1), 55-58 (No DOI). This is a review of developmental interventions to improve preterm infant outcomes from Italy. Says that preterm period is critical period because brain is still developing and is sensitive to the environment. Abstract states: “We are shaped by our environment and in early life the environment has a particularly important role, so minimally invasive treatment and a developmentally appropriate environment is best for preterms. “Pain control, music therapy, massage, kangaroo care and family centered care are essential to optimize results obtained from the intensive care unit: (p. 55). PT, review, critical period developmental care, family centered care, NICU environment. Not on charts 2/2/2011

Anderson GC (1977). The mother and her newborn: mutual caregivers. Journal of Obstetric, Gynecologic, and Neonatal Nursing, 6(5), 50-57. NOT A KC study, but relevant because it describes how mother and baby take care of each other when not separated and this has become know in the early 2000’s as CO-REGULATION.


Anderson GC. (1989). Skin-to-skim: Kangaroo care in western Europe. American Journal of Nursing, 89, 662-666. This article relates the practice of KC in Europe and how helpful it has been found to be in relation to breastfeeding and reducing infant crying. Review, BF, Crying, PT

KCBib 2018
Anderson GC (1989). Skin-to-skin: The kangaroo technique in Western Europe. Servir, 37(6), 316-320. This is a copy of the article listed above. PT

Anderson GC. (1991). Current knowledge about skin-to-skin (Kangaroo) care for preterm infants. Journal of Perinatology, 11(3), 216-226. All of the KC studies are classified to the type of design so one can clearly differentiate randomized controlled trials from others. Good summary statements and terminology related to KC nomenclature. Literature Review, HR, RR, crying, oxygen, temperature, nomenclature, PT


Anderson G.C. (2005). Waking up baby: Barrier to Kangaroo Care as an aid to breastfeeding. Presentation at the Conference of the International Lactation Consultant Association, Chicago, July 7-12, 2005. A fascinating descriptive study of the frequency with which newborn infants were awakened or self-awakened and the association of each with success of breastfeeding because when infants self-awakened and were put in KC, they then latched well and successful breastfeedings occurred, but infants seldom self-awakened. 20 multicultural different healthy BF dyads were observed. Mothers used a pager to notify the researcher sitting outside her postpartum door when infant sleeping and feeding began and ended. After each feeding, the researcher and mother discussed the feeding and awakenings. Infants were awakened 74% (141 times) and self-awakened 50 times (26%). The top 4 reasons for awakening infants were vital signs, feedings, changing diapers/clothes/linens, and assessments. 62% of infants awakenings were by hospital staff, 12% by mothers, 7% by visitors. Average sleep time before self-awakening was 32 minutes. After infants were awakened, 42 feedings occurred (2% formula, 69% exclusive, 5% mixed and 24% unsuccessful. When self-awakened, 24 BF occurred, 0% formula, 88% exclusive, 0% mixed, and 12% unsuccessful. More exclusive and successful breastfeeding occurs after self-awakening. Remaining questions are: how can clinicians reduce interruptions? Why didn’t infants sleep longer than 30 minutes before self-awakening? Were infants hungry when self-Awakened? Did infants ever complete a sleep cycle? For more information, contact Gene Anderson at Gene.anderson@case.edu.


Anderson G.C. (2017). Kangaroo Care. In Fitzpatrick, I. (Ed.) Encyclopedia of Nursing Research. St. Louis: Springer Publ. Pages 211-217. This is a review of updated research findings related to KC. This review covers early kangaroo care studies and knowledge. PT, FT, BF, Temperature, HR, RR, SaO2, infections, GER, Not on charts


Anderson GC, Burkhammer M, Morrison B, Ludington-Hoe SM, & Chiu S-H. (2003). Skin-to-skin contact improves breastfeeding outcomes. Abstract #346, pg 188 at Research ShowCASE, CWRU, April. 4, 2003. Cleveland. This is same as Anderson, Chiu, Morrison et al. 2004 publication below. 50 fulhmers who were having “difficulty” (a yes/no answer to the question “Are you having any difficulty breastfeeding?”) BF between 11-24 hours postbirth, were given 3 consecutive KC sessions (n=50) with BF (KCBF) in the presence of lactation consultant on Postpartum Day 2 and one on the morning of discharge (postpartum day 3 n=48 as 2 withdrew). At KCBib 2018
the end of the KCBF on postpartum day 3, 98% were BF, 75% (n=36) were EXCLUSIVELY BF, 11% (n=23) partially exclusive. At one week post discharge, 73% (35/46) exclusively BF, 5/46 partially, 6/46 none and 2 lost (So n=46). One month postdischarge 52% (25/46) exclusive, 945 partial, 13/45 none, 1 lost so n=45. Rampant interruptions to infant sleep and BF (nine in one hour). The data at discharge are better than the 71.9% in Ross Mothers’ Surveys (Cadwell, 2002), and the 75% as the Healthy People 2000 objective and 2010 National Health Objectives (USDHHS, 2000). Abstract, Fullterm, KCBF, exclusive BF, Discharge BF, one week post discharge, one month post discharge, BF interruptions.  

Anderson, G.C., Chang, H-P., Behnke, M., Conlon, M. & Eyler, F.P. (1995). Self-regulatory mothering (SR) post-birth. Effect on and correlation between infant crying and salivary cortisol. Pediatric Research, 34(4), part 2, (Abstract 57), 12A. Not a KC study per se. In a randomized controlled trial (N=224), full term infants who were separated from their mothers at 60 minutes post-birth cried twice as much between 60 minutes and 300 minutes (1 and 5 hours), compared to infants who remained with their mothers. The separated infants also had salivary cortisol levels that were twice as high at 5 hours. PT, RCT, crying, separation, Not on charts because not KC.

Anderson GC, Chiu SH, Dombrowski MA, Swinth JY, Albert JM, & Wada N. (2003). Mother-newborn contact in a randomized trial of Kangaroo (skin-to-skin) care. J Obstet Gynec Neonatal Nursing, 32(3), 604-611. This reports the actual number of hours mothers got KC in an RCT of early KC with preterm infants from 0-48 hours postbirth. 47 KCers and 44 control LBW preterm infants given KC or wrapped holding during first 48 hours after birth. KC moms did very little KC when its practice was not structured (28.5% of observations if infant in NICU = to wrapped holding of controls on postpartum unit). Observations taken q 15 min for 1 hour and then as seldom as q 3 hours for 24-48 hours postbirth. KCers had 2x as much contact as controls. When KC began was not specified and KC was given much less than 82% of time as in Syfrett 1996 abstract. VERY LITTLE KC occurs naturally and amount was much less than expected. Reasons were unavailability of infant or mothers and hospital staff interrupting contact. Total contact time of KCers was almost double that of controls. Hospital and social supports for families are needed to facilitate early initiation of KC, prolonged periods of KC contact, and reduction of maternal stress. RCT, Preterm PT, Very Early KC, Early KC, maternal stress, has data on swaddled holding too.

Anderson, GC, Chiu, SH, Morrison, B, Burkhammmer M & Ludington-Hoe, SM. (2004). Skin-to-skin Care for Breastfeeding Difficulties Postbirth. In Field, T. (Ed.). Touch and Massage in Early Child Development (pp. 115-136). Skillman, N.J.: Johnson & Johnson Pediatric Institute. 50 Mother/Infant dyads who said they were having difficulty BF within 11 hours of birth were given three consecutive supervised BF in the KC position on postpartum day 1 and another on Day 2. Amount of KC varied but occurred between 11-24 hours postbirth. Several measures were recorded with each BF and at discharge, 7 days postbirth, and one month postbirth. 2 dyads withdrew before discharge, so 48 finished KC sessions: at discharge, 39 (81.3%) were exclusively BF & 9/48 (18.7%) were partially BF. At 1 week postdischarge, 35/48 (72.9%) were exclusively BF; 5 (10.4%) were partially, 6 (12.5%) were not BF, and 2 (4.2%) were lost to FU. At one month postdischarge, 25 dyads (52.1%) were exclusively BF, 9 (18.8%) were BF partially.. 12 (27.1%) were not BF, and 1 (2.1%) lost to FU. These data compare favorably with with the 71.9% of Ross Mother’s Survey and the 75% designated as Objectives 16-19 of Healthy People 2010. Descriptive, Fullterm, BF at discharge, 1 week, 1 month, exclusive BF, KCBF, Early KC.


Anderson GC, Moore E, Hepworth J, & Bergman N. (2002). Early skin-to-skin contact for mothers and their healthy newborn infants (Cochrane Review). In The Cochrane Library, Issue 1, 2002. Oxford: Update Software. 16 RCTs were reviewed and showed significant and positive effects of KC on BF, neutral thermal range (maintain temp in KC better than elsewhere), blood glucose, crying and
maternal affectionate love, touch, and contact behavior during an observed BF. FT, late PT, Cochrane Meta-analysis procedure, BF, temperature, blood glucose, maternal behaviors,

Anderson GC, Moore E, Hepworth J, & Bergman N. (2003). Early skin-to-skin contact for mothers and their healthy newborn infants. (Cochrane Review). In The Cochrane Library, Issue 2, 2003 Oxford: Update Software. or Cochrane Database Systematic Review 2003; CD003319. 806 mother-infant pairs studied across eight randomized controlled trials. Pairs with early KC had significantly better performance on all measures of BF status up to three months postbirth and on BF duration up to 12 months postbirth. KC infants were more likely to maintain temperature within neutral thermal zone, were less likely to cry, and had higher blood glucose and a lower respiratory rate. Infants in KC are more settled/calm/lower behavioral state. Mothers with early skin-to-skin contact displayed more affectionate behaviors. Late PT, FT Cochrane Meta-analysis results. Cry, Behavioral State, Blood Glucose, RR, Temp., maternal behaviors, early KC, BF, Exclusive BF,


Anderson, GC, Radjenovic, D., Chiu, S., Conlon, M., & Lane, A. (2004). Development of an observational instrument to measure mother-infant separation post birth. Journal Nursing Measurement, 12 (3), 215-234. It says on page 217 that from birth “mother and newborns are dependent upon each other for mutual caregiving, meeting each others’ needs when they are in their proper habitat together, undisturbed and in skin-to-skin contact.” Research method, separation, closeness, FT, PT NOT ON CHARTS 3/31/2010

Anderson GC, & Swinith JY. (2004). Concerns about parents sleeping while holding their infants in Kangaroo Care [Letter to the editor]. Neonatal Network, 23(2), 53; Sleeping, FT,

Anderzén-Carlsson A', Lamy ZC', Eriksson M'. (2014- Oct). Parental experiences of providing skin-to-skin care to their newborn infant—Part 1: A qualitative systematic review. Int J Qual Stud Health Well-being; 9:24906. doi: 10.3402/qhw.v9.24906. eCollection 2014. To describe parental experiences of providing skin-to-skin care (SSC) to their newborn infants. SSC care for newborn infants has been reported to have positive physiological and psychological benefits to the infants and their parents. No systematic review regarding parental experiences has been identified. In this first part of a meta-study, the findings of a systematic literature review on parental experience of SSC care are presented. Four databases were searched, without year or language limitations, up until December 2013. Manual searches were performed in reference lists and in a bibliography of the topic. After a quality-appraisal process, data from the original articles were extracted and analysed using qualitative content analysis. The systematic and manual searches led to the inclusion of 29 original qualitative papers from nine countries, reporting experiences from 401 mothers and 94 fathers. Two themes that characterized the provision of SSC emerged: a restoring experience and an energy-draining experience due to obstacles in the environment. This review has added scientific and systematic knowledge about parental experiences of providing SSC. A supportive environment has been described as facilitating the restorative experience. When the process is experienced as positive, it facilitates the growth parental self-esteem and makes the parent ready to assume full responsibility for their child. The results show that KC an be interpreted not only as family-including and an important health care intervention, but also in terms of actually becoming a parent. The process of becoming a parent is influenced in three different levels: family and friends, community, and society at large. Further research about fathers’ experiences is recommended. Qualitative systematic review of all studies of parents experiences, thoughts, beliefs, values, etc, FT, NOT ON chArts 10/23/2014

Anderzén-Carlsson A', Lamy ZC', Eriksson M'. (2014-Oct). Parental experiences of providing skin-to-skin care to their newborn infant—part 1: a qualitative systematic review. Int J Qual Stud Health Well-being. 13:9:24906. doi: 10.3402/qhw.v9.24906. Aim was to describe parental experiences of providing skin-to-skin care (SSC) to their newborn infants. SSC care for newborn infants has been reported to have positive physiological and psychological benefits to the infants and their parents. No systematic review regarding parental experiences has been identified. In this first part of a meta-study, the findings of a systematic literature review on parental experience of SSC care are presented. Four databases were searched, without year or language limitations, up until December 2013. Manual searches were performed in reference lists and in a bibliography of the topic. After a quality-appraisal process, data from the original articles were extracted and analysed using qualitative content analysis. The systematic and manual searches led to the inclusion of 29 original qualitative papers from nine countries, reporting experiences from 401 mothers and 94 fathers. Two themes that characterized the provision of SSC emerged: a restoring experience and an energy-draining experience. 1) Feeling good was dominant finding (a heart-warming feeling, instantaneous and overwhelming love for infant, moms melted when first did KC, wonderful experience, very special and unique sense of joy and happiness (Helth & Jarden, 2013; Johnson, 2007) and warmth(Eleuterio et al., 2008) and strong emotions that were a gift from god (Farlan et al., 2003), sense of calm and peace (Dalybe et al. 2011), relaxation (Affonso et al., 1989; Heinemann et al., 2013, Neu 2004, Roller, 2005), fascinated with infant’s ability to look around and move about (Affonso et al., 1989; Finigan & Davies, 2004), delight in watching baby develop (Leonard & Mayers, 2008)
and immediate sense of love and compassion for infant was accompanied by reduced guilt, anguish (Campos et al., 2008; DeMoura & Araujo, 2005) and fear and rejections (De Moura & Araujo, 2005). Relief of maternal emotional suffering by helping moms find meaning in the preterm birth (Affonso et al., 1989), seeing infant’s strength eased maternal pain caused by preterm birth (Nakajima, 2003) and her guilt (DeMauro & Araujo, 2008; Nakajima, 2002) and fear (De Moura & Araujo, 2005) and made parents hope everything would be alright (Braga et al., 2008; Caetano et al., 2005; Furlan et al., 2003) and that infant would survive (Campos et al., 2008). 3) it was a rewarding experience (Duarte & deSta 2004; Fingan & Davies, 2004, and met mother’s need for affection (De Moura & Araujo, 2005) and provided neme with well-being (Campos et al., 2008) and energy (Dalby et al., 2011). 4) it was natural instinct. 5) it was a learning experience. 6 helped mom find a role. 7) improved self-esteem. 8) empowered mom to feel she had control. This is End of all things moms recounted as part of FEELING GOOD. The second major area was a feeling of doing good for infant because they saw infant’s improvement and learned how important it was for the infant when they were there. The last area was it helped mothers feel like they were becoming a family. This review has added scientific and systematic knowledge about parental experiences of providing SSC. Further research about fathers’ experiences is recommended. PT, Systematic review, maternal feelings

Anderzén-Carlsson A1, Lamy ZC2, Tingvall M1, Eriksson M1. (2014-Oct). Parental experiences of providing skin-to-skin care to their newborn infant Part 2: A qualitative meta-analysis. Int J Qual Stud Health Well-being. 13;9:24907. doi: 10.3402/qhw.v9i24907. eCollection 2014. Aim: To synthesise and interpret qualitative research findings focusing on parental experiences of skin-to-skin care (SSC) for newborn infants. SSC induces many benefits for newborn infants and their parents. Three meta-analyses have been conducted on physiological outcomes, but no previous qualitative meta-synthesis on parental experiences of SSC has been identified. The present meta-synthesis was guided by the methodology described by Paterson and co-workers. Four databases were searched, without year or language limitations, up until December 2013. Manual searches were also performed. The searches and subsequent quality appraisal resulted in the inclusion of 29 original qualitative papers from 9 countries, reporting experiences from 401 mothers and 94 fathers. The meta-synthesis entails a meta-data analysis, analysis of meta-method, and meta-theory in the included primary studies. Based on the three analyses, the meta-synthesis represents a new interpretation of a phenomenon. The results of the meta-data analysis have been presented as a qualitative systematic review in a separate paper. When synthesising and interpreting the findings from the included analyses, a theoretical model of Becoming a parent under unfamiliar circumstances emerged. Providing SSC seems to be a restorative as well as an energy-draining experience. A supportive environment has been described as facilitating the restorative experience, whereas obstacles in the environment seem to make the provision of SSC energy-draining for parents. When the process is experienced as positive, it facilitates the growth of parental self-esteem and makes the parents ready to assume full responsibility for their child. The results show that SSC can be interpreted not only as a family-including and important health care intervention but also in terms of actually becoming a parent. The process of becoming a parent in this specific situation is influenced by external factors in three different levels: family and friends, community, and society at large. The descriptions of providing SSC are similar to what has previously been described as the natural process of becoming a mother or a father. Qualitative Meta-Synthesis, FT, Parent experience/feelings NOT ON CHARTS 10/23/2014 obstacles wonderful, restorative, draining, barriers. See also Chen, Chang et al., 2015 for another systematic review of maternal and paternal experiences, feelings, beliefs with KC

Andres, V., Garcia, P., Rimet, Y, Nicaise, C. & Simeoni, U. (2011). Apparent life-threatening events in presumably healthy newborns during early skin-to-skin contact. Pediatrics, 127(4), e1073-e1076. DOI:10.1542/peds.2009-3095. ALTEs in delivery room are uncommon (6 citations to this). This is a report of 6 case of apparent life threatening events (ALTEs) in the delivery room during the first 2 hours of life over four years (2004-2007) in Provence-Alpes, Cote d’AZur FRANCE). In all cases, infants were given physical examination and those were normal and then infant was placed in direct skin-to-skin contact with mothers while in delivery room. Breastfeeding was then initiated. In each case, the incident occurred in a healthy infant who was in prone position in skin-to-skin contact. Baby 1 was found motionless at 3 mins postbirth; cardiac and respiratory failure mandated resuscitation, sent to NICU and improved rapidly. No obvious neurologic deficit, no early onset neonatal sepsis, no abnormality of EKG, brain MRI, malformations. Baby 2 had cardiorespiratory arrest at 90 minutes post-birth and then needed resuscitation, respiratory support, intropes, anticonvulsant therapy and had severe HIE and died at 23 days. Baby 3 had cardiorespiratory arrest at 60 min postbirth, resuscitation with intubation and mechanical ventilation, intropes, anticonvulsants and antibiotics took place, but infant had severe cerebral bleed and HIE and died at 15 days. Baby 4 at 120 minutes postbirth became motionless with facial cyanosis. Recovered rapidly after vigorous stimulation. Baby 5 became motionless, cyanotic, and bradycardic ‘several minutes after birth’ (pg. e1074) with rapid recovery after vigorous stimulation. Baby 6 had cardiorespiratory arrest at 120 mins postbirth. Resuscitated, intubated, intropes, severe HIE, and died at day 15. Other possible causes such as abnormal EKG or brain MRI, early-onset seizures, malformations, metabolic abnormalities, myotonic dystrophy, hypoglycemia, upper airway obstruction, asphyxiating position, covered face, increased vagal tone were ruled out. Most mothers were primiparous, and in ALL CASES, mother and Infant WERE NOT OBSERVED during the initiation of birth KC and breastfeeding. Birth KC DID NOT INCREASE THE INCIDENCE OF NEONATAL MORTALITY; “overall incidence” ALTEs is 0.025-0.032 per 1000 births and mortality of 0.018 per 1000 births; those rates were concordant with the findings of ALTEs of 0.034 per 1000 and a mortality rate of 0.017 per 100 births during the 4 years of BIRTH KC practice that were studied” (pg. e1075). SURVEILLANCE of newborns is needed and a standardized KBib 2018
investigational workup should be performed after an ALTE. KC may be a risk factor for ALTE (pg. e1075), and mothers who have had sedatives, sepsis, tiredness (especially in primiparas), and unavailability of health observer are contraindications for Birth KC. “Promotion of early mother-infant skin-to-skin contact and breastfeeding in the delivery room should be encouraged, but perinatal medical personnel should be aware of ALTEs and carefully monitor and ensure proper positioning of healthy neonates during this delicate period of mother-infant attachment, especially for primiparous women.” (e1076). 

**FT, Birth KC, negative effect, mortality, life threatening events, mortality, guidelines, No increase in ALTE nor mortality rate.** See also Aboudah, Andres, Becher, Brander, Dageville, Espagne, Gatti (Not KC, so only in related literature on the life threatening chart), Nakamura articles and life threatening events and on/negative effects charts. FT, Birth KC, Life threatening events, BF, guidelines

Angood, P.B., Armstrong, E.M., Ashton, D., Burstin, H., Corry, M.P., Delbanco, E.F et al. (2010). Blueprint for action: Steps toward a high quality, high-value maternity care system. Women’s Health Issues, 20(1Suppl 1), S18-S49. This review article says that current maternity practice data are aimed at data that result in medical billing and do not measure the maternal care experience and measures that indicate quality according to the mPnc guidelines from CDC. Better data collection about duration of skin-to-skin contact at birth is needed to show exclusive breastfeeding goals can be met. Review, guidelines, Birth KC, BF. Not on Charts 9/10/2021 DEY 2018

Anisfeld, E., & Lapper E. (1983). Early contact, social support and mother-infant bonding. Pediatrics 72(1), 79-83. On one day all moms (29) given KC (immed. After birth put naked on moms abdomen for a total of 45-60 min. Then transferred to nursery), on other day all moms(30) got routine care (taken to warmer, wrapped, shown to mom, then to nursery) Then routine – saw moms q 4 hrs for feed, most bottle fed. – day determined randomly, At 2 days observed q 1 min x 15 min during feeding. KC moms had more affectionate behavior than controls and if in low social support group as compared to hi social support group. Quasi-experimental, Fullterm, Delivery KC.

**Maternal behavior**


Arane K, Claudius L Goldman RD. (2017-Jan). Brief resolved unexplained event: New diagnosis in infants. Can Fam Physician, 63(1):39-41. QUESTION: For many years, the term apparent life-threatening event (ALTE) was associated with sudden infant death syndrome, and parents who described an acute event in their infants were sent to the hospital for admission. I understand that for infants new terminology is recommended. What is the current approach to a near-death experience of an infant? ANSWER: A recent clinical practice guideline revised the name and definition of an ALTE to a brief resolved unexplained event (BRUE). The diagnosis of BRUE in infants younger than 1 year of age is made when infants experience 1 of the following BRUE symptoms: a brief episode (ie, less than 1 minute and usually less than 20 to 30 seconds) that is entirely resolved (infant is at baseline), which remains unexplained after the history and physical examination are completed, and includes an event characterized by cyanosis or pallor; absent, decreased, or irregular breathing; hypertonia or hypotonia; or altered responsiveness. Low-risk infants should not be admitted to the hospital and overtesting is discouraged. PT, FT, review, ALTE, BRUE, SUPC. Not on Charts


Argote, L.A., Rey, H., Ladungton, S., Medellin, G., Castro, E., & Anderson, G. (1991). Management of difficult transitory respiration using early skin-to-skin contact. Presentation made at XVII Congreso Colombiano de Pediatría, Nov. 1, 1991, Cali, Colombia. Preterm infants from 1500-2499 grams were given KC 10-20 minutes (M=11.00 +/-1 2.00) after birth and continued for 6 hours. One infant who weighted 1920 grams began having difficult respirations, but SaO2 was > 88 so KC continued. At 2 hours and 10 m inutes post-birth, all signs of transient respiratory distress disappeared and infant remained with mother in KC for 6 hours and then in postpartum. Infant and mother were discharged at 24 hours post-birth. Since this first infant, 6 more infants had respiratory distress. All improved with KC. Observed by neonatologist and if deterioration occurred would have been admitted to nICU but deterioration in KC did not occur and all infants showed higher temp than in incubator, and end of signs of distress. First time this method is described in the world and KC can be used for respiratory distress in villages and small towns. PT, descriptive report, case study, respiratory distress, temperature.

Arivabene, J. C. & Tyrell, M.A. (2010). Kangaroo Mother Method: Mothers’ experiences and contributions to nursing. Revista Latino Americana de Enfermagem 18(2), 262-268. Descriptive study of focus group derived stories of KMC experiences of mothers in Brazil. Themes were survival and recovery of the infant, mothers’ daily life modified by KMC, valuation of family affective bonds, increased maternal-infant bonding, decreased separation of infant from family, increased confidence in parental care before and after KC

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discharge, and improved maternal relationship to infant and to infant’s care team. PT, Qualitative study, maternal feelings, confidence, non-separation, daily life adaptations, 3rd world, bonding


Amon S, Diamant C, Bauer S, Regev R, Sirota G, Litmanovitz I. (2014). Maternal singing during kangaroo care led to autonomic stability in preterm infants and reduced maternal anxiety. Acta Paediatr. 2014 Jul 11; doi: 10.1111/apa.12744. [Epub ahead of print] Kangaroo care (KC) and maternal singing benefit preterm infants and we investigated whether combining these benefited infants and mothers. A prospective randomised, within-subject, crossover, repeated-measures study design was used, with participants acting as their own controls. We evaluated the heart rate variability (HRV) of stable preterm infants receiving KC, with and without maternal singing. This included low frequency (LF), high frequency (HF) and the LF/HF ratio during baseline (10 minutes), singing or quiet phases (20 minutes) and recovery (10 minutes). Physiological parameters, maternal anxiety and the infants’ behavioural state were measured. We included 86 stable preterm infants, with a postmenstrual age of 32-36 weeks. A significant change in LF and HF, and lower LF/HF ratio, was observed during KC with maternal singing during the intervention and recovery phases, compared to just KC and baseline (all P-values<0.05). Maternal anxiety was lower during singing than just KC (P=0.04). No differences in the infants’ behavioural states or physiological parameters were found, with or without singing. 6 This effect is not detected in behavioural state or physiological parameters commonly used to monitor preterm infants. PT, Randomized one group crossover pretest-test-posttest design, maternal anxiety, stability, Heart rate variability, singing, state/sleep????


Ashmore, S. (2001). Implementing skin-to-skin contact in the immediate postnatal period. MIDIRS Midwifery Digest 11(2), 247-250. This is a review of the reasons for implementation and the barriers cited against implementing and the midwives say that skin to skin contact takes time and Ashmore points out that it is not the midwife who has skin contact, but the mother. FT, Birth KC, implementation, barriers. TRY TO GET THIS FROM UK. Not on Charts 5/2/2011


Association of Women’s Health, Obstetric and Neonatal Nurses. (2004). AWHONN news and views. Promoting breastfeeding. Women encouraged to nurse their infants for six months or more. AWHONN Lifelines, 8(4), 366-367. “KC should be provided within 30 minutes of birth and procedures should be delayed during this time.” FT, Fullterm, Birth KC, guidelines.

Association of Women’s Health, Obstetric and Neonatal Nurses (AWHONN). (2008). AWHONN Members: Help Moms Breastfeed. August 5, 2008 from AWHONN. In honor of Breastfeeding Week, each member was sent the following message in which “From the birth of the baby through the first two weeks postpartum, healthcare providers should: 1. facilitate uninterrupted skin-to-skin contact at birth and during hospitalization, whenever possible. Ideally the first feeding should occur within one hour of birth if mother and KCBib 2018
infant are stable." This tip is from Breastfeeding Support: Prenatal Care through the First Year. 2nd Ed. AWHONNs’ evidence-based guideline. On page 2443 it states that KC decreases incidence and severity of infection in infants. BF, Fullterm, Healthy PT, Birth KC, Guidelines, infection

Association of Women’s Health, Obstetric and Neonatal Nurses (AWHONN), (2013). Women’s health and perinatal nursing care quality draft measurements specifications. Washington, DC: AWHONN. Available from http://www.awhonn.org/aha/whonn/content.do?sessionid=38FF2AC15EBAD71FBE5052C2 Accessed 05.29.2013 on the AWHONN website. This is AWHONN’s effort to measure and improve women’s health and perinatal nursing care quality. They propose 12 measures and measures 03 and 04 relate to KC: Proposed Measure 3 is: Skin to skin is initiated immediately following birth (pgs. 1, 40-43 which constitute Appendix C) “Healthy term newborns should be placed in skin-to-skin contact with their mothers immediately (within the first five minutes of life) following birth. The measure identifies newborns that are placed skin-to-skin at birth. For stable mothers and healthy, term newborns, the goals is 100% immediate skin-to-skin contact (pg. 40). Components: 1) Size of sample – minimum of 30 randomly selected newborns or all newborns if population is less than 30, 2) data collection – concurrent or retrospective chart review, 3) Numerator statement = healthy term newborns (greater than 37 weeks 0 days gestation) that are placed skin-to-skin with their mother immediately at birth. 4) Denominator statement – all healthy, term newborns (greater than 37 weeks 0 days gestation) born via vaginal or cesarean birth. Denominator exceptions – mothers who are not alert, responsive, or are unstable following birth. Mothers with severe illness that prevents them from caring for their infants, e.g. sepsis. Newborns with a diagnosis that requires admission to special care or neonatal intensive care unit at birth.” (pg. 40) Page 41 relates the following “Supporting Guidelines and Other References” and “Importance” statements about Measure 03: “Supporting Guidelines and Other References. The Joint Commission (TJC) announced (2012) that the Perinatal Care Core Measure Set was newly designated as one of their accountability measures (a mandate). Exclusive breast milk feeding is one of the quality measures within the Perinatal Care Core Measure Set. Uninterrupted skin-to-skin during the first two hours of life improves breastfeeding rates. Guidelines and evaluation criteria for the United States Baby Friend Hospital Initiative (2012) specify that all mothers should be given their babies to hold in skin-to-skin contact immediately after birth. "The Warm Chain is a set of ten interlinked procedures carried out at birth and during the following hours and days which will minimize the likelihood of hypothermia in all newborns (WHO, 1997, pg. 8). Skin-to-skin contact is the third procedure in the warm chain. “Skin-to-skin contact is an effective method of preventing heat loss in newborns, whether they are full term or preterm babies. The mother’s chest or abdomen is the ideal surface to receive the newborn… It can be kept in skin-to-skin contact with the mother while she is being attended to, during transfer to the postnatal ward, and for the first hours after birth (WHO, 1997, p. 9)."(pg. 41) Relationship to desired outcome: The evidence shows that newborns have better outcomes, including stable temperature, heart rate, respiratory rate and glucose levels when they transition to extrauterine life while in skin-to-skin contact with their mothers (Dabrowski 2007; Galligan, 200; Hung & Berg, 2011; WHO 1997) than elsewhere. For mother who choose to breastfeed, evidence shows that skin-to-skin contact at birth is associated with higher rates of exclusive breastfeeding (Dabrowski, Hung & Berg). Opportunity for Improvement: Perinatal RNS have the opportunity to advocate for and promote uninterrupted skin-to-skin contact as the optimal environment for stable mothers and newborns. Skin-to-skin care addresses all of the IOM’s domains of health care quality: it is SAFE, EFFECTIVE, PATIENT-CENTERED, TIMELY, EFFICIENT, and EQUITABLE. Exception Justification: Care of the unstable mother or newborn needs to take priority before skin-to-skin can be initiated. Harmonizing with Existing Measures: Supports guidelines and evaluation criteria for United States Baby-Friendly Hospital Initiative. (end pg.41). Measure 4 is Duration of Uninterrupted Skin-to-Skin Contact. Description is “Uninterrupted and sustained skin-to-skin contact should be maintained for as long as mother and infant can do so or for at least 60 minutes immediately after birth. All routine procedures and assessments should be performed while the newborn is skin-to-skin with the mother. Procedures that require separation of the mother and infant, such as bathing and weighing, should be delayed until after the initial period of skin-to-skin contact. The goal is for 100% of stable mothers and healthy, term newborns to have at least 60 minutes of uninterrupted skin-to-skin contact.”(Pg. 44). Components: Numerator statement is: Healthy term newborns (greater than 37 weeks 0 days gestation) that are provided with sustained and uninterrupted skin-to-skin contact with their mother for at least 60 minutes. Skin-to-skin contact should be initiated within the first five minutes of life. Denominator statement; All healthy, term newborns (greater than 37 weeks 0 days gestation) born via vaginal or cesarean birth. Denominator exceptions: mothers who are not alert, responsive or are unstable at delivery. Mothers with severe illness that prevents them from caring for their infants, e.g. sepsis. I. Newborns with a diagnosis that requires admission to special care or neonatal intensive care unit (NICU) at birth.”(Pg. 44) Page 45 has the following content: “The Joint Commission (TJC) announced (2012) that the Perinatal Care Core Measure Set was newly designated as one of their accountability measures. Exclusive breast milk feeding is one of the quality measures within the Perinatal Care Core Measures Set. Uninterrupted skin-to-skin during the first two hours of life improves breastfeeding rates. Guidelines and evaluation criteria for the United States Baby-Friendly Hospital Initiative (2012) specify that all mothers should be given their babies to hold in skin-to-skin contact immediately after birth. "The warm chain is a set of ten interlinked procedures carried out at birth and during the following hours and days which will minimize the likelihood of hypothermia in all newborns” (World Health Organization, 2003, pg. 8). Skin-to-skin contact is the third procedure in the warm chain: “Skin-to-skin contact is an effective method of preventing heat loss in newborns, whether they are full term or preterm babies. The mother’s chest or abdomen is the ideal surface to receive the newborn. It can be kept in skin-to-skin contact with the mother while she is being attended to, during transfer to the postnatal ward, and for the first hours after birth” (WHO, 1997, p. 9). Importance: 1) relationship to desired outcome: The evidence shows that newborns have better outcomes, including stable temperature, heart rate, respiratory rate and glucose levels when they transition to extrauterine life while in skin-to-skin contact with their mothers (Dabrowski, 2007; Galligan, 2006, Hung and Berg, 2011, WHO, 1997). For mothers
choose to breastfeed evidence shows that skin-to-skin contact at birth is associated with higher rates of exclusive breastfeeding (Dabrowski, 2007; Hung & Berg, 2011). Opportunity for Improvement: Perinatal registered nurses have the opportunity to advocate for and promote uninterrupted skin-to-skin contact as the optimal environment for stable mothers and newborns. Institute of Medicine Domains of Health Care Quality Addressed: Safe, Effective, patient-centered, timely, efficient, equitable. Exception Justification: The priority is to provide care to unstable mothers and/or newborns prior to initiation of skin-to-skin contact. Harmonization with Existing Measures: Supports guideline and evaluation criteria for United States Baby Friendly Hospital Initiative. (End pg 45). On Page 46: “Definitions: Skin-to-Skin is placing the naked newborn baby prone on the mother’s bare chest, and covering them with a blanket. Uninterrupted skin-to-skin is skin-to-skin contact that is continuous and not stopped for the purpose of providing routine care (pg. 46). FT, Guidelines, Birth KC, Exclusive BF, transfer to postpartum, postpartum KC, thermoregulation, hypoglycemia, HR/RR stability, sick mothers. NOT ON CHARTS 6/26/2013

Association of Women’s Health, Obstetric, and Neonatal Nurses. (2016-Nov-Dec). AWHONN Practice Brief: Immediate and Sustained Skin-to-Skin Contact for the Healthy Term Newborn After Birth: AWHONN Practice Brief Number 5. JOGNN, 45, Issue 6, Pages 842–844 DOI: http://dx.doi.org/10.1016/j.jogn.2016.09.001. This position statement focuses on full term infants and starts with “1. All stable infants greater than 37 weeks and 0 days gestation born by vaginal or cesarean birth should be placed in immediate skin-to-skin contact for at least the first hour of life or until the first breastfeeding is completed. 2. All mothers of stable infants greater than 37 weeks and 0 days gestation should be offered the option of skin-to-skin contact during painful neonatal procedures, such as vaccinations and blood sampling, whenever possible. 3. All parents of healthy infants greater than 37 weeks and 0 days gestation should be encouraged to have frequent uninterrupted skin-to-skin contact with their newborns while in the hospital and after discharge. FT, Position statement, post-discharge KC, birth KC recommendation, need to get full article. Not on charts 1.2017.


Aitchan, M.(2013). The Baby Friendly Health Initiative in Australia: Desirable strategy or lame duck? Women and Birth, 26 (Suppl 1) (Oct. 2013),S22-S41. BF is the biologic norm. The Baby Friendly Health Initiative is a global, mult-faceted strategy that aims to create a positive breastfeeding culture. In 2013,19% of Australian facilities are BFHI certified and impediment is doing something to it should be redirected elsewhere. FT, Birth KC, implementation, Baby Friendly

Athanasopoulou E & Fox J.R.E. (2014). Effect of Kangaroo Mother Care on maternal mood and interaction patterns between parents and their preterm, low birth weight infants: a systematic review. Infant Mental Health Journal 35(3), 245-262 DOI: 10.1002/imhj.21444. Because birth of premature infant can have adverse effects on interaction between parents and infant, authors sought to do a review to learn if KMC could attenuate adverse psychological effects by ameliorating negative maternal mood and/or promoting more positive interactions. Mothers of preterms are more controlling, anxious, and concerned about their infant’s health as well as less emotionally involved than full term mothers (Forcada-Guex et al., 2006) and are less likely to initiate or respond to their baby’s emotional expressions, especially when babies are expressing sadness or anger (Malatesta CZ et al., 1986). Emotion socialization and expressive development in preterm and full term infant. Child Dev 57, 316-330 SEPARATION plays a role in development of adverse dyadic relationship (TAllandini & Scalembron, 2006). When infant is in incubator, opportunities for physical proximity and touch are limited and development of child infant attachment is negatively affected (Feldman, Weller, Sirota, Eidelman, 2003). Separation also creates a physical and emotional distance between mother and infant and can enhance maternal feelings of distress and inadequacy (Stern, 1977; Tallandini & Scalembron, 2006). The NICU poses many challenges to mothers as they strive to establish their role in their baby’s life and their identity as mother while having less opportunity to be with their baby around the clock (Fenswick J, Barclay L, Schmied V 2008. Craving closeness: a grounded theory analysis of womens’ experiences of mothering in the special care nursery. Women and Birth, 21, 71-85). In this review, all studies were evaluated for BIAS using the COCHRANE Collaboration guidelines (Green S & Higgins, JPT 2008. Preparing a Cochrane Review. In JPT Higgins and S. Green (Eds). Cochrane Handbook for Systematic Reviews of Interventions. Chchester, United Kingdom: Wiley-Blackwell.) Findings of studies were inconclusive but there is some evidence to suggest that KMC can make a positive difference on these areas. Specifically, KMC can improve negative maternal mood (anxiety and depression), and promote more positive parental-child interactions. PT, Review, maternal depression, maternal anxiety, interaction, separation.

responded and over 59% were still breastfeeding at 6 months. Mothers who initiated kangaroo care in the first hour had a higher rate of BF during the first six months postbirth than mothers who did not perform skin-to-skin contact. CS moms and primips reported higher use of formula while in hospital and BF for shorter duration. Cesarean moms did not do KC in first hour and breastfed later. Authors sys that policies need to allow for KC in first hour after cesarean section. Reasons for stopping were decreased milk supply, return to work, baby did not latch, baby did not nurse well. FT, descriptive, BF duration, cessation of BF, birth-VEKC (within one hour of birth), postpartum KC, home KC, cesarean section.

Awis, D.D. & Alkor, E.A. (2004). The influence of pre- and post-partum factors on the time of contact between mother and her newborn after vaginal delivery. *Niger Journal of Medicine* 13(4), 272-275 and erratum in *Niger Journal of Medicine* 2005 (Oct-Dec) 14(4), 460. Analysis of interviews and observations and medical records of pre and postpartum factors influencing time interval from vaginal delivery to first KC between 250 moms and newborns in a University Nigerian hospital showed that only 38.4% of moms started KC within 30 minutes of birth. Factors associated with early KC were maternal age < 25 years, primiparity, labor <12 hours, and later episiotomy repair. Factors associated with late KC (after first 30 minutes post-birth) were early performance of routine cleaning and measurement of newborn. A higher proportion of mothers who had BF assistance had early KC (48.8%) than those who did not have any assistance (17.1%). A delay in the time of repair of episiotomy was associated with early Breastfeeding initiation. 96/242 (39.7%) moms who received information on BF had early KC compared with none of the 8 moms who did not get BF education. Marital status and moms’ education had no association with KC. Immediate contact between newborn and mother should take precedence over hospital routines. Fullterm, Descriptive, Regression Analysis, Birth KC, Very Early KC, episiotomy repair, BF education, 3rd world, barriers


Azevedo VM, Xavier CC, Gontijo F. (2012) Safety of Kangaroo Mother Care in intubated neonates under 1500 g. *Journal of Tropical Pediatrics*;58(1):38-42. doi: 10.1093/tropej/fmr033. Quasi-experimental, one group, pre-KC–post KC study of 43 preterms (GA=29.1 +/-1.6 wks), BW = 1.1334 +/-218g) were assessed for 90 minutes (15 min before, 60 mins during KC and 15 mins after KC) for HR, SaO2, axillary temp, and mean arterial MAP Blood Pressure of ventilated infants. Statistically significant (but not clinically significant) differences in HR (varied the most by 5 bpm (pg. 2/5), SaO2, axillary temp (maximum variation was 0.2C), mean arterial BP showed small increase during KC and greatest difference was 4.0mmHg. FiO2 decreased most significantly, up until 30 mins of KC and thereafter it decreased less noticeably. FiO2 variation was statistically significant but not clinically (0.05%). SpO2 decreased over time but the change was only 0.7% (clinically insignificant) No change in PIP, PEEP, RR though . No infant was removed from vent KC. Because no clinically significant differences between the three periods, VS stability occurred during KC. Thus, KC is a safe method for intubated infants. PT, Quasi-ex, Pretest-test-posttest, HR, SaO2, axillary temp, BP, MAP, vent KC, stability, micropremieen, FiO2, duration

Baby Friendly Hospital Initiative. (2014). Guidelines and evaluation criteria. Facilities seeking designation. Baby-Friendly USA website. https://www.babyfriendlyusa.org/get-started/the-guidelines-evaluation-criteria. Accessed April 10, 2014. Guidelines state that all mothers should have continuous skin-to-skin contact with their baby immediately after birth until completion of the first feeding and that skin-to-skin contact should also be encouraged throughout the hospital stay. Guidelines, birth KC, BF, postpartum KC. Not on charts


Badree Z, Faramarzi S, Mirtazadeh T. (2014-Oct 20). The effect of kangaroo mother care on mental health of mothers with low birth weight infants. Adv Biomed Res.,7:214. doi: 10.4103/2277-9175.143262. The mothers of premature infants are at risk of psychological stress because of separation from their infants. One of the methods influencing the maternal mental health in the postpartum period is kangaroo mother care (KMC). This study was conducted to evaluate the effect of KMC of low birth weight infants on their maternal mental health. The study was conducted in Isfahan, Iran. Premature infants were randomly allocated into two groups. The control group received standard caring in the incubator. In the experimental group, caring with three sessions of 60 min KMC daily for 1 week was practiced. Mental health scores of the mothers were evaluated by using the 28-item General Health Questionnaire by Goldberg DP (Goldberg DP. Gater R, Sartorius N, Ustun TB, Piccinelli M, Gureje O, et al. 1997). A scaled version of general mental health questionnaire, Psychol Med, 27: pg. 191-197 and Taghavi, MR. 2002. Evaluation of validity and reliability of General Mental Health Questionnaire. *Psychiatria, 5: 381-398*. The General Health Questionnaire has four subscales: 1) scale of physical symptoms: feeling of health, tiredness, physical and sensory intake, emotional excitation. KC pretest =9.46; control = 8.96; Posttest KC = 8.56; Control = 8.73), 2) Anxiety and sleep disorder subscale; anxiety, insomnia in 7 items Pretest KC=9.43, control =10.23; Posttest KC =10.23, controls=9.96), 3) Social functioning: coping with demands, feelings of how they are coping, 7 items

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(Pretest KC = 9.30, control = 8.96; Posttest KC = 8.96, control = 8.66) and 4) Depressive symptoms: measures of severe depression, suicidal tendency, 7 questions, Pretest KC = 5.86, control = 5.40; Posttest KC = 4.96, control = 4.96). Total subscale score Pretest - Posttest KC = 33.50 - 25.63; control = 32.60 - 31.20). Statistical analysis was performed by the analysis of covariance using SPSS. 2013 g in experimental and control groups respectively (pg. 3 of 7) and no sig difference in birthweight. Birthweights were 2100 (KC) and 2013 (controls). The scores of 50 infant-mother pairs were analyzed totally (25 in KMC group and 25 in standard care group). Pretest was taken on first day of infant hospitalization and was not sig diff between groups (KC = 33.50 and control = 32.60); posttest taken on day of discharge and was sig difference between groups (KC = 25.63, control = 31.20). Three of the subscales were significantly different between groups over time: Anxiety and Sleep symptoms p = 0.001, Social interaction p=0.017, Depression p=0.001. Results of covariance analysis showed the positive effects of KMC on the rate of maternal mental health scores. There were statistically significant differences between the mean scores of the experimental group and control subjects in the posttest period (P < 0.001) and it refers to Table 2, but Table 2 is about PRETEST, not posttest, but when you look at data from Table 1 (pretest and posttest scores for both groups, I think “pretest” in table two is a typo and it should be Posttest). KMC for low birth weight infants is a safe way to improve maternal mental health. KMC affects maternal mental health, especially because the square of Eta was 95%.

“Separation” of mother from infant due to clinical conditions and rules of NICU may have negative effects on mother and premature infants” (pg 4 of 7). Therefore, it is suggested as a useful method that can be recommended for improving the mental health of mothers. KC improves symptoms of anxiety and sleep disorders, level of social interaction, and depression. KC had no effect on mother’s physical disorders. Physical disorders of mother were pain of cesarean or episiotomy, breast congestions, insatiable needs of newborn. So when these occurred, mothers may have felt victimized, depression, isolation, loneliness and KC did not help this aspect. PT, RCT, maternal mental health, stress, separation, rate of change in stress, duration, depression, anxiety. Sleep, physical disorders of mother, infant mental health, development.

Badr, J. K., & Purdy, I. (2007). Brain injury in the infant: The old, the new, and the uncertain. J Perinat Neon Nurs 20(2): 163-175. This is a review of brain injuries in newborns and it states “several important things: on page 170 it states” maintenance of respiration and physiologic stability is essential in reducing the risk of brain injury”, on page 170 it relates “measures aimed at reducing stress in the term or preterm infant may actually reduce the incidence and negative consequences of brain injury” and on page 171 it states “Kangaroo Care may reduce the need for respiratory support.”

Review, PT, FT, dev, stress reduction, stability, brain development NOT ON CHARTS as of 5/20/09.

Bagby K. & Bowen, S. (2012). Kangaroo care increases breastfeeding rates. Journal Obstetric, Gynecologic and Neonatal Nursing, 41, S49. Doi: 10.1111/j.1552-6090.2012.01360.x Descriptive study of fullterm infants getting birth KC to increase breastfeeding rates. Says that education was done in 2007 but the philosophy was not adopted as a standard of care until 2010. Current lit was examined, policies were revised, staff expectations were established, KC champions were identified and assisted staff with completion of KC competencies, three staff were CERTIFIED in KC, and documentation was improved. BF and KC progress was shared with staff monthly. BF INITIATION rates increased from 51% in July 2010 to 74% in July 2011 and birth KC increased from 60% to 73%. Documentation of KC in the mother-baby unit also increased from 35% to 51%. 90% of Labor/delivery and mother-baby staff completed the KC competency assessments in the 12 months following July 2010. Implementation of birth KC improved breastfeeding rates (initiation). It is essential that all levels of leadership support and monitor standard of care practice at the bedside, have accurate data collection, using a comprehensive educational program is vital to support the change, and staff accountability is crucial to any successful change in practice. Their quality improvement project is being shared with 57 birthing hospitals throughout Kentucky. FT, Birth KC, BF Initiation, quality improvement project, implementation, accountability, education, KC Certification. Not on Charts 1-1-2013 UNIVERSITY OF LOUISVILLE HOSPITAL program where Kathy and Susie taught in 2007.

Bahl, J (2012). Setting research priorities to reduce lobar mortality from preterm birth and low birth weight by 2015. Global Health, 2(1), 10403. Doi: 10.7189/ojgh.02.010403. This is an evaluative study using the Delphi Technique and had 21 scientists create and evaluate proposed topics for further research and rate then along specified criteria. Three of the ideas were new technology ideas (one for finding technical ways to keep infants warm at home when moms don’t want to do KC, another was, and another was). Among these three ideas, the authors incorrectly concluded that finding another way to keep babies warm other than KC was the most popular idea. Not on Charts 3/19/2013

Bailey, S. (2012). Kangaroo mother care. British Journal of Hospital Medicine (London), 73(5), 278-281 NEED TO GET THIS Kangaroo mother care is a safe, simple method to care for low birth weight infants. This article looks at its origins, what is involved in kangaroo mother care and reviews the evidence for improved outcomes resulting from its implementation. PT, Review


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supported mat-infant interaction, and moms were more aware of infant’s behaviors and cues. KC also helped moms develop awareness of their own feelings and responses to infant. Qualitative, Maternal Anxiety, maternal pleasure, PT


Bakewell-Sachs, S. (2002). Physiologic stability of intubated VLBW infants during skin-to-skin care and incubator care. Comment by Susan Bakewell-Sachs. MCN, American J. Maternal Child Nursing, 27(2), 123. This is a short one paragraph reiteration of Smith’s report in Advances in Neonatal Care, vol. 1, pg. 28-30 and concludes that incubator care may be less stressful for intubated infants than KC. Ventilated KC, Preterm, Summation, Stability

Bakewell-Sachs S, & Blackburn S. (2003). State of the science: achievements and challenges across the spectrum of care for preterm infants. J. Obstetric, Gynecologic, and Neonatal Nursing 32(5), 683-695. This is a review article of advances made in relation to perinatal intervention, resuscitation, retnopothy, nutrition and feeding, pain management, developmental care, discharge management, transition to home and implications for neonatal nursing practice and research. On page 688 under the section on developmental care it states “Many developmentally supportive care strategies were implemented before undergoing adequate scientific testing. More research is needed, but the evidence base is growing for interventions such as cycled lighting, kangaroo care, nonnutritive sucking, containment, touch, and positioning, due in part to the work of nurse researchers.” Also, “Individualized developmentally based care is a third focus of need for neonatal nursing research. Research demonstrating the effect of developmental care and other nursing care on infant outcomes, consistency of care, and costs will emphasize the importance of skilled nursing care” (pg. 691). PT; Review, developmental care, Not on charts 4/9/2009

Bakewell-Sachs S & Gennaro S. (2004). Parenting the post-NICU premature infant. MCN, the American J of Maternal/Child Nursing 29 (6), 398-403. This article is designed to assist nurses in giving comprehensive, evidence-based care in preparation for discharge and when working with the mother after discharge. Mothers need information, guidance from nurses, support from mothers, and interventions that improve parent-infant interactions. “Most studies have focused on interventions such with mothers such as kangaroo care, developmentally based care,…Kangaroo care has been shown to have beneficial effects for infants and parents; a recent study found that mothers who participated in kangaroo care had more positive mood, touch, and adaptation to infant cues, and their infants showed greater alertness and less gaze aversion compared to control group (Feldman, Eidelman, Sirota, Weller, 2002)”. (pg. 400). On page 402 in Figure 1, entitled “nursing interventions for the care of the NICU graduate”, #5 is “Encourage use of kangaroo care and infant massage.” Clinical review, post-discharge, maternal mood, PT

Bala P, Kaur R, Mukhopadhyay K, Kaur S. (2016-JAN). Oromotor Stimulation for Transition from Gavage to Full Oral Feeding in Preterm Neonates: A Randomized controlled trial. Indian Pediatr. 2016 Jan 8;53(1):36-8. A randomized controlled trial to assess the effect of additional oromotor stimulation along with routine care on transition from gavage to full oral feeding in preterm neonates. 31 neonates (28-34 weeks) randomized to receive either oromotor stimulation along with routine care (n=25, intervention), or routine care alone (n=26, control) (which included Kangaroo mother care and non-nutritive sucking). Median (IQR) days to reach partial and full spoon feed were significantly lesser 5(3-9.5) vs 10(5-15) P=0.006; and 7(5-14.5) vs 12.5(7-21); P=0.03) intervention than in control group, respectively. A significantly higher number (56%) in intervention group as compared to control group (31%) achieved partial direct breast feeding at discharge (P=0.01). Oromotor stimulation along with routine care, Kangaroo care and non-nutritive sucking) reduces the duration of gavage feeding in preterm neonates. PT, RCT, BF, feeding transition, from gavage to breast, KMC is routine care. NEW for BIBLio study


Baley J & COMMITTEE ON FETUS AND NEWBORN. (2015-August 31). Skin-to-Skin Care for Term and Preterm Infants in the Neonatal ICU. Pediatrics,136(3):596-599. doi:10.1542/peds.2015-2335 pii: peds.2015-2335. Finally, the AAP produces a document acknowledging Kangaroo Care just as Canada did 3 years ago! (see Jeffries & Canadian Paediatric Society, 2012) "Kangaroo mother care" was first described as an alternative method of caring for low birth weight infants in resource-limited countries, where neonatal mortality and infection rates are high because of overcrowded nurseries, inadequate staffing, and lack of equipment. Here it recapitulates Lawns’ meta-analysis of 2010 in which 988 LBW <2000 gms infants in 3 RCTs who got KMC continuously starting about 1 week of age showed a 51% reduction in mortality, and it says that Lawns’ methods have been questioned (see Sloan et al.,2011). Then goes on to relate Conde-Agudelo’s Cochrane meta-analysis of 2014 in which 18 studies of KMC beginning within 10 days of birth in infants <2500 gm showed significant reduction in mortality and morbidity (decreased sepsis) and improvement in growth, breastfeeding and mother-infant attachment) at discharge or 40-41 postmenstrual age. Intermittent skin-KCBib 2018
to skin care (SSC), a modified version of kangaroo mother care, is now being offered in resource-rich countries to infants needing neonatal intensive care, including those who require ventilator support or are extremely premature, but intermittent SSC in resource rich countries has NOT been associated with decrease mortality and the data are insufficient to draw this conclusion (and she cites Conde-Agudelo & Dias-Rosello, 2014). She proceeds with a review saying that the most substantial evidence is for long and more exclusive breastfeeding and more milk production and citing Hake-Brooks & Anderson 2008 and the Renfrew et al., 2009 systematic review) SSC may improve mother’s attachment/bonding, her feelings of being needed, or comfortable with infant (pg. 597). SSC promotes participation of mother and father in infants’ care, strengthens family’s role and decreases feelings of helplessness (citing Nyqvist et al., 2010 Towards Universal KMC). Mothers report less stress, more satisfaction with NICU care, and better ability to read infants’ cues. Increased parent satisfaction, better sleep organization, a longer duration of quiet sleep, and decreased pain perception during procedures have also been reported in association with SSC. “Evidence is less clear for a beneficial effect regarding sleep and neurobehavioral maturation. One report found increased frontal brain activity during both quiet and active sleep which is thought to be predictive of improved neurobehavioral outcomes (cites Welch et al., 2014). Other studies using EEG and polysomnography data indicate that preterm infants who receive SSC have more mature sleep organization, with increased total and quiet sleep & decreased REM sleep and arousals from sleep and an improvement in sleep cycling (cites Ludington-Hoe et al., 2006 and Feldman & Eidelman, 2003). They also appeared more alert & observant and spent less time crying (Feldman & Eidelman, 2003)” (pg. 597). She goes on to relate that SSC infants have better autonomic regulation, maternal-infant interactions, high scores on Bayley Scales at 6 and 12 months, and at 10 years (Feldmen et al., 2014) have attenuated STRESS response, improved autonomic functioning, better organized sleep, and better cognitive control” (pg. 597). “SSC has also been advocated for nonpharmacologic management of procedural pain. A Cochrane review (Johnston et al., 2014) concluded that KC seemed to be effective for a single painful procedure such as heel lance and that behavioral indicators of pain tended to favor SSC whereas physiologic indicators were generally not affected, suggesting possible observer bias in scoring behavioral indicators” (pg. 597). (She did not cite Aboulfetoh’s study which showed effects in physiologic outcomes and was conducted at the author’s own hospital in the USA!) However, infections may be spread among mothers, infants, and caregivers, particularly in multi-bed units as has been shown for respiratory syncytial virus (Visser et al., 2008) and tuberculosis (Heyns et al., 2006) Although a recent report described an association between SSC and development of MRSA among infants in one NICU, the authors did NOT believe that there was a causal relationship (Sakaki et al., 2009).” She then gives the clinical guidelines that “parents should be monitored for skin infections and might need cleansing of the skin for infant contact. Some experts consider infants with open lesions (open neural tube defects, abdominal wall defects) to be particularly at risk.” (pg. 597). So these could be CONTRAINDICATIONS TO KC. “Despite apparent physiologic stability during SSC, it is prudent that infants in the NICU have continuous cardiovascular monitoring (pg.596) and that care be taken to verify/monitor correct head positioning for airway patency as well as the stability of the endotracheal tube, arterial and venous access devices, and other life support equipment.” (Pg. 596 and 598 – two times on page 598 in exactly the same words). “Any infant who requires careful temperature regulation or a high-humidity environment might have SSC delayed until he or she is more stable” (pg. 598). “Resistance to KMC from staff may be due to fear of harm to the infant, lack of experience, time, or assistance to transfer the infant to the parent and/or monitor the infant’s well-being. A nursing simulation program may help promote acceptance of SSC (cites Hendricks-Munoz et al., 2014) and says that multiple guidelines for the provision of SSC have been published (Kledzik 2005; DeVenna, 2006; Welch et al., 2013), Ludington-Hoe, et al., 2003)” (pg. 598). “Because SSC has been shown to be feasible and safe in the NICU in infants as young as 26 weeks’ gestations (cites Bier et al., 1996), with benefits for both parents and infants, FACILITIES ARE ENCOURAGED TO OFFER THIS CARE WHEN POSSIBLE.” (PG 598). “SSC significantly improves milk production by the mother and is associated with a longer duration of breastfeeding” (pg 596 and on page 598 it says “It has been shown that skin to skin care results in improved breastfeeding, milk production, parental satisfaction and bonding” (pg. 598), (and this is all it says that KC causes, and all the other benefits listed here are simply ASSOCIATED WITH, which underplays the strength of randomized controlled trial and meta-analyses findings). PT, FT, Review, position statement, guidelines, PT, position statement, guidelines, review, milk production, breastfeeding duration, satisfaction, sleep, pain, physiologic stability, supc positioning, E.T, arterial and venous access, life support equipment, SUPC, barriers to KC, nursing education, transfer skills, contraindications, fear of infant well-being

Ballou, J.F., Gray, B.P., & Mancuso, P. (2014-Sept/Oct). Bradycardia in a term newborn. Journal of Pediatric Health Care 28(5):456-60. doi: 10.1016/j.pedhc.2014.01.004. Case study of a NSVD 39-40 wk GA, male infant with birthweight of 2670 gm to gestational diabetic mom, with apgars of 9/9 , lusty cry. Pediatrician attended delivery for potential hypoglycemia and risk of respiratory depression due to mec stained amniotic fluid. “He immediately was placed across his mother’s bare chest and covered with warm blankets. The baby fed for 5-10 minutes on each breast at approximately one hour of life. At 2 hours he was transferred to newborn nursery.” The heart rate was 136 at 30 mins (RR=68, T=36.4C, BG=68mg), 120 at 60 mins (RR=42, T = 37.1C), 132 at 90 mins (RR=50, T= 36.8C, BG=75mg), 128 at 120 mins (RR=56,T=36.5C), 128 at 150 mins (RR=42, T=36.7C, BG=63mg, Hct=57.7% -59.7% (normal is 40-60%). Umbilical cord pH=7.25 Normal RR is 40-60 bpm, normal Blood glucose is >40 mg/delciter, and umbilical cord pH less than 7.0 indicates risk of intrapartum anoxia). AT discharge, infant had HR of 87 (99% of infants have HR over 100, so this was concern), BP of 58/31 in right arm, 75/51 in right calf, 66/37 in left arm, and 59/37 mmHg in left calf. Wonderful review of HR and RR physiology at birth. Conclusion: baby is undergoing normal extraterine adjustment and low HR probably due to parasympathetic dominance while waiting for

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Barbach L, Ludington-Hoe SM, Dowling D, Lotas M. (2017-Apr). Role of Baby-Friendly Hospital Care in Maternal Role Competence. Nurs Womens Health. 21(2):96-107. doi: 10.1016/j.nwh.2017.02.006. The objective of this pilot study was to determine women's perceptions of their levels of maternal role competence at discharge from a Baby-Friendly hospital. A convenience sample of 30 women completed two self-report questionnaires: a demographic questionnaire and the Perceived Maternal Parenting Self-Efficacy scale. Women report that they perceived high levels of maternal role competence with a mean total score of 69.80 (standard deviation = 6.86) out of 80. As women experience breastfeeding in Baby-Friendly hospitals, maternal role competence may develop with appropriate support.

Barbach, L., Sedlock, J., & Salmon, K. (2012). Making kangaroo care the norm: implementation of a new model of care. Journal of Obstetric, Gynecologic, and Neonatal Nursing, 41 (Suppl): S53-S54. doi: 10.1111/j.1552-6909.2012.01360.x. Report of quality improvement project at Lakewood Hospital Birthing Center in NorthEast Ohio to obtain Baby Friendly designation. A key component was KC in the immediate postpartum period. In 2009 they began training the nurses on KC and implementation followed. Goal was all appropriate infants would be placed in KC shortly after birth and would remain with their mother or the mother’s support person for 60-90 minutes. Time in KC would facilitate transition to extraterine life and allow self-latch at the breast. A nationally recognized expert on KC provided a 4-hour program that included discussion of benefits, infant placement, on-going care of the infant and assessment of infant. Placement was demonstrated to validate understanding. The electronic health record was modified to include documentation of time in and out of KC and who was doing KC. Patient education handouts were given during prenatal appointments, prepared childbirth classes, and breastfeeding classes and tours of the unit. Pediatric, obstetric, and anesthesia providers were educated about KC and Baby Friendly requirements. The percentage of infants in Birth KC is reviewed monthly: Between 90-98% of appropriate infants are placed in KC, and infants are placed in KC shortly after cesarean while mother is still in operating room. Lactation consultants report a decrease in delayed latch and breastfeeding problems. Families have reported increased satisfaction with birth experiences. KC is used throughout the hospital stay and families are encouraged to continue KC at home.

Barber, D., & University of Louisville University Hospital Center for Women and Infants. (2010). Jumping into Kangaroo Care. A comprehensive educational toolkit. University Hospital. Available from: Denise Barbier, 34 hill Road, Louisville, KY 40204, 502-458-2324. Disc 1 is a DVD that contains “everything you need to know to implement Kangaroo Care, from prenatal visits to patient discharge. Disc 2 is a CD ROM that contains instructor guide, participant guide, sample hospital policies, research references, patient education brochures, national and international policy statements and other supportive materials. The program is designed to promote KC in the delivery room and throughout the hospital stay in order to increase the number of infants who are breastfed upon discharge. BF rates at University of Louisville Hospital rose from 45% to 64% in 7 months when new mothers were encouraged to be skin-to-skin with their healthy full term infants immediately after birth. KC is a simple and effective way to increase the number of newborns who are breastfed and, as a result, will increase the number of mothers and their infants who enjoy the significant health benefits of breastfeeding. Disc one has 10 chapters of content and is absolutely BEAUTIFULLY DONE. All USA Safety precautions followed, and they demonstrate birth KC procedure (but they put baby head up on mother’s chest), all babies have head caps and they emphasize uninterrupted continuous Birth KC for one hour and stress the important of this one hour even if mom is formula feeding her infant.


GET THIS AND PUT ON CHARTS

Barnes, N.P., & Roberts, P. (2005). “Extrasystoles” during Kangaroo Care. Pediatric Critical Care Medicine, 6(2), 230-235. This is commentary on Khatie et al’s 2004 case study of an extrasystole appearing on the EKG of a preterm infant during KC, and concluded that they were picking up maternal heart beat. It was Not A Life Threatening Event during KC. PT, Apnea. Life threatening event, HR, Maternal VS Pickup by Infant.

Barradas J, Fonseca A, Guimaraes CL, & Lima GM. (2006). Relationship between positioning of premature infants in Kangaroo Mother Care and early neuromotor development. Journal Pediatrics (Rio Journal), 82(6), 475-480. Kangaroo Care is considered normal, routine and infants were placed either in lateral decubitus position or in full prone position while receiving 24/7 KC. Better flexed positioning and motor dev in 24/7 KC infants.

Correlational study, preterm, development, motor, position
Barreto AC, Maia CR, Lima KD, Maranhão HD. (2013). Postnatal growth restriction and predictors of nutritional outcome in very low birth weight infants fed human milk and assisted by the Kangaroo Mother Care method. *J Matern Fetal Neonatal Medicine* 26(2), 201-206. doi: 10.3109/14767058.2012.722720. Determination of the prevalence of postnatal growth restriction (PNGR) and the predictors of nutritional outcome in 112 very low birth weight (VLBW) infants fed unfortified breastmilk while hospitalized on KMC ward. Cross-sectional study conducted in a maternity school between July 2005 and August 2006. The number of days required to reach minimum weight and regain birth weight, the percentage of weight loss, and the deterioration of nutritional status were outcomes that were converted into a factor termed “nutritional outcome” using factor analysis. Multiple linear regressions were used to identify predictors of nutritional outcome. PNGR was observed in 89.3% of the infants at hospital discharge. The predictors of nutritional outcome were: appropriate-for-gestational-age infants, children of mothers aged ≤20 years old, need for mechanical ventilation, longer stays in the neonatal intensive care unit, and a greater number of days to achieve full enteral nutrition. It is important to know the factors that negatively influence the nutritional outcome of VLBW infants, as these can be modified through the improvement of perinatal care and can reduce PNGR. PT, regression analysis, descriptive study, micropreemie, BF, 24/7 KMC, weight – I think this is 3rd world-Brazil, but am not sure til I get full article to review. Not on Charts 2012

Barros, F.C., Bhutta, Z.A., Batra, M. et al., (2010). Global report on preterm birth and stillbirth (3 of 7): Evidence for effectiveness of interventions. *BMC Pregnancy Childbirth* 10(Suppl1): S3. doi: 10.1186/1471-2393-10-S1-S3. This is a review of effective interventions and in relation to KC it says that KMC is an important intervention to decrease morbidity and mortality for low-birthweight infants in developing countries. PT, 3rd world, mortality, morbidity, implementation See also Victora, Reubens & GAPP, 2010; for other reports from same Brazilian work group for scaling up KMC

Bass JL, Gartley T, Lyczkowski DA, Kleiman R. (2018-Feb). Trends in the Incidence of Sudden Unexpected Infant Death in the Newborn: 1995-2014. *J Pediatr.* 2018 Feb 5.. doi: 10.1016/j.jpeds.2017.12.045. Not an KC study per se, but about SUPCs that result in death an are then labelled SUID and the article does address SUPCs increasing since skin to skin contact has been encouraged and this report starts with the story of a physician father who was watching TV on his couch and picked up his infant son to put him chest to chest (not skin-to-skin) and then Dad fell asleep and when he woke up his son was dead from suffocation in the prone position. Purpose of study was to evaluate the epidemiology of sudden unexpected infant death (SUID) over a 20-year period in the US, to assess the potential frequency of sudden unexpected postnatal collapse (SUPC) in the early days of life, and to d/about standeetermine if SUID rates in the neonatal period (0-27 days) have changed in parallel with rates in the postneonatal periods, including the percentages attributed to codes that include accidental suffocation. Data from the US Centers for Disease Control and Prevention *Infant Death Surveillance System* (IDSS) from 1995-2014 were analyzed for the first hour, day, week, and month of life. The US Centers for Disease Control and Prevention define SUID as “the death of an infant less than 1 year of age that occurs suddenly and unexpectedly, and whose cause of death is not immediately obvious before investigation” (CDCP, 2017. About SUID and SIDS. [https://www.cdc.gov/sids/aboutsuidandsids.htm](https://www.cdc.gov/sids/aboutsuidandsids.htm)). A similar acronym that is used is SUID for sudden unexpected death in infants (Victoria State Government, Australia. Sudden unexpected death in infants (SUDI and SIDS) [https://www.baph.org/sites/default/files/files/SUPC_Booklet.pdf](https://www.baph.org/sites/default/files/files/SUPC_Booklet.pdf). Accessed jan 5, 2018). The definition of SUID includes sudden infant death syndrome (SIDS) as well as accidental suffocation and strangulation in bed (ASSB) and unknown causes of death in infants less than 1 year of age (CDCP 2017 just above). Although the rate of SIDS peaks between 1 and 4 months of age, newborns are also vulnerable. Sudden unexpected postnatal collapse (SUPC) describes healthy infants born at greater than 35 weeks gestations, with a 10-minute APGAR score of greater than 7 who collapse suddenly and unexpectedly within the first postnatal week of life (Herlenius & Kuhn, 2013 in this bib). Though SUPC is not an official category in the International Classification of Diseases (ICD), newborn deaths after SUPC conform to the CDC definition of SUID. SUID encompasses all categories of sudden unexpected deaths in infancy, including SIDS, SUPC, and ASSB. Purpose is to focus on data on the early ddays of life that may reflect SUPC deaths, analyzing deaths in the first hour, hours 1-23 and days 1-6 of life

A comparison of neonatal and postneonatal data related to SUID, including accidental suffocation, was carried out. Death records for 1995-2014 indicate that, although SUID rates in the postneonatal period have declined subsequent to the 1992 American Academy of Pediatrics sleep position policy change, newborn SUIDs have failed to decrease, and the percentage of SUIDs attributed to unsafe sleep conditions has increased significantly in both periods; 29.2% of the neonatal cases occurred within the first 6 days of life. From 1995 to 2014, 8869 SUIDs occurred in first month, 2593 (29.2%) in first six days of life, 1317 (14.8%) on first day, and 625 (7%) in the first hour of life (pg. 2). Average annual USA rate of SUIDs is 31 in first hour, 95 in 1-23 hours, 64 in 1-6 days, and 314 between 7-27 days. 511 (60.1%) of annual SUIDs are in infants < 35 weeks GA. Rates of neonatal (<27 days) SUID remain at 11 in 100,000 births and the percentage of SUIDs in neonatal period rose from 9-10% in 1995 to 11-13% in 214 (pg 2). Mechanical suffocation in bed and cradle and accidental suffocation/strangulation in bed increased from 1995 (2.1%) to 2014 (22.7%), representing an 11 fold increase in the neonatal population. SUPC is now globally recognized (pg. 3) and contributes to the alarming increase in neonatal SUIDs which now represents 29.2% of all neonatal SUIDS (pg. 3).The frequency of SUIDs during the neonatal period warrants ongoing attention to all circumstances contributing to this category of deaths, including skin-to-skin and chest-to-chest positions and breastfeeding positions. The development of a standardized definition of sudden unexpected postnatal collapse and a KCBib 2018
national registry of these events is recommended. Ongoing research on the effects of early neonatal practices on postneonatal SUID should also be encouraged. FT, descriptive evaluative study, SUPC, definition of SUPC that differs from others, SUID, KC, BF

Not on charts 2/24/2018 See also Lambert et al., 2018

Bar Yamin, N.B., (2002). Kangaroo mother care: Restoring the original paradigm for infant care and breastfeeding. J. Human Lactation, 18(3), 289 for a review of the film in the title that was made by Nils Bergman. FILM, BF, FT

Bass, J.L., Gartley, T., Kleiman, RAxva. doi: 10.1001/jamaopeds.2016.1529. This is a review article that relates the occurrence of SUPCs had come to their attention and that “Unfortunately, there is now emerging evidence that full compliance with the 10 steps of the (BFHI) initiative may inadvertently be promoting potentially hazardous practices and/or having counterproductive outcomes,” (pg. 923). So the authors did a review of the records from the Massachusetts Dept. Of Public Health Registry of Vital Records and Statistics from 2004-2013 to determine statewide rates of sudden unexplained infant deaths among newborns by looking for the code for SIDS and found that 14% of SIDS occurred in first 28 days of life with 8 (22.2%) of SIDS cases in newborns and 20 (35.1%) of newborn sudden unexplained deaths occurred in first 5 days of life, suggesting that the incidence might be more common than that reported by Goldsmith IP in 2013 (pg. 924). He suggests that the accelerated implementation of Baby Friendly Hospital status should be reconsidered, and hospitals should place more attention on ensuring compliance with safe sleep programs. (pg. 924). This article resulted in many published replies by health professions (see Ferrarello reply in JAMA Pediatrics as a sample, also Meek & Noble, etc.). Policy paper, FT, SUPC. Life threatening events, Baby Friendly, Birth KC, BF. Not on charts. Oct. 12, 2016 ( see related citation on Baby Friendly Hospital Initiative criteria from 2014, and see also Benjamins et al., 2011 for Surgeon Generals’ comments on accelerating adoption of BFHI)

Bastani F, Rajaie N, Farzi Z, & Als, H. (2016-Dec 29). The Effects of Kangaroo Care on the Sleep and Wake States of Preterm Infants, J. Nurs Res. doi: 10.1097/jnr.000000000000194. DEVELOPMENT OF PSINB. Developing interventions that improve deep sleep and quiet awake is important to improve the quality of care that is provided to preterm infants. The aim of this study was to compare the effects of kangaroo care and in-arms-holding on the sleep and fants with gestational ages of 32-37 weeks and their mothers were recruited from the neonatal intensive care unit of Vialas Hospital in Tehran, Iran. Seventy participants completed the trial. In the preintervention phase, nurses placed all of the infants, clad only in diapers, in supine position in their incubator for 20 minutes. Next, the infants in the kangaroo care group were placed onto their mothers' bare chest, whereas those infants in the in-arms-holding group were cradled in their mothers’ arms, with the head and back supported by the mother’s left arm. The intervention period lasted for 70 minutes. In the postintervention phase, the infants were returned to their incubators and placed in supine position for 20 minutes. The observer recorded the status of the infants during the three phases of study. There were no significant differences between the two groups in terms of state distribution in the preintervention phase. However, the kangaroo care group had longer periods in deep sleep (p < .001) and in the quiet awake/alert state (p = .004) during the intervention phase and less time in the light sleep or drowsy state (p < .001) and in the actively awake state (p = .02) than the in-arms-holding group. No significant group differences were found in terms of crying. Kangaroo care appears to increase the length of time that preterm infants spend in deep sleep and quiet awake states as compared with simply being held in their mothers' arms. Replication of this research will strengthen the results. A Tehran, Iran study, PT, RCT, Pretest-posttest, control was MOTHERS’ ARM, pre and post was SUPINE in incubators, state, sleep, quiet awake, crying, duration of KC was 70 mins, 3rd world. GET THIS


Bauer K. (2005). Interventions involving positioning and handling in the neonatal intensive care unit: Early developmental care and skin-to-skin holding. In J. Szum & JV Browne (Eds.), Research on Early Developmental Care for Preterm Infants, Montirouge, France; John Libbey Eurotext, pp. 59-65. This is a review that covers prone positioning, SIDS, prone sleeping helps acquire motor milestones earlier (pg. 60), supine positioning does not prevent asymmetrical postures which increases functional asymmetries that prone positioning does not, head up positioning minimizes apnea and bradycardia for 6 hours (Jenni OG et al, in Pediatric1997, vol 100, 622-625), swaddling, nesting, postural support, sling carrying, minimal handling, and KC is on page 62-63. They conclude on page 63 that “skin to skin care has several aspects that support the infant’s neurobehavioral development. It promotes stability of heart and respiratory function, it is a time when infant is protected from painful interventions, it offers opportunity for maternal proximity and interaction, and provides stimulation by skin to skin contact, stroking, and by the sound of the mother’s body and voice. Reported short term benefits are an increase in sleep time. Yet, there are few studies of medium-term or long-term effects of skin to skin holding on neurodevelopment. Review, Preterm, development, devel care, HR, RR, A/B, prone, interaction, swaddling, Stabilization , minimal handling. Not on charts as of May 20, 2009.

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Bauer, K., Pyper A, Sperling P, Uhrig C., & Versmold H. (1998). Effects of gestational age and postnatal age on body temperature, oxygen consumption, and activity during early skin-to-skin contact between preterm infants of 25-30 week gestation, AGA, and their mothers. *Pediatric Research*, 44(2): 247-251. 27 infants spontaneously breathing infants (GA=25-30 wks) given 60 min in incubator and then 60 min in KC and 60 min. back in incubator in wk 1 and then got KC DAILY for 1 hr each day until 7 days later (2nd week of life). Interferring observations made with 1 hour periods of observation. No change in oxygen consumption, but there is more sleep in KC, 25-27 weekers lose rectal heat during KC, 28-30 weekers gain heat in KC (0.3°C/1 hour). No sig change in oxygen consumption. In week 2 all infants slept more in KC (Sig diff). Maternal chest temp at 2 cm below clavicle. Maternal chest temp stayed at 34.3-34.4 during KC. Sleep was Brueck score of 3or 4, based on behavioral observation. Humidity was 80% in incubator, 40% in room air. Temp dropped during transfer into and out of KC in 25-27 weekers. Oxygen consumption did not increase during SSC or during temp drop with transfer. Maternal temp under towel was same as surface temp in incubator. In wk 1 infants slept >90% time in incubator and KC. IN wk 2 infants spent more time asleep in KC (pretest 78%, KC 90%, posttest 82% for 25-27 wkers; 92% to 97% to 85% for 28-30 weeker. KC had no effect on HR and O2 consumption. **Pretest-posttest, one group, NOT an RCT, oxygen consumption, sleep, temperature, HR. Small vs. not so small, Maternal temp, sleep, transfer, micropreemie, PT, humidity, transfer CHECK IF ON ALL CHARTS< ic. humidity and transfer**

Bauer, J., Sontheimer, D., Fischer, C., & Linderkamp, O. (1996). Metabolic rate and energy balance in very low birth weight infants during Kangaroo Care holding by their mothers and fathers. *Journal of Pediatrics*, 129(4), 608-611. 25-27 weekers did not gain body heat during KC, 28 weeker or more did. Gain in body heat is not accompanied by increased metabolic rate nor increased oxygen consumption. No difference in infection rate in infants with paternal or maternal KC and infection rates lower in KC infants. **FATHERS, INFECTION (p. 608). Temperature, oxygen consumption, stability maintained. How many subjects? How much KC? Compared to incubator? Micropreemie, PT Type of study??? **State check this**

Bauer, K., Uhrig, C., Sperling, P., Pasel, K., Wieland, C., & Versmold, H.T. (1997). Body temperatures and oxygen consumption during skin-to-skin (Kangaroo) care in stable preterm infants weighing less than 1500 grams. *Journal of Pediatrics*, 130(2), 240-244. 22 stable preterm <1500 grms and AGA given first KC in first wk of life. Continuously measures HR, rectal temp, foot skin temp and oxygen consumption for 1 hr in incubator, during 60 min of KC, and 1 hr in incubator. **HR never changed from 151. During KC, rectal temp is 0.2°C and foot temp 0.6°C higher than pretest. During posttest, body temps returned to pretest. O2 consumption during KC (6.1±0.9 ml/kg/min.) was not higher than in incubator (5.8±0.8 ml/kg/min). Time in Quiet sleep (Brueck score of 3 or less –behavioral state) as % total time was 93 ± 7 pretest, 98 ± 7 KC, 95 ± 5 posttest and state was NOT SIG DIFF. Everything returned to pretest value in posttest period. For stable preterm infants <1500 gms and <1 week of age, one hour of KC is not a cold stress compared with incubator care. **TRANSFER to mom took 9±4 min. GERMANY. Pretest-posttest, one group, NOT an RCT. Transfer time, rectal temp, foot temp, oxygenation, oxygen consumption, stability, First week of life. QUIET TIME, sleep <1500 gm. Stability. PT**

Bauer, K., Uhrig C, & Versmold H. (1999). How do mothers experience skin contact with their very immature (gestational age 27-30 weeks), only days old premature infants? Z Geburtshilfe Neonatal. 203(6): 250-254. **English Abstract.** 17 mothers recorded their experiences with ad lib KC over 14 days beginning 3 days postbirth with 27-30 median was 27.5 wk; median wt of 1130g. They increased KC from 60-120 minutes, 21% wanted longer KC periods, 82% had positive feelings and 78% said KC increased attachment to baby. Descriptive Qualitative Study, duration of KC, mat feelings, attachment. Same subjects as in Tornhage’s two studies. **Micropreemie PT, longer KC visits**

Bavaro JB, Mendoza JL, McCarthy RJ, Toledo P, Bauchat JR. (2016-June). Maternal sedation during scheduled versus unscheduled cesarean delivery: implications for skin-to-skin contact. *International Journal of Obstetrical Anesthesia*. 27:17-24 doi: 10.1016/j.ijsa.2016.06.003[1] Department of Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL, USA. Electronic address: joseph.bavaro@northwestern.edu. Early maternal skin-to-skin contact confers numerous benefits to the newborn, but maternal sedation during cesarean delivery could have safety implications for early skin-to-skin contact in the operating room. We compared patient-reported and observer-assessed levels of sedation during unscheduled and scheduled cesarean deliveries. Laboring women undergoing unscheduled cesarean delivery with epidural anesthesia, and scheduled cesarean delivery with spinal anesthesia were enrolled. Sedation levels, measured using patient-reported (1=least sedated to 10=most sedated) and observer-assessed (0=most sedated to 5=least sedated) scales, were evaluated at baseline and 15, 30, 45, and 60 min following a T4 sensory level. The primary outcomes were patient-reported sedation at 45min and the areas under the sedation curves. Patient-reported levels of sedation were greater at 45min in laboring women undergoing unscheduled (median 7.5, IQR 5-9) versus scheduled cesarean delivery (median 4, IQR 3-6) (difference in medians 3.5, 99% CI 0 to 5). Observer-assessed sedation was not different between groups. The area under the time curve for patient-reported sedation was greater in the unscheduled group, median difference 162 score min (95% KCBib 2018
CI 52 to 255). The area under the time curve for observer-assessed sedation was greater in the unscheduled group, median difference 26 score min (99% CI 10 to 41). Times to skin-to-skin contact and breastfeeding were not different. Women undergoing unscheduled cesarean deliveries are more sedated than women undergoing scheduled cesarean deliveries. Skin-to-skin protocols for cesarean deliveries must consider maternal sedation and anesthesiologists should use sedating medications judiciously. FT, comparative descriptive study, cesarean section, KC initiation time, BF initiation time. Not on charts 7-19-2016, new to biblio

Baylis R, Ewald U, Gradin M, Nyqvist KH, Rubertosson C, Blomqvist YT.(2014). First time events between parents and preterm infants are affected by the designs and routines of neonatal intensive care units. Acta Paediatr. 2014 Jun 12. doi: 10.1111/apa.12719. [Epub ahead of print]. Early parental bonding with preterm babies is particularly important and the aim of our study was to explore when parents experienced what they regarded as important events for the first time while their infant was in the neonatal intensive care unit (NICU). The study was part of a longitudinal project on Kangaroo Mother Care at two Swedish university hospitals. The parents of 81 infants completed questionnaires during their infants’ hospital stay. Most parents saw and touched their infants immediately after birth, but only a few could hold them skin-to-skin or swaddle them. Other important events identified by parents included the first time they performed caregiving activities and did so independently, interaction and closeness with the infant, signs of the infant's recovery and integration into the family. The timing of the events depended on the physical design of the NICU, whether parents' could stay with their infant round-the-clock and when they were allowed to provide care under supervision and on their own. The design and routines of the NICU dictated when parents first interacted with their infants. Clinical guidelines that facilitate early contact with preterm babies can help parents to make the transition to their parental role. PT, Descriptive evaluative study, parent feelings and activities, parents as providers, guidelines, need to guidelines to facilitate early contact. Birth KC

BCG Foundation (Bill & Melinda Gates Foundation), 2013. (2013 – Aug). BCG field research in Malawi: A Mother’s Perspective on KMC- Malawi. Boston: Bill and Melinda Gates Foundation, pg. 15-24. Exploratory interviews of 34 mothers in Malawi found that one mother thought “there is good motherly love, the infant knows that this is my mother” and “with KMC, there was restored warmth and closeness to the baby.” Interviews were conducted to generate hypotheses on the most important barriers and opportunities for KMC in Malawi. What is the perception of value that may support awareness, adoption, adherence? What are the messages that will resonate with mothers? What are the channels to provide those messages? KMC was introduced to Malawi in 1992 at Zomba Hospital and as of 2012 was available in 121 hospitals because government policy mandated each hospital have a KMC ward. Practitioners are trained in KMC and KMC is integrated into the nursing curriculum. Community engagement efforts have been tried but challenges in widespread awareness, adoption and adherence continue. Barriers are within facilities, and within communities. Conducted 23 in depth interviews with 16 practicing mothers, 5 guardians of practicing mothers and 2 fathers who had KMC experience, then did 5 focus groups with 12-30 participants each (2 gps with community women, 2 with community men, 1 with Mat/BN health Community Action Group) and concluded with 11 in depth interviews about practicing mothers with 8 health practitioners, 2 traditional chiefs, and 1 Minister of Health. Mothers are 18-34 (median =22), majority had some schooling but not completed 8th standard, average parity is 1.9 (1-4), all are married, work as farmers. There is low awareness in broad community, but targeted programs have created awareness (all men in Ekwemendi could explain what KMC was), seeing other women do it can convince women, but male adoption barriers are very high (i.e. KMC is peticoat government…”) (pg. 20). There are 6 stages of a mother’s journey in Malawi: 1) Preprege never heard of KMC, may have seen STS before. Barrier is low awareness of KMC. 2) Pregnancy, she attends 3-4 classes and hears about KMC briefly but does not think it is relevant for her because it is about preterm babies. Barriers are lack of prenatal training and low participation of family members during prenatal training. 3) delivery and immediate postnatal care – she is trained in KMC and told to do it intermittently until space in KMC ward is available – which can be many days later (pg. 21). Barrier is lack of dedicated space to practice continuous KMC. 4) post delivery in facility when KMC ward space is available, she is told to do it continuously, and she takes breaks. Barriers are maternal pain, fatigue, and KMC messaging only about warmth. 5) post discharge KMC – once home, it is difficult to do it while sleeping and she has little support for doing KMC at home. Barriers are lack of support for practicing KMC, lack of support for other chores, trouble sleeping, stigma of having a preterm birth. 6) Post-KMC. Once infant weighs 2500 gram, she returns to normal life and does no more. C especially outside her family. Barrier is lack of spontaneous discussion about KMC and lack of awareness of long term benefits of KMC. Critical barriers in Malawi make post-discharge adherence challenging: don’t know what KMC is better source of warmth than blankets. Think KMC is for warmth, and when baby is warm then mother can stop, at night the mothers don’t want infant’s presence then, and during the day they don’t want infant near the smoke when they are cooking and near the dust when mom is farming, and people in the community associate preterm babies with immature sperm, so will not pass on the rightful things to the woman thinking she made the man’s sperm immature or did something else bad. PT, Descriptive, 3rd world, community KMC, maternal beliefs and perceptions, BF, barriers, implementation – not on charts 9/2013. See also citation under Bill and Melinda Gates Foundation 2014.
Beake S, Bick D, Narracott C, Chang YS. (2016-Nov). Interventions for women who have a caesarean birth to increase uptake and duration of breastfeeding: a systematic review. Matern Child Nutr. 2016 Nov 24. doi: 10.1111/mcn.12390. Epub ahead of print. Rates of breastfeeding uptake are lower after a caesarean birth than vaginal birth, despite caesarean rates increasing globally over the past 30 years, and many high-income countries reporting overall caesarean rates of above 25%. A number of factors are likely to be associated with women's infant feeding decisions following a caesarean birth such as limited postoperative mobility, postoperative pain, and ongoing management of medical complications that may have triggered the need for a caesarean birth. The aim of this systematic review was to evaluate evidence of interventions on the initiation and duration of any and exclusive breastfeeding among women who had a planned or unplanned caesarean birth. Seven studies, presenting quantitative and qualitative evidence, published in the English language from January 1994 to February 2016 were included. A limited number of interventions were identified relevant to women who had had a caesarean birth. These included immediate or early skin-to-skin contact, parent education, the provision of sidecar bassinets when rooming-in, and use of breast pumps. Only one study, an intervention that included parent education and targeted breastfeeding support, increased initiation and continuation of breastfeeding, but due to methodological limitations, findings should be considered with caution. There is a need to better understand the impact of caesarean birth on maternal physiological, psychological, and physical recovery, the physiology of lactation and breastfeeding and infant feeding behaviors if effective interventions are to be implemented. FT, PT, systematic review, BF, birth KC, early KC. Not on charts 1/2017


Bear, R (Rebecca). (2017-April). Kangaroo Mother Care: A strategy to improve the quality of postpartum care. Healthy Newborn Network, April 28, 2017 available from https://healthynewbornnetwork.org/blog/kangaroo-mother-care-strategy-improve-quality-postpartum-care/ This post originally appeared on the Maternal Health Task Force blog. The author for the post is Rebecca Bear, PhD candidate, Victoria University of Wellington. The recent release of an International Consensus Statement on Kangaroo Mother Care (KMC) for preterm and low birthweight babies has once again highlighted the importance of the KMC intervention for reducing global infant mortality and perinatal morbidity. Raising awareness of the value of KMC in all global healthcare settings is a key public health strategy towards realizing Sustainable Development Goal 3—particularly the target for preventable neonatal deaths, which are often prematurity-related. The postnatal period is a critical phase of development for both mother and baby, and its importance in the transition between fetal and infant life is well known. From the third trimester, the environment and experience of the baby become as important for brain development as genetic processes. The biological expectation of the baby at birth and during the postnatal period is the immediate closeness of the mother, including skin-to-skin contact, close physical proximity, reciprocal gaze and vocalization, maternal smell and breastfeeding. With skin-to-skin contact, inborn behaviors are stimulated, which motivate the baby to seek mother’s milk. Physiological stability is established more quickly among babies who remain close to their mothers compared to those who are separated, laying the foundation for positive emotional and mental health. Importantly, for babies born preterm and requiring hospitalization, KMC provides safety from the three main challenges these infants can endure: separation from their mother, environmental stress and unbuffered painful procedures. In the KMC position, the infant’s parasympathetic nervous system is activated by oxytocin, resulting in a perception that the environment is ‘safe.’ The sympathetic system and associated “fight, freeze or flight” responses are downregulated, and physiological, metabolic and immunological functioning is optimized. Crucially, KMC helps babies to establish breastfeeding sooner and continue longer, and it also provides babies with pain relief. Furthermore, research suggests that the benefits of KMC can last throughout the child’s life: The case for widespread KMC use as a “best practice” to enhance a “normal physiological postnatal period,” is highlighted by this statement made by the World Health Organization (WHO) in 2015: “Kangaroo mother care is recommended for the routine care of newborns weighing 2000 grams or less at birth, and should be initiated in health care facilities as soon as the newborns are clinically stable… should be provided as close to continuous kangaroo mother care as possible. . . (or) intermittent kangaroo mother care rather than conventional care.” For KMC to be implemented and scaled more widely, a paradigm shift needs to occur away from routine care practices in the early postnatal period involving the separation of mothers and babies and towards a “zero-separation” model of care. This shift is recommended by the World Association for Infant Mental Health, the American Academy of Pediatrics and WHO. Supporters of this perspective agree that this strategy will result in more humanized perinatal care. KMC can be especially important for preterm and low birthweight infants in settings with limited resources, as seen in countries such as Malawi, Mali, Rwanda and Uganda. Timely use of KMC is safe, effective, efficient, equitable and people-centered and therefore meets the WHO definition of high quality care. Short and long term physiological, psychosocial, humanitarian and financial benefits are expected for individuals, professionals and healthcare systems implementing KMC on a large scale; indeed, there is an urgent moral and ethical imperative to do so. PT, FT, birth KC, separation, recommendations, parasympathetic system. Not on Charts 4-28-2017

KCBib 2018
Becher, J., Ashworth, M., Bell, J. et al., (2011). Guidelines for the Investigation of Newborn Infants Who Suffer a Sudden and Unexpected Postnatal Collapse in the First Week of Life: Recommendations from a Professional Group on Sudden Unexpected Postnatal Collapse, WellChild, London, UK, 2011. Fullterm babies who have SUPC and die should have postmortem done and this article tells exactly what features of a post mortem should be done and that 60% of causes of SUPC will be known at end of postmortem. It also lists the studies to be done while infant is still alive. This is also listed under WELLCHILD on this bib. This document is also available from: British Association of Perinatal Medicine. 2011. Guidelines for the investigation of newborn infants who suffer a sudden and unexpected postnatal collapse in the first week of life: recommendations from a professional group on sudden unexpected postnatal collapse. Edinburgh: British Association of Perinatal Medicine at https://www.bapm.org/resources/guidelines-
investigation-newborn-infants-who-suffer-sudden-and-unexpected-postnatal. Accessed 3-1-2018. FT, review, SUPC/life threatening events. New to Bibliostudy This is listed also under Wellstart

Becher, J.C., Bhushan, S.S., & Lyon, A.J. (2012). Unexpected collapse in apparently healthy newborns – a prospective national study of a missing cohort of neonatal deaths and near–death events. Arch Dis Childhood Fetal Neonatal Edition, 97(1), F30-F34. doi: 10.1136/adc.2010.208736. A prospective study in Scotland of sudden, unexpected, postnatal collapse (SUPC) to determine the incidence over 13 months 2008-2009. Sudden and unexpected postnatal collapse of a healthy newborn is a rare event, carries high risk of mortality and significant neurodisability. Previous work has shown associations with prone positioning, breastfeeding, and primiparous status. SUPC during Birth KC is rare but well-recognized. 13 months of data from British Paediatric Surveillance Unit data were examined from all hospitals in UK (England, Scotland, Ireland). Infants were ≥ 37 wks GA, Aggar ≥ 8 at 5 minutes, collapsed within 12 h of birth in hospital and required resuscitation, and died or received NICU care. 91 cases reported, but 32 were in error and 10 were duplications and four did not meet eligibility. Thus 45 cases of SUPC were reported out of 858,466 births. 12 (27%) died and 33 survived till discharge. 15 infants had an underlying condition responsible for collapse and 6 of these died. In the remaining 30 cases, no underlying condition was found, and 24 postmortems showed accidental suffocation. In the further 6 cases, no cause was determined and 1 died. Incidence of SUPC within the first 12 hours of life was 0.05/1000 (1/19,000) term live births and mortality was 0.01/1000 (1/72,000) term live birth. When no underlying disease/abnormality of infant was present (n=30), incidence was 0.0353/1000 (1/29,000) term live birth. In infants without underlying condition, 23 (77%) of mothers were primiparous, and all were in good health. Two smoked and 4 had hypertension. 16 infants born NSVD, 4 by instrumental vaginal delivery, in n by cesarean. In 4 cases there was mecon staining, in 11 cases cord gas median pH was 7.18 (R=7.09-7.3) and base deficit was 5.3mmol/l (R=209.5 nmol/l). GA median was 40 wks (37-42 wks), and Mean Birth weight was 3328g (R=2260-430g). All had Aggar scores of 8 or more at 5 minutes of age and were assigned routine postnatal care with mother. Age of collapse was Median=70 (6-643 mins) and 73% (n=22/30) collapsed in first 2 hrs. A high percentage (24/45 cases, or 53%) of SUPC were attributed to airway obstructions assoc with breastfeeding, skin-to-skin or prone position. One of 2 (20%) mothers who were alone in the room recognized baby was not well. 7 sets of parents were with infant when collapse occurred and 71% (57%) of these parents recognized infant not well. In 13/30 cases clinical staff were present at time of collapse and 100% of them recognized when infant was unwell. In 18/30 cases (60%), the infant was PRONE on mom’s breast, chest or abdomen, 9 cases (30%) occurred when infant was in mom’s arms, 3 (10%) occurred when baby was in cot. It is interesting that 8 of the mothers were health professionals and only one of these recognized signs of deterioration of their infant. Two babies died immediately despite resuscitative efforts (one with sepsis, one with transposition of the great arteries), 23 infants (58%) of the newborns had neurological abnormalities at one year. Of the 30 SUPC kids without underlying cause, all had accidental suffocation as cause and 5 of the 19 who lived to discharge had neurological abnormalities (26% [3 CP, 1 probably CP, I with mild global delay & hypotonia]). All six with no identified cause for collapse were normal at follow-up. Moore’s 2007 meta-analysis showed BF duration and bonding improvements without serious adverse events, and BF benefits of KC are not disputed, so early skin practices are safe, beneficial and should be recommended. For such recommendations to be safe for all infants, guidelines should include appropriate vigilance of infants.

Responsibility should be with clinical staff to ensure that during breastfeeding and skin-to-skin practices, parents are able to assess the airway, breathing, and colour of their infant. Where parental observations of these parameters may be impaired by exhaustion or sedation, the responsibility should reside with the clinical staff.” Pg. F4 of 5. FT, descriptive, United Kingdom, Birth KC, life threatening events, mortality, guidelines. See also Byard, 2012 commentary on this article.

A high percentage (24/45 cases, or 53%) of SUPC were attributed to airway obstructions assoc with breastfeeding, skin-to-skin or prone position. One of 2 (20%) mothers who were alone in the room recognized baby was not well. 7 sets of parents were with infant when collapse occurred and 71% (57%) of these parents recognized infant not well. In 13/30 cases clinical staff were present at time of collapse and 100% of them recognized when infant was unwell. In 18/30 cases (60%), the infant was PRONE on mom’s breast, chest or abdomen, 9 cases (30%) occurred when infant was in mom’s arms, 3 (10%) occurred when baby was in cot. It is interesting that 8 of the mothers were health professionals and only one of these recognized signs of deterioration of their infant. Two babies died immediately despite resuscitative efforts (one with sepsis, one with transposition of the great arteries), 23 infants (58%) of the newborns had neurological abnormalities at one year. Of the 30 SUPC kids without underlying cause, all had accidental suffocation as cause and 5 of the 19 who lived to discharge had neurological abnormalities (26% [3 CP, 1 probably CP, I with mild global delay & hypotonia]). All six with no identified cause for collapse were normal at follow-up. Moore’s 2007 meta-analysis showed BF duration and bonding improvements without serious adverse events, and BF benefits of KC are not disputed, so early skin practices are safe, beneficial and should be recommended. For such recommendations to be safe for all infants, guidelines should include appropriate vigilance of infants.

Responsibility should be with clinical staff to ensure that during breastfeeding and skin-to-skin practices, parents are able to assess the airway, breathing, and colour of their infant. Where parental observations of these parameters may be impaired by exhaustion or sedation, the responsibility should reside with the clinical staff.” Pg. F4 of 5. FT, descriptive, United Kingdom, Birth KC, life threatening events, mortality, guidelines. See also Byard, 2012 commentary on this article.

Begley, C.M., Guillland, K., Dixon, L., Reilly, M. & Keegan, C. (2012 - Dec). Irish and New Zealand midwives’ expertise in expectant management of the third stage of labour. The “MEET” study. Midwifery 28(6):733-9. doi: 10.1016/j.midw.2011.08.008. Descriptive study fo 27 midwives who related what they routinely practiced in the third stage of labor and they believe that the 3rd stage is a special time of parent-baby discovery and ‘watchful waiting’, with no intervention necessary. Skin to skin contact, breastfeeding, not clamping the cord, upright positions and maternal effort were also used. FT, Descriptive, Birth KC Not in charts 2/12/2012.
Breastfeeding Successfulness in Full Term Newborns after Cesarean Delivery. Int J Pediatr. 2014; 1:7 doi: 10.1155/2014/846486. The skin-to-skin contact (SSC) of mother and newborn is uncommon full-term newborns after delivering via cesarean section due to the possibility of hypothemia in the infants. The aim of this study was to compare mothers' and infant's temperatures after delivering via cesarean section. Material and Methods. In this randomized clinical trial, 90 infant/mothers dyads delivered via cesarean section were randomized to SSC (n = 46) and routine care (n = 44). In experimental group, skin-to-skin contact was performed for one hour.
Belizán, J.M. (2011). Kangaroo Mother Care: A paradigm of a wise and humanitarian solution to a limiting situation in developing countries. *Current Women’s Health Reviews*, 7(3), 226.  A one page editorial that says Kangaroo care is one of the most compelling interventions to save newborn lives in the world. Many studies in all parts of the world have concluded that KC, when compared with conventional neonatal care, is associated with a reduction in mortality, severe infection/sepsis, hypothermia, length of hospital stay, as well as an increase in weight gain, exclusive or any breastfeeding (cites Conde-Agudelo 2011 Cochrane). Results show consistency that neonatal deaths can be reduced by 40% and that approximately 40 infants need to be treated to prevent one death. KC should be widely and strongly recommended. It is desirable to stimulate the creation of a leading KC initiative advocating for the use of the intervention and providing support and training to those willing and supposed to implement it. KC should be used in all levels of care. PT, commentary/editorial, mortality, sepsis, length of stay, KC initiative. Not on charts. 10/1/2011.


Bell, R.P., & McGrath, J.M. (1996). Implementing a research-based Kangaroo Care program in the NICU. *Nursing Clinics of North America*, 31(2), 387-403. Relates their step-by-step procedure to implementing KC so that it became routine care. Lack of consistency in KC implementation was major factor in lack of KC use. They developed the evidence-based procedure with detailed eligibility policy and procedure for staff and parent education. After the protocol was fully implemented, BF rate in NICU rose by 41%. IMPLEMENTATION, BF rate – Excellent Resource. PT

Benjamin, R., Frieden, T.R., Jones, W.K., et al., (Eds.) (2011). Action 7: Ensure that maternity care practices throughout the United States are fully supportive of breastfeeding. In *The Surgeon General’s Call to Action to Support Breastfeeding*. Washington, DC: The US Dept of Health and Human Services/Office of the Surgeon General. 2011: 44-45. On these pages of the Call to Action to Support Breastfeeding book, it states that accelerated implementation of the Baby Friendly Hospital Initiative is needed, and this includes the provision that all mothers should have continuous skin-to-skin contact with their babies immediately after birth until completion of the first feeding and that skin to skin contact should be encouraged throughout the hospital stay. Guidelines, recommendations, Birth KC, BF, postpartum KC. Not on charts.


Benoit, B., Campbell-Yeo M, Johnston C, Latimer M, Caddell K, Orr T. (2016-June). Staff Nurse Utilization of Kangaroo Care as an Intervention for Procedural Pain in Preterm Infants. *Advances in Neonatal Care*. 16(3):229-238. doi: 10.1097/ANC.0000000000000262. Skin-to-skin contact between mother and infant, commonly referred to as Kangaroo Care (KC), has demonstrated efficacy as a pain-relieving strategy for infants, yet, it remains underutilized in clinical practice. To evaluate changes in neonatal intensive care unit staff nurse beliefs, utilization, and challenges related to practice change in implementing KC as an intervention for management of procedural pain in preterm infants between 2 time points. Nurses who participated in a larger clinical trial examining the sustained efficacy of KC were asked to complete a questionnaire at 2 time points. 1- and 6 month(s) following study initiation. Identified benefits, expectations, frequency of use, and challenges related to practice change uptake were described using frequencies and percentages. Data from the 2 different time points were compared using χ² analysis. Of the 40 nurses approached, all completed the questionnaire (19 at the 1-month and 21 at the 6-month time point). Of the sample (n = 40), 97% of participants indicated that they expected KC to provide good pain relief or better. Staff nurses reported significantly improved preconceived ideas (χ² = 22.68, P < .01) and significantly fewer concerns (χ² = 22.10, P = .01) related to using KC as a pain-relieving intervention between the 2 time points. No significant differences were seen in the frequency of using KC as an intervention between time points. Despite increasingly positive preconceived ideas and reduced concerns, the frequency of using KC for KC Bib 2018
procedural pain relief remained unchanged. Further research addressing ways to overcome barriers to utilizing KC as an intervention for procedural pain is warranted. PT, descriptive evaluative study, longitudinal, pain, use of KC to reduce pain did not change, staff ideas and concerns improved and expected KC would reduce pain, but did not change behavior. Little use of KC for pain. Not on charts 5-29,16. New to biblio

Benoit B, Martin-Misener R, Latimer M, Campbell-Yeo M. (2017Apr-June). Breast-Feeding Analgesia in Infants: An Update on the Current State of Evidence. J Perinat Neonatal Nurs. 31(2):145-159. doi: 10.1097/JPN.0000000000000253. This is a systematic review. To provide an updated synthesis of the current state of the evidence for the effectiveness of breast-feeding and expressed breast milk feeding in reducing procedural pain in preterm and full-term born infants. A systematic search of key electronic databases (PubMed, CINAHL, EMBASE) was completed. Of the 1032 abstracts screened, 21 were found eligible for inclusion. Fifteen studies reported on the use of breast-feeding or expressed breast milk in full-term infants and 6 reported on preterm infants. Direct breast-feeding was more effective than maternal holding, maternal skin-to-skin contact, topical anesthetics, and music therapy, and was as or more effective than sweet tasting solutions in full-term infants. Expressed breast milk was not consistently found to reduce pain response in full-term or preterm infants. Studies generally had moderate to high risk of bias. There is sufficient evidence to recommend direct breast-feeding for procedural pain management in full-term infants. Based on current evidence, expressed breast milk alone should not be considered an adequate intervention. PT, FT, Systematic Review, pain, BF, Breastmilk, KC, swaddling, sucrose. Not on charts 4-28-2017

Bera, A., Ghosh, J., Singh, A.K., Hazra, A., Mukherjee, S., Mukherjee, R. (2014-June) Effect of Kangaroo Mother Care on growth and development of low birth weight babies up to 12 months of age. Acta Paediatrica, 103(6), 643-650. doi: 10.1111/apa.12618. KMC is a non-conventional method of newborn care. Purpose was to assess effect of sustained KMC on growth and development of LBW Indian babies up to 12 months. Five cohorts of LBW infants and mothers. Final N=500 dyads. The three infants with lowest birth weight in each group received KMC until 40 weeks corrected age or weighed 2500 grams, while the other two received care in incubators. All babies were exclusively breastfed for 6 months. KMC babies rapidly achieved physical growth parameters similar to control babies at 40 weeks corrected age, but after that the KMC babies surpassed the control infants despite being smaller at birth. Growth was weight, length, head circumference, chest circumference, and arm circumference. The Developmental Assessment Scales for Indian Infants (DASII) at 12 months showed significantly better MOTOR and MENTAL quotients for KMC infants. PT, controlled trial, development, growth, 3rd world (India)

Berges, Barbara (2010). Skin-to-skin quality improvement project at Geauga. Available from Barbara.Berges@UHhospitals.org or Barbara Berges, BS, RN, IBCLC, Lactation Consultant, UH Geauga Medical Center, 13207 Ravenna Road, Chardon, OH 44024, phone 440-285-6005; Fax: 440-285-6629. This is a proposal that instead of swaddling babies after birth, babies are placed skin-to-skin with mother while baby recovers from the stress of delivery and adapts to extra-uterine life. It is not a “breastfeeding project”, but a project to enhance care of all infants and mothers and it is presented as such. Before they began their initiative, they collected information on temperature regulation (temps in 1st 90 minutes postbirth to assess time to temp stabilization in swaddled vs KC at birth, time to first successful breastfeeding, number of breastfeeding in first 24 hours, amount and number of supplementations vs exclusive breastfeeding during stay to address the new Joint Commission measurements. The only change that was made was “No change in routine care of infant after birth from current practices, except instead of swaddling the baby and placing in mom’s arm, the baby, wearing only a diaper, is placed upright against the mother’s bare chest in a prone position. The baby’s back is covered with a warm blanket to maintain warmth and privacy.” Unfortunately, the starting time, and duration of uninterrupted KC time may be compromised by this simple method, but the simple change from swaddling to skin-to-skin may facilitate later adaptation of the finer points of Birth KC. Fullterm, Birth KC, breastfeeding.

Bergh A-M, Arsalo I, Malan AF, Patrick M, Pattinson RC, & Phillips N. (2005). Measuring implementation progress in kangaroo mother care. Acta Paediatrica 94, 1102-1108. This is a report of testing an implementation model (pg. 1104) and recording benchmarks that show progress in adapting and using KMC in hospitals in South Africa. She offers indicator (bench mark) for each of the implementation constructs: creating awareness, adopting the concept, taking ownership, evidence of practice, evidence of routine and integration, sustainable practice. Model and quantification of progress has worked well. PT, Implementation Plan, Benchmarks

Bergh AM, de Graaf-Johnson J, Khadka N, OwIniaahs A, Udani R, Pratomo H, De Leon-Mendoza S. (2016-Jan). The three waves in implementation of facility-based kangaroo mother care: a multi-country case study from Asia. BMC Int Health Hum Rights. 16(1):4. doi: 10.1186/s12914-016-0080-4.Kangaroo mother care has been highlighted as an effective intervention package to address high neonatal mortality pertaining to preterm births and low birth weight. However, KMC uptake and service coverage have not progressed well in many countries. The aim of this case study was to understand the institutionalisation processes of facility-based KMC services in three Asian countries (India, Indonesia and the Philippines) and the reasons for the slow uptake of KMC in these countries. Three main data sources were available: background documents providing insight in the state of implementation of KMC in the three countries; visits to a selection of health facilities to gauge their progress with KMC implementation; and data from KCBib 2018
The establishment of KMC services at individual facilities began many years before official prioritisation for scale-up. Three major themes were identified: pioneers of facility-based KMC; patterns of KMC knowledge and skills dissemination; and uptake and expansion of KMC services in relation to global trends and national policies. Pioneers of facility-based KMC were introduced to the concept in the 1990s and established the practice in a few individual tertiary or teaching hospitals, without further spread. A training method beneficial to the initial establishment of KMC services in a country was to send institutional health-professional teams to learn abroad, notably in Colombia. Further in-country cascading took place afterwards and still later on KMC was integrated into newborn and obstetric care programs. The patchy uptake and expansion of KMC services took place in three phases aligned with global trends of the time: the pioneer phase with individual champions while the global focus was on child survival (1998-2006); the newborn-care phase (2007-2012); and lastly the current phase where small babies are also included in action plans. This paper illustrates the complexities of implementing a new healthcare intervention. Although preterm care is currently in the limelight, clear and concerted country-led KMC scale-up strategies with associated operational plans and budgets are essential for successful scale-up. PT, case study, qualitative, implementation, 3rd world. NEW for biblio study


• 1MRC Unit for Maternal and Infant Health Care Strategies, University of Pretoria, Private Bag X323, Arcadia 0007, South Africa. anne.marie.bergh@up.ac.za.

Some countries have undertaken programs that included scaling up kangaroo mother care. The aim of this study was to systematically evaluate the implementation status of facility-based kangaroo mother care services in four African countries: Malawi, Mali, Rwanda and Uganda. A cross-sectional, mixed-method research design was used. Stakeholders provided background information at national meetings and in individual interviews. Facilities were assessed by means of a standardized tool previously applied in other settings, employing semi-structured key-informant interviews and observations in 39 health care facilities in the four countries. Each facility received a score out of a total of 30 according to six stages of implementation progress. Across the four countries 95 per cent of health facilities assessed demonstrated some evidence of kangaroo mother care practice. Institutions that fared better had a longer history of kangaroo mother care implementation or had been developed as centres of excellence or had strong leaders championing the implementation process. Variation existed in the quality of implementation between facilities and across countries. Important factors identified in implementation are: training and orientation; supportive supervision; integrating kangaroo mother care into quality improvement; continuity of care; high-level buy in and support for kangaroo mother care implementation; and client-oriented care. The integration of kangaroo mother care into routine newborn care services should be part of all maternal and newborn care initiatives and packages. Engaging ministries of health and other implementing partners from the outset may promote buy in and assist with the mobilization of resources for scaling up kangaroo mother care services. Mechanisms for monitoring these services should be integrated into existing health management information systems. PT, observation and questionnaire evaluation study, implementation, enhanced, barriers, little use NOT on CHARTS

Bergh, A.M., Manu, R, Davy, K., van Rooyen, E., Quansah Asare, G., AWoonor Williams, J.K, Dedzo, M., Twumasi, A. Nang-Beifubah, A. (2012). Translating research findings into practice - the implementation of kangaroo mother care in Ghana. Implementation Science, 7(1), 75-77. Because of its many benefits, Ghana created a program to scale up KMC in 4 regions, so delivery units were equipped with necessary skills for KMC practice and to singleout KMC for special attention instead of embedding it in other newborn practices. A three-phase outreach intervention was adapted from previous research findings and a regional steering committee was formed. During Phase 1, INCOMPLETE

Bergh, A.M., Manu, R, Davy, K., van Rooyen, E., Quansah, Asare-G., Awonoor-Williams, J., Dedzo, M., Twumasi, A., & Nang-Beifubah, A. (2013). Progress with the implementation of kangaroo mother care in four regions in ghana. Ghana Med J. 2013 Jun;47(2):57-63. Aim was to measure progress with the implementation of kangaroo mother care (KMC) for low birth-weight (LBW) infants at a health systems level using Action Research design with district and regional hospitals as the unit of analysis in four regions in Ghana, identified by the Ghana Health Service and UNICEF. Health workers and officials, health care facilities and districts in the four regions underwent a one-year implementation programme with three phases: (1) introduction to KMC, skills development in KMC practice and the management of implementation; (2) advanced skills development for regional steering committee members; and (3) an assessment of progress at the end of the intervention. Measures were description of practices, services and facilities for KMC and the identification of strengths and challenges. Twenty-six of 38 hospitals (68%) demonstrated sufficient progress with KMC implementation. Half of the hospitals had designated a special ward for KMC. 66% of hospitals used a special record for infants receiving KMC. Two of the main challenges were lack of support for mothers who had to remain with their LBW infants in hospital and no follow-up review services for LBW infants in 39% of hospitals. It was possible to roll out KMC in Ghana, but further support for the regions is needed to maintain the momentum.
Bergh A-M, & Pattinson RC. (2003). Development of a conceptual tool for the implementation of Kangaroo Mother Care. *Acta Paediatrica* 92, 709-714. This provides a conceptual model to assist the implementation of KC. A Qualitative research approach used in South Africa to elicit main issues in establishing a program of KC and they developed a set of core questions to assist in decision making about using KC at the institution level. Implementation, staff issues, PT

Bergh, AM, Rogers-Bloch, Q., Pratomo, H., Ubahiyah, U., Poernomo Sigit Sidi, I., Rustina, Y., Suradi, R. & Gibson, R. (2012-Oct.). Progress in the implementation of kangaroo mother care in 10 hospitals in Indonesia. *Journal of Tropical Pediatrics* 58(6):402-405. doi: 10.1093/tropej/fmr114 Using her implementation scale, she evaluated the progress of 10 hospitals having kangaroo mother care wards (24/7 KMC) for preterm infants. Hospitals scored 28-85, with a mean score of 62.1. One hospital had not reached the level of “evidence of practice”, five hospitals had the level of “evidence of practice” and 2 hospitals scored on the level of “evidence of routine and integration.”. The 2 training hospitals were on the border of “evidence of sustainable practice”. Implementation of KC is along process that requires dedication and support for a number of years. Some items in the progress monitoring tool could be used to set standards for KMC that hospitals must meet for accreditation purposes. PT, 3rd World, guidelines, implementation, routine KC NOT on charts as routine

Bergh AM, van Rooyen E, & Pattinson RC. (2008). Scaling up kangaroo mother care in South Africa: ‘on-site’ versus ‘off-site’ educational facilitation. *Human Resources & Health, 2*(6), 13 + 6 pages. Descriptive comparative study. Implementation study of 36 hospitals implementing KC were assigned to two matched groups: one received 2 on-site education visits and the other matched site received one off site hands-on workshop education session at a training hospital. Evaluation was 6-8 months later. Successful implementation was a score >10 on Bergh’s scale. No differences between groups. 15 of on site hospitals and 16 of off site hospitals were successfully implementing KC. Site of training/education did not influence ability to successfully implement KC. Local circumstances should guide educational strategy. PT, Implementation

Bergman, J. (2010). *Hold Your Prem.* Capetown: New Voices Publishing, Pp. 1-144. This is a great book for parents and has many fantastic resource chapters with good documentation of sources to validate factual statements. The chapters in the book are: the first few hours, how preemies are different from full term neonates, what parents can do to help their baby, emotions and coping, skin to skin contact, breast milk and feeding, how the brain develops and works: neuroscience, protect sleep, separation and stress, developmental care, technology, problems preemies face in the NICU, long term problem preemies face and how skin-to-skin contact can help, how friends and family can help, going home, parenting, compassionate care for a dying baby, and resources. PT, parent, guides, book, dev., stress NOT on Charts as of 3/24/2010

Bergman, J. (2011). Hold Your Preemie. Capetown: New Voices Publishing, Pp. 1-144. This is an Americanized version (i.e. instead of ‘nappies’ the text has ‘diapers’, instead of ‘prem’ it says ‘preemie’, etc) of the J. Bergman book reported above. It is a wonderful book for parents, interactive, helpful, practical advise, clear guidelines, and eases anxiety about the preterm birth experience as well. Now available from Geddes Productions in Los Angeles. Contact them at http://www.geddesproduction.com or orders@geddesproduction.com. They take credit cards and mail the same day.

Bergman J, & Bergman N. (2013, Winter). Whose Choice? Advocating Birthing Practices According to Baby’s Biological Needs. Journal of Perinatal Education, 22(1):8-13. doi: 10.1891/1058-1243.22.1.8. Modern western society and media often present the mother’s choices for her birth as paramount. Various gurus provide the mother with often conflicting advice. But the reality is that childbirth often becomes a medicalized event with many interventions and less than ideal outcomes. In many instances, the choices are made to suit health professionals and hospital routines rather than the mother. All the aforementioned are based on ideas and assumptions which predate evidence-based medicine and recent neuroscience. In reproductive biology, the newborn is an active participant and agent in birthing (Alberts, JR. 1994 Learning as adaptation in the infant. *Acta Paediatrica Supplement*, 397, 77-85). Based on this, the perspective which has been lacking is what is best for the baby; our choices should be primarily based on the basic biological needs of the infant. The AAP published policy statement called “Early Adversity, toxic stress, and the role of the pediatrician” by Garner & Shonkoff, 2012 (on this bib) and an accompanying technical report (Shonkoff & Garner, 2012, also on this bib) that describes the ECORIBODEVELOPMENTAL MODEL in which eco stands for ecology or the newborn’s environment and for the newborn, the environment is the mother’s body (pg. 8). Mother’s body provides buffering protection of adult support to prevent harmful EPIGENETIC changes from taking place during sensitive periods of development (Meaney MJ & Szyf M. 2005. Maternal care as a model for experience-dependent chromatin plasticity? Trends in Neurosciences, 28(9), 45 6-465; Shonkoff & Garner, 2012). “These sensitive periods operate in the early hours and days of life. Mother’s body is also the source of sensory input that drives “needed neural processes”(Graven, SN, 2004. Early neurosensory visual development of the fetus and newborns. Clinics in Perinatology, 31(2), 199-216.). The mother’s body is also the source of basic biological need (the bio of the model) that provide KCBib 2018
physiologic regulation and stabilization. Prolonged regulation leads to establishment of internal set points that will determine the resilience over the life span (McEwen BS, Seeman T, 1999. Protective and damaging effects of mediators of stress. Elaborating and testing the concepts of allostatic and allostatic load. Annals of NY Acad of Sciences, 896, 30-47). The key objective of this early development is establishing emotional (end of page 8 as citation for the quote which continues onto page 9) resilience and social competence, and the brain pathways for this are laid down starting at the first hour of birth (Schore AN, 2001. Effects of a secure attachment relationship on right brain development, affect regulation, and infant mental health. Infant Mental Health Journal, 22(1-2):7-66)/pg. 9) “Development is accomplished “in the light of mother’s body”(Hrdy SB, 1999. Mother nature. London, UK: Chatto & Windus.” “Any adverse events in early development affect the life span of the individual, with negative impact on learning and education, public health, and economic productivity (Garner & Shonkoff, 2012; Shonkoff & Garner 2012- both on this bib).” “To make the BEST transition to life in the outside world, place the naked baby in skin-to-skin contact on the mother’s bare chest immediately after birth and dry the baby, covering them both. The baby inside the mother has been warmed, fed continually, and held and protected in the dark, so when the baby is born, we need to adapt the sensory environment with dim light, warmth, and quiet to aid healthy adaptation. The baby is biologically expecting to hear the mother’s familiar voice and heartbeat, the mother’s smell, the taste of breast milk and warmth from her body. With these sensations, the baby will have a more stable heart rate, blood pressure and breathing. All of these sensory signals form the mother’s body help the baby to find healthy set points for all aspects of physiologic function, which may last the baby’s entire life. In the RIGHT place, mother’s chest- the baby will be warmer and have higher blood sugar (Chirstensenn et al., 1992). As with all mammals, human babies are born knowing how to breastfeed. Any interruption to the nine essential stages of self-attachment at birth will make self-attachment more difficult. Knowing the impact of immediate skin to skin contact, we need to make every effort to provide that at cesareans, too (Smith, Plaat, & Fisha, 2008-on this bib).” ANY SEPARATION OF MOTHER AND BABY DISRUPTS ESSENTIAL BRAIN DEVELOPMENT, WHICH IS REQUIRED FOR BONDING.(Pg. 9) Baby needs to stay in skin to skin for the first two hours at least, and then remain in skin to skin contact for the first 24 hours to keep uninterrupted access to the breast. Father and other family members can do skin to skin. Holding a clothed baby over mother’s clothes is NOT skin-to-skin contact. Stress hormones rise rapidly in the baby and destabilize the baby. Stress hormones remain high during separation; 30-60 minutes of skin to skin contact is required to return to healthy baseline. Strong evidence exists for importance of COLOSTRUM for the first few days to improve immunity (Eidelman, A, 2012. Breastfeeding and the use of human milk: an analysis of the American Academy of Pediatrics 2012 Breastfeeding policy Statement. Breastfeeding Medicine, 7, 323-324.) “So, even if a mother has chosen not to breastfeed, the baby’s right to this immune booster should be honored and take precedence.’(pg. 9). The AAP defines Breastfeeding as the NORMATIVE STANDARD (Eidelman, 2012). (go to http://www.infactcanada.ca/RisksofFormulaFeeding.pdf to get all the negative aspects of formula feeding). Hospital routines provided for survival, but neglected bonding and attachment and long-term development and is based on SEPARATION for the last 100 years. “Modern neuroscience shows that separation causes significant harm”pg. 10). An infant’s basic biological needs are the baby’s basic human rights and it is necessary to put the baby’s needs first (even if parents’ societal expectations are not aligned with the baby’s basic biological needs” (pg. 10). Doulas support the mother and can now emphasize the infant’s needs based on current neurosience, an advocate for the baby’s birth right (Kangaroula”) p. 10. Role of Kangaroula is to 1. SUPPORT THE PARENTS TO SUPPORT THEIR NEWBORN. 2. Explain technical terminology. 3. give information on choices that support the baby in needed neural processes, 4. Five information on how adults protectively buffer the infant from a toxic environment to support brain development , citing Shonkoff & Garner, 2012). 5. Mediate between parents and staff. 6. Support staff in adjusting routines, and 7. RECOGNIZE the rights of the newborn” (pg. 10). Kangaroula needs to tell family in Labor that induction with oxytocin produces high levels of oxytocin in labor and make oxytocin levels drop in mother 2 days later, making mothering more difficult ( Alberts JR, 1994. Learning as adaption of the infant. Acta Paediatrica Supplement, 397, 77-85; Phaneuf S, Rodriguez Linares B, et al., 2000. Loss of myometrial oxytocin receptors during oxytocin-induced and oxytocin augmented labour. J Reproduction & Fertility, 120(1), 91-97). Demerol in labor makes the baby floppy and unresponsive at birth (Nissen E., Lilja G, Matthiesen A.S. et al., 1995. Effects of maternal pethidine on infants’ developing breast feeding behavior. Acta Paediatrica, 84(2), 140-145.) and the mother less tuned–in to her newborn (Hale TW, 2006. Medication and mother’s milk. (12 th ed), Amarilrow, TX: Hale.), which in turns inhibits ability to self–attach and breastfeed. Epidural mandates that mother lie down (not walk, not be upright) and this increases likelihood of fetal distress and epidural also blocks oxytocin stimulation in maternal brain, affecting quality of her mothering experience (Swain JE, Tasqin E et al., 2008. Maternal brain response to own baby cry is affected by cesarean section delivery. J Child Psychology and Psychiatry, 40(10), 1042-1052.) In c/s baby needs to be protected from harsh sensory environment of operation room and further unnecessary separation and interventions (McClellan & Cabianca, 1980 on this bib). After birth, do not take baby to nursery so mom can sleep because mom sleeps better if baby is with her and mom has less anxiety (pg. 11). Maternal newborn nurses have to undergo role shift so that Parents are primary providers on mother-infant unit, starting at birth and building on the maintenance of their togetherness. Nurses should no longer be the one to do the practical care of newborn, instead the nurse should become mentor, teaching parents the skills needed to parent their baby (Westrup, B 2004 Family-


Bergman, N. (1999). Kangaroo mother care: Rediscover the natural way to care for newborn baby, International J of Childbirth Education 18 (1), 30 & 27. This is a simple to read reason why KC should be practiced with fullterm infants. Article conveys two concepts: No separation and Breastfeeding. Rewarming occurs when no separation. Review, Full Term, BF, temp, rewarming, BF not on charts 7-11-16. TRY TO GET THIS ARTICLE.

Bergman, N. (2005). More than a cuddle: skin-to-skin contact is key, Practicine Midwife 8(9), 44. Short commentary on the importance of kangaroo care for breastfeeding and providing the natural niche for the infant. PT, FT, Commentary, Review.

Bergman, N. (2006). Kangaroo mother care and skin-to-skin contact as determinants of breastfeeding success. Retrieved 1/20/2007 from www.Iwantmymum.com (http://www.Iwantmymum.com/content/view/32/47). Clinical review of habitat and ecological niche of the infant and that KMC is really good for promoting breastfeeding. Says the biggest barrier to BF success is separation of mother and newborn. First part of article summarizes neurodevelopment of fetus and newborn, and second identifies barriers and how to fix them. Promotion of uninterrupted and continuous KC is needed. Does not have an actual measure of breastfeeding success (such as Carfoot’s desire and final study had), but is talking about overall success. This is very similar content to Winberg’s article. Not on charts yet. PT


Bergman NJ. (2015-Jan). Proposal for mechanisms of protection of supine sleep against sudden infant death syndrome: an integrated mechanism review. Pediatr Res. 77(1-1):10-19. doi: 10.1038/pr.2014.140. Supine sleep decreases sudden infant death syndrome (SIDS) incidence, however the mechanisms for this are unclear. The triple risk model for SIDS requires that one or more underlying abnormalities of breathing or autonomic control are present; these are rare, but brainstem defects are found in most SIDS cases. Supine sleep increases sympathetic nervous system tone, and level of state organization, and may therefore act as a stressor. This is evidenced by physiological arousal, and by delayed neurodevelopment in supine compared to prone sleepers. It is argued here that prone sleep position is the biological standard in healthy infants, supporting autonomic regulation. During rapid eye movement (REM) sleep (and other circumstances), a parasympathetic-mediated adverse autonomic event (AAE) may be spontaneously triggered. In healthy infants, gasping initiates autoresuscitation and recovery. The underlying vulnerability to SIDS is specific to autoreresuscitation from an AAE, the initial serotonin-dependent gasp is commonly compromised. Serotonin metabolism defects also influence sleep architecture, increasing the likelihood of AAE. The mechanism whereby supine sleep decreases SIDS may therefore be a stressor effect, disturbing sleep architecture to decrease REM and AAEs, and increasing sympathetic tone, which may prevent and counteract the purely parasympathetic-mediated AAE, thereby decreasing the risk of SIDS. PT, FT, Review, Sleep, position, SUPC, SIDS

countries (Denmark, United Kingdom, Australia, Israel, United States) with published time trends of autism, change points coinciding with supine sleep campaigns were identified. The model proposes that supine sleep does not directly cause autism, but increases the likelihood of expression of a subset of autistic criteria in individuals with genetic susceptibility, thereby specifically increasing the incidence of autism without intellectual disability. Supine sleep is likely a physiological stressor, that does reduce SIDS, but at the cost of impact on emotional and social development in the population, a portion of which will be susceptible to, and consequently express autism. A re-evaluation of all benefits and harms of supine sleep is warranted. If the SIDS mechanism proposed and autism model presented can be verified, the research agenda may be better directed, in order to further decrease SIDS, and reduce autism incidence. FT, PT, Review, SUPC, position, autism, SIDS, sleep

Bergman N.J., Carney G., & Ludington-Hoe SM. (2010). Kangaroo Care for the preterm infant. Infant, Child, and Adolescent Nutrition, 2(3), 165-169. This is an article that is a roundtable in which the three authors were asked the same questions and their answers are posted. The first question was KC has distinct known advantages for our preterm infants. Can you briefly outline those advantages from your perspective? Nil’s related; Carney related, and Ludington-Hoe related a one sentence answer of all outcomes reported in Ludington-Hoe, Morgan, & Abouellêtho (2008). The second question was “the practice of KC for the preterm infant is not always standard protocol. From your perspective, when should KC be initiated?” Bergman says the question should be “when should incubator care be initiated?” Carney replied: Ludington replied that the American Academy of Pediatrics and WHO say it should begin as soon as possible, continue for as long as possible, and be uninterrupted during hospitalization, whether full term, preterm, vaginal or cesarean birth, singleton or multiple birth and she refers to the two Nyqvist et al., 2010 publications in Acta Paediatrica. PT, Review, cs, multiple birth, etc.


Bergman NJ, Lisney LL, & Fawcus SR (2004). Randomized controlled trial of skin-to-skin contact from birth versus conventional incubator for physiological stabilization in 1200- to 2199-gram newborns. Acta Paediatrica, 93(6), 779-785. No doi. RCT, 18 KC and 13 in incubator over first 6 hours post birth, gave either KC or incubator care to LATE PRETERM/NEAR TERM infants and measured number of times infant’s physiologic values exceeded clinical norm range and scored the values using SCRIIP, a stability scoring system. Stability was measured in terms of a set of pre-determined physiological parameters, and a composite cardio-respiratory stabilization score (SCRIP). Stabilization scores were 77.11 for SSC versus 74.23 for incubator (maximum 78), mean difference 2.88 (95% CI: 0.3-5.5), p = 0.031. All 18 SSC subjects were stable in the sixth hour, compared to 6/13 incubator infants. Eight out of 13 incubator subjects experienced hyperthermia. “Newborn care provided by KC on the mother’s chest results in better physiological outcomes and stability than the same care provided in closed servo-controlled incubators. Cardiorespiratory instability seen in separated infants in the first 6 hrs is consistent with mammalian “protest-despair” biology, and with “hyperarousal & dissociation” response patterns described in human infants. Newborns should not be separated from their mothers.” (pg.779) PT, RCT, HR, RR, stabilization, birth KC , stability. See also Nagai et al., 2010 for 247 KMC starting in first 24 hours postbirth with premature infant, LATE PRETERM/NEAR TERM

Bergman N, Malan A, Henn M, & Organizing Committee. (2003). Fourth International Workshop on Kangaroo Mother Care. J. Tropical Pediatrics. 49(5), 311-312. Report of the 4th Workshop is Cape Town in 2002. Reports that objectives of the workshop were to review clinical research, examine KMC public health policy, empower delegates to more effectively implement KMC, and equip delegates with ability to promote KMC to general public. KMC starting at birth with 1200 gramers and larger was shown to be safe (pg. 311).developmental and bonding benefits of KMC beyond 12 months were shown, Cochrane (Anderson et al., 2003) of fullterm early KMC outcomes – BF outcomes most marked, less crying, improved attachment were reviewed. Many provinces and countries have adopted KMC as formal government policy, and WHO’s Kangaroo Mother Care – a Practical Guide was reviewed. Social marketing principles (selling KMC to the public) were presented on Day 3 by Dr. Amy Seidel Marks. Principles are: identify stake holders, package the message separately for each target audience or market sector, sometimes putting aside was the medical manager knows and what is best for the community and instead putting in what the people’s needs and wants (the consumer’s perspective) are. Thus, KMC requires marketing not just a product, but new behaviours and values associated with KMC. Each segment of the market has a different value. Packaging must also match client’s stage of change. Barriers to change need to be understood and addressed for each market (readers are referred to Prochaska & DiClemente, 1983. Stages and processes of self-change of smoking: toward an integrative model of change. J. Consult Clin Psychol 51,390-395.) Report. Birth KC, preterm birth KC, longitudinal KMC (AFTER 12 MONTHS), Fullterm, cry, attachment, BF, policy, implementation.


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Bergström A, Byaruhanga R, Okong P. (2005-Oct). The impact of newborn bathing on the prevalence of neonatal hypothermia in Uganda: a randomized controlled trial. *Acta Paediatr* 94(10):1462-1467. To elucidate the impact of bathing on the prevalence of hypothermia among newborn babies exposed to the skin-to-skin (STS) care technique before and after bathing. Non-asphyxiated newborns after vaginal delivery (n = 249) in a Ugandan referral hospital were consecutively enrolled and randomized either to bathing at 60 min postpartum (n = 126) or no bathing (n = 123). All mothers practised skin-to-skin care of their newborns. Four rectal and tympanic registrations of newborn temperatures were carried out in both groups directly after drying at birth, and at 60, 70 and 90 min postpartum. Bathing of newborns in the first hour after delivery resulted in a significantly increased prevalence of hypothermia, defined as temperature <36.5 degrees C, at 70 and at 90 min postpartum despite the use of warmed water and the application of the STS method. There was no neonatal mortality. Aside from the bathing procedure, no background factor potentially predisposing the newborns to hypothermia was identified. Bathing newborn babies shortly after birth increased the risk of hypothermia despite the use of warm water and STS care for thermal protection of the newborn. FT, RCT, baths, hypothermia.

Bergström A, Okong P, & Ransjo-Arvidson AB. (2007). Immediate maternal thermal response to skin-to-skin care of newborn. *Acta Paediatrica* 96(5), 655-658. 39 Ugandan moms who had normal spontaneous vaginal delivery and non-asphyxiated newborns were studied. Maternal skin and axillary temps were taken immediately before KC, then every two minutes for 20 minutes and 10 minutes after neonate was removed. Infant axillary and forehead temps were measured immediately before KC, twice after initiating KC, and 10 minutes after newborn had been removed from KC. Maternal breast skin immediately displayed a rapid thermal response after KC was initiated (rise by 0.5 C p=0.001 within first 2 minutes of KC and then dropped by 0.5C by 10 minutes after end of KC). Maternal axillary temp similarly rose by 0.5C. Descriptive, Fullterm, birth KC, maternal breast temperature, maternal axillary, infant axillary and forehead temps. 3rd world, Maternal-Infant Thermal Synchrony (see also Mori R, et al., 2010)

Berman J. (2010). *The A to Z Guide to Raising Happy Confident Kids*. Los Angeles: New World Library. She has a chapter in her book about the importance of touch and has tracked down the baby Steven who was born at 24 weeks at Brigham Women’s and Children’s Hospital in Boston and who survived (with many disabilities) with KC by his mother Dorothy. Dr. Berman used KC with her twin daughters and found it to be so helpful. You can contact Dr. Berman at 310-278-9666; fax is 310-278-9669, email is BermanPsych@aol.com, DoctorJenn@DoctorJenn.com, www.DoctorJenn.com  FT


3. Erratum is in Lancet. 2014 Jul 26;384(9940):308. Sankar, Jeeva M [corrected to Sankar, M Jeeva]. Progress in newborn survival has been slow, and even more so for reductions in stillbirths. To meet Every Newborn targets of ten or fewer neonatal deaths and ten or fewer stillbirths per 1000 births in every country by 2035 will necessitate accelerated scale-up of the most effective care targeting major causes of newborn deaths. We have systematically reviewed interventions across the continuum of care and various delivery platforms, and then modelled the effect and cost of scale-up in the 75 high-burden Countdown countries. Closure of the quality gap through the provision of effective care for all women and newborn babies delivering in facilities and this includes KANGAROO CARE, could prevent an estimated 113,000 maternal deaths, 531,000 stillbirths, and 1,325 million neonatal deaths annually by 2020 at an estimated running cost of US$4-5 billion per year (US$0-9 per person). Increased coverage and quality of preconception, antenatal, intrapartum, and postnatal interventions by 2025 could avert 71% of neonatal deaths (1-9 million [range 1-6-2-1 million]), 33% of stillbirths (0-82 million [0-60-0-93 million]), and 54% of maternal deaths (0-16 million [0-14-0-17 million]) per year. These reductions can be achieved at an annual incremental running cost of US$5-5 billion (US$1-15 per person), which amounts to US$1928 for each life saved, including stillbirths, neonatal, and maternal deaths. Most (82%) of this effect is attributable to facility-based care which, although more expensive than community-based strategies, improves the likelihood of survival. Most of the running costs are also for facility-based care (US$3-66 billion or 64%), even without the cost of new hospitals and country-specific capital inputs being factored in. The maximum effect on neonatal deaths is through interventions delivered during labour and birth, including for obstetric complications (41%), followed by care of small and ill newborn babies (30%). To meet the unmet need for family planning with modern contraceptives would be synergistic, and would contribute to around a halving of births and therefore deaths. Our analysis also indicates that available interventions can reduce the three most common cause of neonatal mortality—preterm, intrapartum, and infection-related deaths—by 58%, 79%, and 84%, respectively. PT, Review, infant mortality

Bieda, A. (2007). Where are the data? Applying evidence to neonatal care. Nursing for Women’s Health, 11 (3), 316-318. This is a review about using evidence to guide practice and how to use Cochrane reviews. States on page 316, “Neonatal nurse researchers have contributed to evidence-based practice through well-documented nursing research in many areas, including neonatal skin care, infant massage, kangaroo care (cities Ludington-Hoe et al., 2000), pain management, infant bathing, developmental care, NICU environment, and infant feeding.” Review to PT KC only, review of evidence-based practice procedure.

Bier, J-A., Ferguson, A.E., Liebling, J.A., Morales, Y., Archer, D., Oh, W. (1996). Skin-to-skin contact improves physiologic states of breast-fed low-birth-weight (LBW) infants. Pediatric Research 37(4) part 2, 103A. Abstract of study that appears in 1996. N= 21 KC; 13 swaddled. Gave KC for 10 minutes each day for 10 days but mean KC was 13 mins/day. HR in KC was 165, HR swaddled was 174 PT, RCT, BF, HR, RR, Axillary Temp, # desats, BF, milk production, KCBF.

Bier J-A., Ferguson A.E., Morales, Y., Liebling, J.A., Archer, D., Oh, W., & Vohr, B. (1996). Comparison of skin-to-skin contact with standard contact in low birth weight infants who are breast-fed. Archives Pediatric and Adolescent Medicine, 150, 1265-1269. Gave KC once medically stable and no oxygen support to 50 PT <3.3lbs BW for 10 minutes only each day x 10 days and measured every minute HR, RR, SaO2, Axillary Temp. # Desats. First 10 minutes of 176 KC sessions and 137 standard contact sessions were scored. RR, HR, temperature were same between groups. SSC temps rose in first 5 minutes and then matched control group thereafter. A warming effect of KC was seen. SaO2 was higher during KC and fewer desats (~90%) during KC (11% of 1716 SaO2 recordings during KC) and 24% of 1334 recordings during standard care (swaddled by moms). No diff in mean daily maternal milk expression, more stable milk production in KC. 90% of KC moms vs 61% non-KC moms were breastfeeding throughout hospitalization and 50% vs 11% were still BF at 1 month after discharge. At 6 months, 20% of KC & 10% control still BF. All mothers of multiples who Kced breastfed at discharge, and only 50% of multiples in standard care were BF at discharge, but no mother of multiples was still BF at 3 and 6 months. Moms and babies calm in KC. RCT, PT, KCBF, BF, milk production, milk expression, duration of BF, SaO2, oxygenation, HR, RR, Axillary Temp, # Desats, stability, twin KC.


Bier J., Oliver T, Ferguson, A., & Vohr B. (2002). Human milk improves cognitive and motor development of premature infants during infancy. Journal Human Lactation 18 (4), 361-367. 29 preterms got mother’s milk and 10 preterm got formula only. Infants were assessed at 3,7 and 12 months with Peabody Picture Vocabulary Set was administered to mothers. Milk fed infants had higher motor scores than formula fed at 3 months (63±20 vs 46±15) and at 12 months (101±11 vs 90±9). Mom’s milk infants had higher motor score than formula too, adjusting for oxygen requirements and maternal vocabulary score. Human milk is associated with improved development of premature infants at 3 and 12 months age. PT, BF, Development – NOT A KC STUDY AT ALL!!!! But shows how to test for maternal intelligence in follow-up developmental studies.

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Bigelow, A., Littlejohn, M., Bergman, N., & McDonald, C. (2010). The relation between early mother-infant skin to skin contact and later maternal sensitivity in South African mothers of low birth weight infants. *Infant Mental Health Journal*, 31(3), 358-377. DOI: 10.1002/imhj.20260 12 mother infant pairs from a randomized controlled trial of early KC were visited in their homes in South Africa at less than one year age. Amounts of SSC were taken from hospital records and home interviews. Videotapes of mother-infant interactions in the home were scored for maternal sensitivity on the Maternal Behavior Q-Sort (DR Petersson, G Moran, S Bento, 1990). Nursing Child Assessment Teaching Scale (Summer & Spertz, 1994; Kathy Barnard’s NCAST tool). Amount of KC in first 24 hours of life independently accounted for maternal sensitivity on both measures, indicating that early maternal-infant KC predicted subsequent maternal sensitivity. FT, PT, Early KC, interaction, sensitivity. *Not on chart*

Bigelow, A., & Power, M. (2012). The effect of mother infant skin-to-skin contact on infants’ response to the still face task from newborn to three months of age. *Infant Behavior and Development*, 35(2), 240-251. doi: 10.1016/j.infbeh.2011.12.008. FT, interactions, still face. Full term infants who got KC (n=26) (not birth kc but Early kc starting in first 24 hours of life and then 5 hrs/day for first week and then 2 hrs/day for weeks 2,3, and 4 of life) were compared to full term infants who did not get KC (n=51) on still face tasks at one, two and 3 months of age. KC infants engaged with their mothers in Still Face Task at ages 1 wk, 1.2, and 3 months and began responding to CHANGES in still face at 2 months (controls did not respond to changes in Still Face until 3 months) KC infants increased their non-distress vocalizations during still face phase at 3 months – suggesting social bidding to their mothers. KC accelerated infant’s social expectations for their mother’s behavior and enhanced infants’ awareness of themselves as active agents in social interactions. FT, RCT, Early KC, maternal-infant interactions, Still face, infant vocalizations, and self-identity, brain maturation/brain studies, home KC. *Not on Chart*

Bigelow, A., Power, M., Macelllan-Peters, J., Alex, M. & McDonald, C. (2012). Effect of mother/infant skin-to-skin contact on postpartum depressive symptoms and maternal physiological stress. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 41(3), 369-382. DOI: 10.1111/j.1552-6909.2012.01350.x. Longitudinal quasi-experimental study of 30 KC moms of fullterm infants who gave approximately 5 hours of KC/day for the first week of life and then >2 hrs/day until infants were one month old. 60 control group moms provided little or no KC. Self-report depression scales of signs/symptoms of depression showed lower scores in KC group at one week and marginally lower scores at one month; no differences between groups at 2 and 3 months. Over the first month of life, KC moms had greater reduction in salivary cortisol than control group moms. Mean value of salivary cortisol for one week visit was .340 ug/dl (SD=.163 for SSC and .278 (SD=.128 ug/dl) for controls; at one month means values for KC was 0.234 (sd=0.095) and for controls was 0.244 (SD=.161) ug/dl but these were not significantly different. Change from one wk to one month was sign diff:KC moms had a larger decrease in salivary cortisol over the first month than controls. Mother/infant KC benefits mothers by reducing their depressive symptoms and physiological stress. FT, comparative effectiveness study, depression, maternal salivary cortisol, Postpartum KC, home KC.

Bill & Melinda Gates Foundation, (2014–Sept. 29). Kangaroo mother care product forum. Background on meeting in Kigali, Rwanda on November 14-16, 2014. This 15 page document starts with the background for this meeting. But first, remember that in 2012 this group held a meeting in London that Kerstin Nyqvist and Anne Marie Bergh attended, and then another meeting was held Oct. 20-22, 2013 in Istanbul and this document is for the meeting in Rwanda, Nov. 14-16, 2014. The Bill and Melinda Gates Foundation is run by the Boston Consultancy Group and is separate from the SAVE THE CHILDREN group that Bill and Melinda Gates also financially sponsor. This group is backing ACCELERATION OF KMC (See Engmann publication of Istanbul outcomes on this bib).

Bill and Melinda Gates Foundation. (2012). A Mother’s Perspective on KMC –Malawi. Pg. 15-24. Interviews were conducted to generate hypotheses on the most important barriers and opportunities for KMC in Malawi. What is the perception of value that may support awareness, adoption, adherence? What are the messages that will resonate with mothers? What are the channels to provide those messages? KMC was introduced to Malawi in 1992 at Zomba Hospital and as of 2012 was available in 121 hospitals because government policy mandated each hospital have a KMC ward. Practitioners are trained in KMC and KMC is integrated into the nursing curriculum. Community engagement efforts have been tried but challenges in widespread awareness, adoption and adherence continue. Barriers are within facilities, and within communities. Conducted 23 in depth interviews with 16 practicing mothers, 5 guardian or practicing mothers and 2 fathers who had KMC experience, then did 5 focus groups with 12-30 KCBib 2018
participants each (2 grps with community women, 2 with community men, 1 with Mat/NB health Community Action Group) and concluded with 11 in depth interviews about practicing mothers with 8 health practitioners, 2 traditional chiefs, and 1 Minister of Health. Mothers are 18-34 (median =22), majority had some schooling but not completed 8th standard, average parity is 1.9 (1-4), all are married, work as farmers. There is low awareness in broad community, but targeted programs have created awareness (all men in Ekwendeni could explain what KMC was), seeing other women do it can convince women, but male adoption barriers are very high (i.e. KMC is peticquet government...”(pg. 20). There are 6 stages of a mothers journey in Malawi : 1) Prepreg= never heard of KMC, may have seen STS before. Barrier is low awareness of KMC. 2) Pregnancy, she attends 3-4 classes and hears about KMC briefly but does not think it is relevant for her because it is about preterms. Barriers are lack of prenatal training and low participation of family members during prenatal training. 3) delivery and immediate postnatal care – she is trained in KMC and told to do it intermittently until space in KMC ward is available – which can be many days later (pg. 21). Barrier is lack of dedicated space to practice continuous KMC. 4) post delivery in facility when KMC ward space is available, she is told to do it continuously, and she takes breaks. Barriers are maternal pain, fatigue, and KMC messaging only about warmth. 5) post discharge KMC- once home, it is difficult to do it while sleeping and she has little support for doing KMC at home. Barriers are lack of support for practicing KMC, lack of support for other chores, trouble sleeping, stigma of having a preterm birth. 6) Post-KMC. Once infant weighs 2500 gram, she returns to normal life and does no more. C, especially outside her family. Barrier is lack of spontaneous discussion about KMC and lack of awareness of long term benefits of KMC. Critical barriers in Malawi make post-discharge adherence challenging: don’t know what KMC is, better source of warmth than blankets. Think KMC is for warmth, and when baby is warm then mother can stop, at night the mothers don’t want infant’s presence then, and during the day they don’t want infant near the smoke when they are cooking and near the dust when mom is farming, and people in the community associate preterm babies with immature sperm, so will not pass on the rightful things to the woman thinking she made the man’s sperm immature or did something else bad.I In conclusion: 1) Pregnancy education has to be expanded to full term infants so mothers sense relevance to them. 2) Break down the expectation of KMC ward admission and do 24/7 KMC everywhere! 3) KMC is for more than warmth! Read Ludington-Hoe 2011 physiologic outcomes of KMC and Ludington-Hoe 2010 Kangaroo Care is Developmental Care sources. 4) Build support for post-discharge KMC, with incentives for closest families to help and do it themselves. (See the Anderson, G.C. articles with surrogage KMC providers). 5) Where is evidence that KMC should stop when infant reaches 2500 grams? Original Colombian work (Charpak et al.,1989….) had mothers do KMC 24/7 for 1-2 years of preterm life. Preterm, evaluative study, 3rd world, implementation, barriers, staff perception, community KC: NOT ON CHARTS as of 12/12/2014.


Black, A M. (2012). Breastfeeding the premature infant and nursing implications. Advances in Neonatal Care, 12(1), 10-14, DOI: 10.1097/ANC.0b013e3182425ad6. This is a clinical review of effects of breastfeeding on premature infant, his mother,nurses, and ends with nursing implications. On page 12 it states: “The skin-to-skin contact that is involved in breastfeeding can provide additional advantages for the mother. Typically it will make the mother feel much closer to her infant and she tends to perceive a much more intimate connection. The… goes on for a whole paragraph. Will finish later.

Blaymore-Bier, J-A 1997. See Bier, JAB above.

Blencover H, Kerac M, & Molyneux E. (2009). Safety, effectiveness and barriers to follow-up using an ‘Early Discharge’ Kangaroo Care policy in a resource poor setting. Tropical Pediatrics, 55(4): 244-248. Perspective descriptive study of all 272 babies admitted to KMC ward in Malawi from Nov to May. When infant weight 1300 gram and gained weight daily he was discharged. Follow up continued until 2500 grams. 201/272 (73.9%) reached 2500 grams; 46(16.9%) died, unknown outcome in 25(9.2%). Mortality was highest in weights of 1300 to 1500 grams. Barriers to seeking healthcare postdischarge were transportation problems, late recognition of illness. Early discharge is safe, feasible, but issues regarding access to healthcare need to be addressed. PT, descriptive, 3rd world, KMC, early discharge, weight gain, mortality.

Blomqvist Y.T., Ewald U, Gradin M, Nyqvist KH, Rubertsson C. Acta Paediatr. (2013 Jan). Initiation and extent of skin-to-skin care at two Swedish neonatal intensive care units. Acta Paediatric, 102(1): 22-28. doi: 10.1111/apa.12056. To describe initiation and extent of parents’ application of skin-to-skin care (SSC) with their preterm infants at two Swedish neonatal intensive care units. The duration of SSC was recorded in infants’ medical charts during their hospital stay, and the parents answered a questionnaire. Both parents were involved in the practice of SSC. Three infants experienced SSC directly after birth, 34 within 1 h, 85 within 24 h and the remaining 19 at 24-78 h postbirth. SSC commenced earlier (median age of 50 min) in infants whose first SSC was with their father instead of with their mother (median age of 649 min: p < 0.001). The earlier the SSC was initiated, the longer the infant was cared for skin-to-skin per day during his/her hospital stay.

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hospital stay (p < 0.001). The median daily duration of SSC was 403 min. Early initiation of SSC had positive impact on the extent of parents’ application of SSC. Even though the infants in this study were cared for skin-to-skin to a high extent, there is a potential for extended use of SSC in this type of hospital setting for reducing separation between infants and parents. PT, descriptive, Earlier KMC, duration, reducing separation. Earlier KC leads to improvements Not on CHARTS 2/19, 2014

Blomqvist YT, Ewald U, Gradin M, Nyqvist KH, Rubertsson C. (2013 –Jan). Initiation and extent of skin-to-skin care at two Swedish neonatal intensive care units. Acta Paediatr. 2013 Jan;102(1):22-8. doi: 10.1111/apa.12056. To describe initiation and extent of parents’ application of skin-to-skin care (SSC) with their preterm infants at two Swedish neonatal intensive care units. The duration of SSC was recorded in 104 infants’ medical charts during their hospital stay, and the parents answered a questionnaire. Both parents were involved in the practice of SSC. Three infants experienced SSC directly after birth, 34 within 1 h, 85 within 24 h and the remaining 19 at 24-78 h postbirth. SSC commenced earlier (median age of 50 min) in infants whose first SSC was with their father instead of with their mother (median age of 649 min: p < 0.001). The earlier the SSC was initiated, the longer the infant was cared for skin-to-skin per day during his/her hospital stay (p < 0.001). The median daily duration of SSC was 403 min. Early initiation of SSC had positive impact on the extent of parents’ application of SSC. Even though the infants in this study were cared for skin-to-skin to a high extent, there is a potential for extended use of SSC in this type of hospital setting for reducing separation between infants and parents. PT, descriptive evaluative study, duration SSC, birth kc, separation. Pat KC. Not on charts 3-25-2018

Blomqvist YT, Frölund L, Rubertsson C, Nyqvist KH. (2013 June). Provision of Kangaroo Mother Care: supportive factors and barriers perceived by parents. Scandinavian Journal of Caring Science, 27(2):346-353. doi: 10.1111/j.1471-6712.2012.01040.x. Kangaroo Mother Care (KMC) supports parents' role at the neonatal intensive care unit (NICU). To enhance parents' provision of KMC, it is essential to obtain knowledge of what parents perceive as supportive factors and barriers regarding their opportunities to perform KMC. Aim: To identify factors that parents of preterm infants perceived as supportive factors or barriers for their performance of KMC and to explore the timing of and reasons for parents' discontinuation of KMC. Methods: A descriptive study performed at two NICUs in Sweden with 76 mothers and 74 fathers of preterm infants born at gestational ages ranging from 28 to 33 weeks. Data on infant characteristics were obtained from the infants' medical records. A questionnaire, based on scientific literature and the researchers' clinical experience, was completed by the mothers and the fathers separately, shortly after the infant's discharge from the hospital. The data were analyzed with qualitative content analysis and descriptive statistic. Results: Four categories were identified in parents’ responses regarding support and barriers for their performance of KMC: Parent related factors, Time, Infants related factors and The NICU and home environment. The hospital staff and environment were described by the parents as both supportive and barriers for their application of KMC. Some mothers described the infants’ feeding process as an obstacle to KMC. Sleeping with the infant skin-to-skin in the same position throughout the night could be difficult, as an uncomfortable sleeping position caused insufficient sleep. A majority of both mothers and fathers continued providing their infant with KMC to some extent after discharge. Conclusion: Interventions for enhancing parents' opportunities for performing KMC should address both hospital staff attitudes and practices and the NICU environment. PT, Qualitative, Descriptive quantitative too, barriers, discontinuation reasons, implementation, NICU, home KC/post-discharge KC. This is about KMC – 24/7 KMC in Sweden, not intermittent KMC

Blomqvist, Y.T., & Nyqvist, K.H. (2011). Swedish mothers’ experiences of continuous Kangaroo Mother Care. Journal of Clinical Nursing, 20(9-10), 1472-1480. (doi:10.1111/j.1365-2702.2010.03369.x.). Descriptive study to characterize the infants receiving continuous 24/7 KMC from birth to discharge in Swedish NICU and report mother’s experiences of this model of care. Retrospective survey with purposive sampling of 23 mother-infant pairs. Infants were 31-41 weeks GA, birthweights were 1715-3700 gms. moderately preterm and ill newborn infants. Mothers showed good acceptance of the idea of 24/7 KMC during NICU stay. their evaluations of 24/7 KMC were predominantly positive, negative comments concerned lack of information about practical application of the method and some mothers perceive their infants’ care during the night exhausting. No mother would have preferred NOT to perform KMC to or terminate KMC earlier than they did. Mothers accept the model well when giving help and support they need. Moms should be offered opportunity to do 24/7 KMC to the extent that they are able and willing to do so and as permitted by infant’s medical condition and care. PT, 24/7 KMC, maternal feelings, implementation. Not on charts 2/1/2011

Blomqvist, Y.T., Rubertsson, C., Kyberg, E, Joreskog, K., & Nyqvist,K.H. (2012). Kangaroo Mother Care helps fathers of preterm infants gain confidence in the paternal role. Journal of Advanced Nursing, 68(9):1988-1996. DOI: 10.1111/j.1365-2648.2011.05886.x. Qualitative study of 7 fathers who were individually interviewed and who thought incubators were a barrier and separation was stressful. KC facilitated role attainment, allowed them to feel in control an that they were doing something good for their babies. As active agents in their infant’s care, some fathers stayed with the infant during the whole hospital stay, others were at the neonatal intensive care unit all day long. Despite the un-wished-for situation, they adapted to their predicament and spent as much KCBib 2018
time as possible with their infants. This article is a report on a descriptive study of fathers’ experiences of providing their preterm infants with Kangaroo Mother Care. During neonatal intensive care, fathers describe the incubator as a barrier and the separation from their infant as stressful. Fathers consider it important to be close to the infant, and performing Kangaroo Mother Care makes them feel an important participant in their infants’ care. Individual interviews conducted in 2009 with seven fathers who performed Kangaroo Mother Care were analysed using qualitative content analysis. The fathers’ opportunity for being close to their infants facilitated attainment of their paternal role in the neonatal intensive care unit. Kangaroo Mother Care allowed them to feel in control and that they were doing something good for their infant, although the infant’s care could be demanding and stressful. As active agents in their infant’s care, some fathers stayed with the infant during the whole hospital stay, others were at the neonatal intensive care unit all day long. Despite the un-wished-for situation, they adapted to their predicament and spent as much time as possible with their infants. Fathers’ opportunities for Kangaroo Mother Care helped them to attain their paternal role and to cope with the unexpected situation. The physical environment and conflicting staff statements influenced their opportunity for, and experience of, caring for their preterm infants. PT, qualitative, paternal KC, role attainment, paternal feelings, separation is stressful, incubator is barrier

Blomqvist, Y.T., Rubertosson, C., Nyqvist, K.H. (2011) Parent-infant skin-to-skin contact: How do parent records compare to nurse records? Acta Paediatrica, 100(5), 773-777. DOI: 10.1111/j.1651-2227.2011.02160.x. A descriptive study of measurement of daily amount of time infants spend in KC and who best documents the amount of time. Parents and nurses differed in the documentation of the actual number of times infants were in KC. Agreement between nurses and parents for KC duration and starting/termination times was 40%. Parents also noted more people who provided KC than did nurses. “Another relevant consideration is that parental documentation of KC may serve as a strategy for empowerment of parent.” Be sure to read commentary by Boukydis in 2011. PT, duration of KC, parent records. This is in KC electronic records – office computer


Bogota Declaration. See Charpak 2000 citation


This 2/17/2011

Bogota Declaration. See Charpak 2000 citation

Bohnhorst, B, Gill D, Dordelmann M, Peter CS, & Poets CF. (2004). Bradycardia and desaturation during skin-to-skin care: No relationship to hyperthermia. J Pediatr 145 (October), 499-502. This is a second study of the 2001 study and authors state that second study was conducted because in first study they did not control the infant’s airway position during KC and some infants had flexed their heads and occluded their airways. 22 preterm infants (median age 32 weeks) with postconceptional age <36 wks at study time underwent 2-3 hour recordings of breathing movements, nasal airflow, HR SpO2, and oximeter waveforms. Pretest was prone in incubator at neutral thermal temperature, followed immediately by KC at 15-30 degree incline prone, and posttest was back in incubator where ambient temp had been elevated by 1 degree C (or up to 2 degrees C if infant’s body temp did not rise at least 0.4 degrees C during posttest). Head was uncovered and body covered by towel. Took rectal temp every 5 mins and uncovered baby if necessary to keep temp stable during KC. Desats <80%, brady (>1/3 of baseline HR for at least 5 seconds), apnea >10 sec were rare. Periodic breathing (3 or more central apneic pauses of 4 sec or more, separated by less than 20 breaths) were recorded as %. Temp did not rise during KC, but rose 0.6C in posttest. Proportion of regular breathing was lower during KC than pre & posttest. Baseline HR (154) & RR (66) did not change with KC (HR = 156, RR = 67), rose in posttest (HR= 162, RR = 78). SpO2 did not change at all (Pretest = 97.5, kc=98.0, posttest=98.0). # of bradys + desats (combined together) was significantly higher during KC (3.0/hr) than posttest (1.7/hr) & higher (but not significantly) than pretest (2.2/hr). # of bradys alone/hr was 0.0 during KC, versus 0.3 during pretest and 0.6 in posttest. # of desats/hr was 1.0 pretest, 2.3 KC, 0.9 posttest (Sig. Differe between KC and posttest only). Mean nadir of bradys and desats did not change. & PB showed trend to increase during posttest (pretest = 0.01%, KC = 0.0%, posttest = 0.75%). “Frequency of apneas remained largely unchanged”(pg. 500) (pretest = 1.0/hr, KC=0.8/hr, posttest = 1.2/hr). ALL VALUES ARE MEDIANs, not means. Authors conclude that POSITIONAL FACTORS interfering with respiration play a role during KC. KC effects had disappeared with 3 hours of KC’s cessation. KC was associated with less regular breathing. Authors suggest continuous monitoring of HR, oxygenation, and temp during KC. PT, pretest-test-posttest Quasi Exp, Rectal temp, HR, RR, SpO2, desats, bradyacardias, apnea, periodic breathing, irregular breathing pattern, negative effect, ALL MEDIANs, NOT MEANS, residual effects

Bohnhorst B, Heyne T, Peter CS, & Poets CF. (2001). Skin-to-skin (Kangaroo) care, respiratory control, and thermoregulation. J Pediatr 138 (2), 193-197. 22 spontaneously breathing preemies (28wks, 26 days, 1310g) had a 2hr recording B4, during, after KC (of 2 hrs duration). HR, RR, # of bradys, # hypoxemia (<80%) & rectal temp (from 36.9 to 37.3) increased, proportion of regular breathing

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decreased during KC. Changes may be due to heat stress. SaO2 decreased in second hour of KC by 7%. The irregular breathing was due in part to airway obstruction from flexed head and no nursing monitoring to be sure positioning was correct was conducted. KC effects had disappeared within 3 hours of KC’s cessation. Pretest-Posttest Quasi Exp., Negative Effect, PT, HR, RR, Brady, apnea, desats, temp, breathing pattern, residual effects. safetyF

Boju, S.L., Gopi Krishna, M., Uppala, R., Chodavarapu, P. & Chodavarapu, R. (2012). Short spell Kangaroo Mother Care and its differential physiological influence in subgroups of preterm babies. Journal of Tropical Pediatrics, 58(3):189-93. doi: 10.1093/tropej/fmr072. A quasi-experimental, pretest-posttest study of 86 preterm infants in India who got one hour of KC done because mothers said that 4-6 hours of KC was too much. KC was given when infants were 7.7 +/- 5.2 days old. One hour of KC created many physiologic changes: HR: in all infants, HR decreased by 3 bpm; in SGA decreased by 5 bpm; RR: in all infants decreased by 3 per minute; in females decreased by 6/min; SaO2 increased by 1.1% in all infants, increased by 2.1% in SGA, and increased by 1.5% in females; Axillary Temp Increased by 0.4F in all infants; increased by 0.6F in SGA, and by 0.3F in Females. Concluded that preterm infants benefit from one hour of KMC and that SGA and female preterms had different and greater responses than males and AGA infants. PT, Quasi-Exp pretest-posttest, HR, RR, Temp, SaO2, and 4-6 hours of KC was TOO LONG for mothers, 3rd world, duration of KC;

Bonner, K (Krista,) M. (2007). A case study comparing kangaroo care with conventional holding and the effects on heart rate, respiratory rate, oxygen saturations, and ventilator settings in the very low birthweight infant. Presentation at National Association of Neonatal Nurses’ 2nd Annual Research Summit, April 10-12, 2007 Scottsdale, AZ. Watch for this in Advances in Neonatal Care: Official Journal of NANN. Preterms, ventilated KC, descriptive, HR, RR, SaO2, swaddled holding (Not on charts yet)

Bonner, K. M. (2008). A case study of the effect of kangaroo care on physiologic parameters and ventilator settings in very low birth weight fraternal twins. Advances in Neonatal Care 8(2), 134-135. Case study of fraternal twin sisters on mechanical vents, born at 25 weeks ga, bw = 740 grams-one got KC, the other swaddled holding at 29 weeks postmenstrual age. HR, RR, axillary temp SaO2, and ventilator settings taken before, then every 15 minutes during 2 hours of KC or swaddled holding, and 15 minutes after KC/swaddled holding. This was repeated 4 times over a 2 week period. NO sig difference in temp between the twins but KC twin tended to have higher mean overall temp (99.6, SD=0.69) than swaddled (98.0SD 0.33). No differences in HR, SaO2, and vent settings trended downward with both types of holding. KC was not harmful to the VLBW infant. PT, Descriptive Case Study, Vent KC, micropreemie, VLBW, temp HR, RR, SaO2, swaddled holding, multiples NO differences

Bonner O, Beardsall K, Crilly N, Lasenby J (2017-Feb). ‘There were more wires than him’: the potential for wireless patient monitoring in neonatal intensive care. BMJ Innov. 3(1):12-18. doi: 10.1136/bmjinnov-2016-000145. The neonatal intensive care unit (NICU) can be one of the most stressful hospital environments. Alongside providing intensive clinical care, it is important that parents have the opportunity for regular physical contact with their babies because the neonatal period is critical for parent-child bonding. At present, monitoring technology in the NICU requires multiple wired sensors to track each baby’s vital signs. This study describes the experiences that parents and nurses have with the current monitoring methods, and reports on their responses to the concept of a wireless monitoring system. Semistructured interviews were conducted with six parents, each of whom had babies on the unit, and seven nurses who cared for those babies. The interviews initially focused on the participants’ experiences of the current wired system and then on their responses to the concept of a wireless system. The transcripts were analysed using a general inductive approach to identify relevant themes. Participants reported on physical and psychological barriers to parental care, the ways in which the current system obstructed the efficient delivery of clinical care and the perceived benefits and risks of a wireless system. The parents and nurses identified that the wires impeded baby-parent bonding; physically and psychologically. Parents wanted to do Kangaroo Care and often were not allowed to do so because of wires. While a wireless system was viewed as potentially enabling greater interaction, staff and parents highlighted potential concerns, including the size, weight and battery life of any new device. The many wires required to safely monitor babies within the NICU creates a negative environment for parents at a critical developmental period, in terms of physical and psychological interactions. Nurses also experience challenges with the existing system, which could negatively impact the clinical care delivery. Developing a wireless system could overcome these barriers, but there remain challenges in designing a device suitable for this unique environment. PT, Qualitative study, involvement of parents, closeness/separation. Not on charts 3-4-2017

Boo, N-Y (for Nem-Yun), & Jamli, F.M. (2007). Short duration of skin-to-skin contact: Effects on growth and breastfeeding. Journal of Paediatrics and Child Health, 43(12), 831-836. STABLE preterm infants were randomized into KC(n=64) who got 10.0+/- 5.6 days of one hour/day KC (wearing only diaper and head cap while semi-upright between breasts and for at least one hour per day) for a mean total duration of 11.3 +/-5.9 hours of KC) or to control (n= 62, no kc, stayed in incubator). KC was with mother or father. 8 KC infants received KC less than 50% of hospital stay because moms were too frightened to handle infant (n=3), unable to visit regularly (n=4), or afraid KC would prevent weight gain (n=1). They found KC improved head circumference growth.

PT, SCT, stable, 3rd world-Malaysia, paternal KC, duration of KC, head circumference NEED to finish THE Results Not on charts 11-13-2011

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Borck, M., & dos Santos, E.K. (2010). Third stage of the Kangaroo method converging investigative and care practices with families in outpatient care. *Rev Gaucha Enferm*, 31(4), 761-768. Qualitative study to assess how KC at home (3rd stage) with premature and LBW newborns is progressing. Six mothers and family members were observed and participated in semi-structured interviews. Results showed that there is a need to strengthen the role of the family when mother and newborn leave the hospital and communication among the multidisciplinary team, as well as rethinking criteria for discharge to home KC. PT, qualitative study, HOME KC/Community KC. Not on charts 9/19/2011.

Bosque, E.M., Brady, J.P., Alfonso, D.D., & Wahlberg, V. (1995). Physiologic measures of kangaroo versus incubator care in a tertiary level nursery. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 24(3), 219-228. Pretest in incubator-test in KC—posttest in incubator. All 8 infants got this 4 hrs/day, 6 days/ wk x 3 weeks for 18 data collection periods per infant. Infants served as own control. Reports that skin temperature was lower in KC than before or after (p<0.03). Control over insulation across the infant’s back was questioned even though manuscript reports control. State measured every 10 minutes using Anders and Parmeleee scale and showed no difference in apnea, bradycardia or lowest SaO2 between KC and incubator periods and there was lower % of total sleep, and lower Active Total % Sleep time was lower and more transitional sleep during KC(p<0.003), no differences in % or amount of Quiet Sleep. Bradycardia increased with gavage and bottle feedings and decreased frequency associated with breastfeeding independent of KC or incubator care. Sleep and temperature differences were statistically significant but were so slight they were not clinically significant. *Quasi-Experimental pretest-test-posttest design. Not an RCT. Preterm, Negative Effect., skin temp. HR, RR, SaO2 during KC and posttest, Quiet Sleep, Active Sleep, Total sleep time, Transitional Sleep, Apnea, Bradycardia*


Bouanene, I., Elmhaamdi, S., Sriha, A., Bouslah, A. & Soltani, M. (2010). Knowledge and practices of women in Monastir, Tunisia regarding breastfeeding. *East Mediterranean Health Journal*, 16(8), 879-885. No DOI. 354 women were assess for prevalence, exclusivity and duration of breastfeeding when attending child’s 6- month vaccination appointment. 94.4% initiated BF after birth but only 1.9% continued exclusive BF until 6 months. Exclusive Breastfeeding over 3 months was associated with Birth KC contact (OR=1.93; 95% CI. 1.06-3.69) (pg. 881). *PT, PT. Breastfeeding, exclusivity. Birth KC.*

Bouchez C. (2002). The magic of ‘kangaroo care’. *USA Today Health & Science 6/27/2002*. This is an interview with Dr. Karen Hendricks-Munoz, director of NICU at NY University Medical Center who reports that parents who feel a sense of depression and anxiety about birth of baby feel more connected when they do KC. Infants sleep better and deeper, grow faster, are more stable and go home sooner and that there is no evidence of increased risk of infection. *PT, review, interview, infection, stability, growth, sleep, maternal feelings, length of stay, Not on charts as of 6/6/09.*

Bouklydis, Z. (2011). Parent-infant skin-to-skin contact: parents’ views versus nurses’ views. *Acta Paediatrica*, 100(5), 638-640. DOI.10.1111/j.1651-2227.2011.02195.x. From Turku, FINLAND. This is a commentary on Blomqvist, Robertson & Nyqvist’s 2011 study of measurement of hr nurses record vs mothers record of daily amount of time infants spend in KC compared and who best documents the amount of time. Parents and nurses differed in the documentation of the actual number of times infants were in KC. Agreement between nurses and parents for KC duration and starting/termination times was 40%. Parents also noted more people who provided KC than did nurses. He believes the parent’s count might be more accurate because they were actually there holding the infant and sometimes were behind screens so nurses could not see. He says that videorecording (suggested by Blomqvist) is not needed to confirm accuracy, infant temperature and HR changes can be used as a criterion measure as could sensor indicating infant’s space and rhythmic movement on maternal chest. He quotes considerable literature on reliability of parental verbal or questionnaire report of infant’s behavioral, temperament, and documentation of 24 hour cycles of cry and sleep patterns (Salisbury A, Minard K et al., Audio recording of infant crying, Int J Beh Dev 2001. 25:458-465). Parental records are 50-85% in comparison with independent measure of the child’s behavior. He says that parental anxiety might decrease reliability in charting or that parental “alertness” might be heightened as some parents want to do everything possible and be more reliable in charting. Future study should control for parental mental health status, stress, depression, early attachment, sense of competence, self-esteem, and understanding of the rationale or purpose for charting. Parents volunteered and this could cause Hawthorne Effect. For this he recommends a collegial “reliability check” between nurses and parents who collaborate on the documentation. Also, one should question parents about how they felt about completing the charts: did they value it as a contribution to their infant’s care, see themselves collaborating with staff in care of infant, or was it an unnecessary chore or even an intrusion on their private time – he cites the Axelin study in which some parents wanted to do facilitative tucking to reduce pain, some did not, and some were ambivalent about doing so (Axelin A, Lehtinen L, Pelander T, Salantera, S.-I. (2010). Mothers’ different styles of involvement in preterm infant pain care. *J Obstet Gynecol Neonatal Nurs*, 39, 415-424 doi: 10.1111/j.1552-6909.2010.01150.x . ). *Commentary, attitudes about doing interventions for PT infants (Not on charts yet).*
Bouloumie E. (2008). The kindness of skin-to-skin contact during labor and delivery. *Sotus Pediatrue Paericultura, 245, 36-38. Available from ehouloumie@bibi-Paris.com.* Study of 47 questionnaires that were returned by 17 moms and staff of Full term birth KC infants from birth (and 40% of these got KC both day and night for the first 3 nights of life) and 30 from infants who got routine care before initiation of birth KC and postpartum KC. No difference in groups in birth weight loss, nor in recovery of birth weight rate. Mothers felt very much pleasure with KC and more confidence. Staff think that KC is okay if mother is very vigilant and they reported that infants were calm during KC. Better cardiorespiratory stability in KC than when not in KC. FT, Birth KC, early KC, weight loss, mat feelings, HR-RR stability, calmed infants, staff feelings, postpartum KC, quasi experiment.

Boundy, E.O. Dastjerdi, R., Spiegelman, D. Fawzi, W.W., Missmer,S.A., Lieberman, E., Sandhya Kajeepeta, S., Wall,S., Chan.G.J. (2016-Jan). Kangaroo Mother Care and Neonatal Outcomes: A Meta-analysis. Pediatrics 137 (1), e20152238, doi:10.1542/peds.2015-2238. Kangaroo mother care (KMC) is an intervention aimed at improving outcomes abstract among preterm and low birth weight newborns. A systematic review and meta-analysis estimating the association between KMC and neonatal outcomes was conducted after searching the following data sources: PubMed, Embase, Web of Science, Scopus, African Index Medicus (AIM), Latin American and Caribbean Health Sciences Information System (LILACS), Index Medicus for the Eastern Mediterranean Region (IMEMR), Index Medicus for the South-East Asian Region (IMSEAR), and Western Pacific Region Index Medicus (WPRIM). They included randomized trials and observational studies through April 2014 examining the relationship between KC and neonatal outcomes among infants of any birth weight or gestational age. Studies <10 participants, lack of a comparison group without KMC, and those not reporting a quantitative association were excluded. Two independent reviewers extracted data on study design, setting, participant characteristics, KMC intervention, outcomes, study quality, and relative risk (RR) or mean difference measures. 1035 studies were screened, 124 met inclusion criteria. Among newborns who survived to receive KMC, KMC was associated with 36% lower mortality among LBW newborns compared with conventional care (RR=0.64, 95%CI 0.46-0.89). KMC decreased risk of neonatal sepsis (RR=0.53, 94%CI=0.34-0.83), hypothermia (RR=0.22, 95%CI= 0.12-0.41), hypoglycemia (RR= 0.12, 95%CI = 0.05-0.32, hospital readmission (RR=0.42, 95%CI=0.23-0.76) and increased EXCLUSIVE BF (RR=1.50; 95%CI=1.26-1.76). Newborns receiving KMC had lower mean respiratory rate and pain measures and higher oxygen saturation, temperature, and head circumference growth. Ability to assess dose-response relationship was limited by lack of data available on KMC duration practiced. Interventions to scale up KMC implementation are warranted. Most of meta-analysis is based on developing nation data. This meta-analysis did not include randomized controlled trials, including only CORRELATIONAL studies showing an association. This is a weakness, but note the data base they had in 2015 (1035 studies) to conduct their study. PT, Meta-analysis, RR, temperature, infection, readmission, EXCLUSIVE BF, hypoglycemia, head circumference, SaO2, mortality, pain. See also PNP Daily News for media coverage of this article. See also Chan 2016 article

Bouza, H. (2009). The impact of pain in the immature brain. Journal Maternal Fetal and Neonatal Medicine, 22, 722-732. Clinical review that says that acute episodic pain may cause early neurologic injury, repeated and prolonged exposure to pain may alter subsequent psychokinetic development, as well as affect long term neurodevelopmental, behavioral and social outcomes. Thus, use of pharmacologic and non-pharmacologic interventions are recommended. IS this a KC article? Get THIS, May be KC recommendation. PT, FT, Pain

Bowden VR, Greenberg CS, & Donaldson NE. (2000). Developmental care of the newborn. Online Journal of Clinical Innovations or CINAHL Information Systems (Glendale, CA). 3, issue 7, 77 pages with 286 ref. Available online at http://www.cinahl.com or from CinaHL Information Systems, 1509 Wilson Terrace, Glendale, CA 91206. The 14 pages that appear online do not include all references (only 27 pages are in the online version). In the full text, in essence, KC is part of development care for all NEWBORNs. This review starts with cost of NIDCAP program over 3 years was $440,000 but saved 2.19 million in hospital charges (129,000 per infant) and excluded physician charges. Lower cost attributed to earlier discharge from NICU to transitional unit and infant’s lower intensity of care needs. 60 VLBW infants cared for in NIDCAP unit had average cost savings at time of discharge of $4,340 per infant (page 2) when discharge occurred within the first 35 days of life. Page 2 relates NIDCAP results. Behaviors indicating less stress and signs of stability are in table on page 8. On page 10 it identifies all the resources needed to implement NIDCAP (developmental staff positions, initial and ongoing NIDCAP training, leadership involvement, multidisciplinary team involvement, Reflective process. Then it reviews the WEE CARE program of developmental care on page 11, and then the FIRST program on page 11, and then on page 12 it lists Kangaroo Care as “data-based intervention” for infant handling aspect of developmental care with full discussion of KC on page 20-24. Page 20 states: “However, the intervention, the protocol for implementation, and the documented benefits to the infant have still not been clearly defined” (this was published in 2000). “An an intervention, KC has different description depending on the location of the practice. In international literature KC is most often termed KMC or kangaroo mother method and has three components: the Kangaroo position (skin to skin, between breasts for up to 24 hrs/day), kangaroo feeding (limited and exclusive breastfeeding) and Kangaroo discharge (early discharge when infant has overcome all major adaptations to extrauterine life, and continuation of Kangaroo practices in the home setting... In western countries, KC or skin to skin contact is associated solely with placing the preterm diapered infant upright, vertical, chest to chest with parent. Such contact may last from 60 minutes to several hours.” “Two seminal articles exist which discuss KC as an intervention to promote neurobehavioral organization of the infant (and it cites Ludington-Hoe and Swinth, 1996 and Anderson, 1991). Page 21-22 lists the problems with KC studies: “...critical evaluation of individual studies reveals that many methodological problems exist KCBib 2018
in this body of research, and that continued investigation is warranted. The major methodological problems can be attributed to 1) lack of consistency in KC implementation protocols (amount of time in KC and not enough time to determine if negative consequences exists. 2) feeding the infant during KC occurs in some studies and not in others and not accounted for as a controlled variable. 3) Use of headcaps is inconsistent among investigators. 4) Only non-ventilated, medically stable infants have been tested. 5) some studies included a teaching component in which parents are taught to recognize and respond to infant cues. 6) small sample size, 7) lack of control groups, 8) lack of randomization, and 9) short testing periods (and for this one is cites only one study, Bosque’s 1995 and she practically tethered moms to babies for 4 hours per day for every day per week for 4 weeks). Page 22 says that more ventilated KC studies are needed as are studies with ELBW and phototherapy infants. The practice of KC would benefit from the development of an interdisciplinary and internationally developed protocol of care, with criteria and contraindications for infant selection, nursing care monitoring and documentation, the procedure for the entire KC episode with assessments before and after implementation of KC, and minimal standards for parent education and staff development.” (pg. 22-23). On PAGe 36 it has another section on KC under Tactile Stimulation and says “KC is another form of tactile stimulation that has produced many beneficial outcomes for the infant and parent caregiver (See Table 4). This intervention was discussed earlier.” Pg. 36. Table 4 is on page 21 and is entitled “Benefits Associated with Kangaroo Care and the categories of benefits are 1) Autonomic stability and improvement in basic physiologic functions, 2) motor regulation, 3) state regulation, 4) parental attentiveness and interactions with the infant, 5) self regulatory abilities, and 6) others (i.e. decreased maternal stress, psychological healing of mother, decreased pain, decrease hospital stay, better weight gain, better breastfeeding outcomes). Review, Preterm, Developmental Care, stress signs, stability signs, needed research, vent KC, phototherapy KC. Limitations of studies, NIDCAP vs. other developmental programs.

Boyce SC McDougall E, Silverman JM, Atmavilas Y, Dhar D, Hay K, Raj A.(2017-Nov). Associations of intimate partner violence with postnatal health practices in Bihar, India. BMC Pregnancy Childbirth.17(1): 398. doi: 10.1186/s12884-017-1577-0. Reducing neonatal mortality is a global priority, and improvements in postnatal health (PNH) practices in India are needed to do so. Intimate partner violence (IPV) may be associated with PNH practices, but little research has assessed this relationship. A cross-sectional analysis of data from a representative household sample of mothers of neonates 0-11 months old in Bihar, India was conducted. The relationship between lifetime IPV experience (physical violence only, sexual violence only, or both physical and sexual violence) and PNH practices [clean cord care, kangaroo mother care, early initiation of breastfeeding (EIBF), delayed bathing, receipt of a postnatal visit, exclusive breastfeeding, and current post-partum contraceptive use] was assessed using multivariate logistic regression. Over 45% of the 10,469 mothers experienced IPV in their lifetime. The three types of IPV experiences differentially related to PNH practices. Adjusted analyses revealed that compared to those who had never experienced IPV, women who experienced physical violence only (29.0%) had higher odds of skin-to-skin care (AOR = 1.67, 95% CI = 1.42, 1.96) and delayed bathing (AOR = 1.19, 95% CI = 1.03, 1.37), but lower odds of EIBF (AOR = 0.81, 95% CI = 0.70, 0.93) and exclusive breastfeeding (AOR = 0.83, 95% CI = 0.71, 0.96). Mothers who had experienced sexual violence only (2.3%) had lower odds of practicing EIBF (AOR = 0.52, 95% CI = 0.36, 0.76). Those who had both experiences of physical and sexual violence (14.0%) had increased odds of postpartum modern contraceptive use (AOR = 1.35, 95% CI = 1.07, 1.71) and lower odds of delayed bathing (AOR = 0.76, 95% CI = 0.63, 0.91). The results of this study found differing patterns of vulnerability to poor PNH practices depending on the type of IPV experienced. Efforts to increase access to health services for women experiencing IPV and to integrate IPV intervention into such service may increase PNH practices, and as a result, reduce neonatal mortality. PT, FT, KC as a postnatal health practice, maternal feelings/issues.

Boyd, M.M. (2017-June). Implementing Skin-to-Skin Contact for Cesarean Birth. Association of Operating Room Nurses J.105(6):579-592. doi: 10.1016/j.aorn.2017.04.003. Skin-to-skin (STS) contact in the OR facilitates the development of mothering behaviors, breastfeeding success, and newborn adaptation to extraterrestrial life. A team at my institution performed a quality improvement project to implement a standard of care for STS contact in the OR during and after cesarean birth. Thirty-seven of 50 mother-infant dyads experienced STS contact in the OR or in the postanesthesia care unit. Twenty-five mothers and newborns who experienced STS contact did so on the OR bed. The median time newborns spent engaged in STS contact with their mothers was 42 minutes and 30 seconds. Developing and using a standard of care to implement this evidence-based practice facilitated acceptance of this intervention. Obstacles that staff members encountered included maternal or neonatal instability, equipment problems, and nurse staffing issues. Staff members addressed these obstacles through creative problem-solving FT, QIP, cesarean KC, birth kc, barriers. Not on charts 6-1-2017. *

Brady K, Bulbitt D, Chiarelli C. (2014, July). An Interprofessional Quality Improvement Project to Implement Maternal/Infant Skin-to-Skin Contact During Cesarean Delivery. Journal of Obstetric, Gynecologic, and Neonatal Nursing.43(4), 488-496. doi: 10.1111/1552-6909.12469. Immediate skin-to-skin contact between a mother and her newborn has been associated with successful breastfeeding outcomes. One of the challenges nurses face in promoting skin-to-skin occurs in the operating room during a cesarean delivery. Utilizing an interprofessional approach for this quality improvement project, we successfully implemented skin-to-
skin contact for all eligible mother/infant couples after cesarean birth. Exclusive breastfeeding rates for these women increased as a result. Descriptive evaluative, quality improvement project, cesarean, c/s, breastfeeding, full term. Not on charts 7/8/2014

Braga, D.F., Machado, M.M.T., & Bosi, M.L.M. (2008). Achieving EXCLUSIVE BREASTFEEDING of premature babies: The perceptions nd experience of 8 women from public health services (Portuguese). Revista De Nutricao-Basial Journal of Nutrition, 21(3), 10.1590/1415-52732008000300004. This article is also on www.scielo.com and is an article on kc’s effectiveness as helping breastfeeding and mothers related that moms must really have the time to do KC because the nurses should never ignore KC on the mothers. PT, qualitative phenomenology, BF, Exclusive BF, maternal feelings/perceptions.

Branam, L., Lee, J.W., Moore, E., Montgomery, S., Neish, C., Bahjri, K., & Melcher, C.L. (2010). Effect of early skin-to-skin mother-infant contact during first 3 hours following birth on exclusive breast feeding during the maternity hospital stay. Journal of Human Lactation, 26(2), 130-137. doi: 10.1177/0898344409355779. 19 hospitals participated in this prospective descriptive study of breastfeeding mong 21,842 patients delivering 37-40 week term singleton infant. Maternal demographics and prenatal feeding method intention and very early KC (in first 3 hours of birth) were correlated with exclusivity of breastfeeding during maternal hospitalization. Exclusive breast feeding was higher in KC moms than in moms who got more rather than less KC in first three hours: If mom got 1-15 mins KC Odds Ratio (OR) was 1.376; 16-30 mins (OR=1.665), 31-59 mins KC (OR= 2.357); and > 1 hour (OR = 3.145). So, there is a dose response relationship between duration of very early KC and breast feeding exclusivity. FT, population study, dose response, BF, exclusivity, implementation, quality-improvement project. Purposed to have SaO2 data too. Authors are certified Kangaroo Caregivers by USIKC. See Romano 2010 and 2011 reviews of this article because she states that data is consistent and compelling and that duration of skin-to-skin at birth is key to EXCLUSIVITY. The Loma Linda University Perinatal Services Network supported the study and has produced flyers, handouts, and posters for SOFT that you can access from http://bit.ly/bo8Klq. (I tried to access this 3/22/2013 and this website was no longer available).

Branger, B, Savagner C, Roze JC, Winer N, & Pediatres des Maternites des Pays-de-la-Loire. (2007). Eleven cases of early neonatal sudden death or near death of full term and healthy neonates in maternity wards. Journal de Gynecologie, Obstetrique et Biologie de la Reprod (Paris). 38(7-Nov): 671-679. Descriptive report that over 5.5 years there were 7 deaths and 11 apparent life-threatening events (1 life threatening event/26,000 births; one death/40,000 births). Five times in 8 ‘well-known’ cases the newborn was in maternal KC at the time, one other case the infant was in maternal arms and the last one in the delivery room far from mother at 3 minutes of life. In two deaths (of all the deaths, not just the KC deaths) the infants were prone on their own bellies. One baby was declared dead in maternity, ten transferred to NICU, and 6 died on postpartum. They don’t know if the frequency of these events is increasing or not or if it is related to birth KC, but have undertaken a province wide survey. On pages 337 and 338 it states that “Skin-to-skin has many benefits, ameliorates maternal-infant difficulties, and benefits the newborn by aiding suckling, prolonging breastfeeding, and improving neurological outcomes. So, skin to skin should not be questioned because it is a positive practice for infants. Nonetheless, if the organization’s condition and surveillance are not adequate, or if the health of the mother or infant are not optimal, skin-to-skin may be contra-indicated. Better surveillance is needed.” so, this is a CONTRAINDICATION guideline. They provide a sample of the questionnaire that could be used to determine region wide the incidence of ALTEs and early deaths in this part of France. Descriptive, Full term, mortality, negative outcome. Life threatening event, Birth KC, Bradycardia, apnea, support KC, questionnaire for survey, guidelines.

Breast crawl. See UNICEF, 2007 for this reference to the manuscript and to the video. Video is at www.breastcrawl.com FT, birth KC, breastcrawl


Brenneman, A., & Price, K.A. (2014). Couplet care: The magic within. Journal of Obstetric, Gynecologic and Neonatal Nursing, 43 (Suppl 1), S28. Doi:10.1111/1552-6909.12363 This article is from Grant Medical Center in Columbus, OHIO. It is a descriptive evaluative report of a quality improvement project to enhance the delivery experience and provide excellent outcomes for couplets. The old way of doing things was that vaginally born healthy term infants received birth kc and then were taken to the nursery for observation for hours and in the nursery at night. They did literature review and then had meetings about barriers, then identified resources needed to make a change, wrote up a patient pamphlet about couplet care and rooming-in, including the infant staying with the mother at night. They gave the pamphlets to all mothers and initiated 247 couplet care. The outcomes have only been positive. Couplet care (which includes postpartum kangaroo care at this site even though it is not mentioned in this abstract’s publication) has been successful and an increase in maternal satisfaction, increased maternal confidence in care of newborn, increased in staff satisfaction, and a decrease in transiety tachypnea of the newborn and decreased in number of infants being admitted to NICU for neonatal abstinence syndrome have been documented. FT, descriptive evaluation study, quality improvement project, implementation, postpartum KC, 24/7 rooming-in

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even at night, maternal satisfaction, maternal confidence, staff satisfaction, transient tachypnea of the newborn, neonatal abstinence syndrome. Not on charts 6/17/2014

Brett, J., Staniszewska, S., Newburn, M., Jones, N. & Taylor, L. (2011). A systematic mapping review of effective interventions for communicating with, supporting and providing information to parents of preterm infants. BMJ Open, 1(1), e000023. A systematic review of interventions to improve communication with parents of preterm infants. The review of the 72 studies showed that parents felt supported through individualized developmental and behavioral care programmes, through being taught behavioral assessment scales, and through breastfeeding, kangaroo-care, and baby massage programmes. On page 5 it reports that Randomized controlled trial evidence suggests that KC reduces maternal anxiety, gives mother a greater sense of competence and greater sensitivity with their infants (cites Tessier et al., 1998) and that music with KC significantly lowers maternal anxiety (cites Lai & chen, 2006). On same page it says Feldman et al., study (Feldman, Eidelman, Sirotia, et al., 2002) that KC produced better levels of maternal infant interaction, more touch, better adaptation to infant cues and better perception of the infant, and less maternal depression at 37 wks. Then it credits LeGault and Goulet (1995) finding that mothers preferred the kangaroo method because the baby is close to them and touch is important to mothers because it induced feelings of well-being and fulfillment in parents. Alfonso et al. (1993) reported that KHelped parents get to know their infant, increased their confidence and made them feel that their baby needed them, and study showed that parent mood was improved and that they perceived their infant differently and that they felt a strong sense of identifying with their infant (Gale, Franck, Lund, 1993. Review, PT, massage, NIDCAP, maternal feelings, maternal behaviors, maternal anxiety, maternal perception of infant, music, communication.

Briere, C.F., Lucas, R, McGrath, J.M., Lussier,M., & Brownell, E. (2015). Establishing breastfeeding with the late preterm infants in the NICU. Journal of Obstetric, Gynecologic, and Neonatal Nursing. 44(1),102-113. DOI:10.1111/1552-6909.12536 This was a review of literature found on Pub Med and CINAHL from 2009-2014 related to challenges late preterm infants face with breastfeeding and to provide an overview of current policy statements and practice guidelines that support breastfeeding for late preterm infants. Purpose was to describe challenges that late preterm infants (LPs) face with breastfeeding and to provide an overview of current policy statements and practice guidelines that support breastfeeding for LPs. In addition, we describe current breastfeeding research related to the LPI and combine this research with policies and practice guidelines to provide evidence-based recommendations to guide practice and future research in the NICU. Late preterms have greater challenges than full term infants due to neurologic immaturity, weak suck that my lead to not transferring sufficient milk volume. Maternal challenges are insufficient milk supply, something that might be compromised by proximity of the mother and infant for frequent breastfeeding and skin to skin contact. There is also support for skin to skin contact between mother and infant, regardless of when breastfeeding is initiated. Nurses play an important role in encouraging early and frequent maternal-infant contact. PT, Review of lit, Breastfeeding, separation, guidelines, staff issues

Briere, C.E., McGrath, J., Cong, X., & Cusson, R. (2014- May). An Integrative Review of Factors that Influence Breastfeeding Duration for Premature Infants after NICU Hospitalization. Journal of Obstetric, Gynecologic, and Neonatal Nursing. 43(3):272-81. doi: 10.1111/1552-6909.12297. The objective was to determine what factors affect breastfeeding duration after discharge home from the neonatal intensive care unit (NICU) for high-risk mothers and their premature infants. Using exclusion and inclusion criteria, 292 articles were initially assessed for relevance to the research question through abstract review. Further screening resulted in full review of 52 articles. Reference list searching added an additional six articles. Finally, in-depth review of these 58 articles resulted in 24 studies that fully met inclusion and exclusion criteria. Studies were reviewed for information related to factors associated with breastfeeding duration for high-risk mothers and preterm infants after NICU discharge home. Studies were categorized into five themes, including NICU factors, feeding and soothing methods, maternal characteristics, maternal experiences, and support programs. Most significant factors affecting duration included exposure to kangaroo mother care, prenatal education, and quantity of maternal breast milk supply during the first week after discharge. Breastfeeding also was affected by maternal breastfeeding knowledge and perception of providing appropriate volumes. Mothers face many challenges breastfeeding their premature infants after NICU discharge. Ideally, all mothers need to receive support after NICU discharge, and the transition to home can be challenging even if breastfeeding is well established. However, NICU professionals are in a perfect position to provide guidance to families so they are able to anticipate and effectively resolve lactation challenges at home. Review, PT, breastfeeding, discharge, duration, neonatal intensive care unit, preterm infants, transition to home Not on charts 5/7/2014

Brimdyr, K., Cadwell1,K., Stevens,J., Takahashi, S., (2017-Nov). An implementation algorithm to improve skin-to-skin practice in the first hour after birth. Maternal and Child Nutrition, e12571, 15 pages DOI: 10.1111/mcn.12571. Evidence supporting the practice of skin-to-skin contact and breastfeeding soon after birth points to physiologic, social, and psychological benefits for both mother and baby. The 2009 revision of Step 4 of the WHO/UNICEF “Ten Steps to Successful Breastfeeding” elaborated on the practice of skin-to-skin contact between the mother and her newly born baby indicating that the practice should be “immediate” and “without separation” unless documented medically justifiable reasons for delayed contact or interruption exist. While in immediate, continuous, uninterrupted skin-to-skin contact with mother in the first hour after birth, babies progress through 9 instinctive, complex, distinct, and observable stages including self-attachment and suckling. However, the most recent Cochrane review of early skin-to-skin contact cites inconsistencies in the practice; the authors found “inadequate evidence with respect to details … such as timing of initiation and dose.” This paper introduces a novel algorithm to analyse the practice of skin to skin in the first hour using two data sets KCBib 2018
and suggests opportunities for practice improvement. The algorithm considers the mother’s Robson criteria, skin-to-skin experience, and Widström’s 9 Stages. Using data from vaginal births in Japan and caesarean births in Australia, the algorithm utilizes data in a new way to highlight challenges to best practice. The use of a tool to analyse the implementation of skin-to-skin care in the first hour after birth illuminates the successes, barriers, and opportunities for improvement to achieving the standard of care for babies. Future application should involve more diverse facilities and Robson’s classifications.

Brimdyr K, Cadwell K, Widstrom AM, Svensson K, Neumann M, Hart EA, Harrington S, & Phillips R (2015-Dec) The Association Between Common Labor Drugs and Sucking When Skin-to-Skin During the First Hour After Birth. Birth, 42(4):319-28. doi: 10.1111/birt.12186 Intrapartum drugs, including fentanyl administered via epidural and synthetic oxytocin, have been previously studied in relation to neonatal outcomes, especially breastfeeding, with conflicting results. We examined the normal neonatal behavior of suckling within the first hour after a vaginal birth while in skin-to-skin contact with mother in relation to these commonly used drugs. Suckling in the first hour after birth has been shown in other studies to increase desirable breastfeeding outcomes. Prospective comparative design of 63 low-risk mothers self-selected to labor with intrapartum analgesia/anaesthesia or not. Video recordings of infants during the first hour after birth while being held skin-to-skin with their mother were coded and analyzed to ascertain whether or not they achieved Stage 8 (suckling) of Widström’s 9 Stages of newborn behavior during the first hour after birth. Video recordings confirmed the 9 stages outlined by Widstrom et al., 2011. A strong inverse correlation was found between the amount and duration of exposure to epidural fentanyl and the amount of synthetic oxytocin against the likelihood of achieving suckling during the first hour after a vaginal birth. Results suggest that intrapartum exposure to the drugs fentanyl and synthetic oxytocin significantly decreased the likelihood of the baby suckling while skin-to-skin with its mother during the first hour after birth. FT, descriptive comparative study, BF, newborn behaviors observations, Birth KC, Oxytocin, BF, sleep, 9 stages after birth. doi: 10.1891/1058-4671-42(4):685-92. doi: 10.1542/peds.2012-2556. To investigate the effect of Baby-Friendly Hospital Initiative (BFHI) accreditation and hospital care practices on breastfeeding rates at 1 and 4 months. All women who birthed in Queensland, Australia, from February 1 to May 31, 2010, received a survey 4 months postpartum. Maternal, infant, and hospital characteristics; pregnancy and birth complications; and infant feeding outcomes were measured. Sample size was 6752 women. Breastfeeding initiation rates were high (96%) and similar in BFHI-accredited and nonaccredited hospitals. After adjustment for significant maternal, infant, clinical, and hospital variables, women who birthed in BFHI-accredited hospitals had significantly lower odds of breastfeeding at 1 month (adjusted odds ratio 0.72, 95% confidence interval 0.58-0.90) than those who birthed in non-BFHI-accredited hospitals. BFHI accreditation did not affect the odds of breastfeeding at 4 months or EXCLUSIVE breastfeeding at 1 or 4 months. Four in-hospital practices (early skin-to-skin contact, attempted breastfeeding within the first hour, rooming-in, and no in-hospital supplementation) were experienced by 70% to 80% of mothers.

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with 50.3% experiencing all 4. Women who experienced all 4 hospital practices had higher odds of breastfeeding at 1 month (adjusted odds ratio 2.20, 95% confidence interval 1.78-2.71) and 4 months (adjusted odds ratio 2.93, 95% confidence interval 2.40-3.60) than women who experienced fewer than 4. When breastfeeding initiation rates are high and evidence-based practices that support breastfeeding are common within the hospital environment, BFHI accreditation per se has little effect on both exclusive or any breastfeeding rates. FT, descriptive comparison, Exclusive BF, BF at one month, 4months.

Broughton, E.L. Gomez, I., Sanchez, N. & Vendell, C. (2013, Sept). The cost-savings of implementing Kangaroo Mother Care in Nicaragua. Pan American Review de Salud Publica, 34(3), 176-182. The costs of 46 randomly selected NICU infants before KC started were compared to costs of 52 preterm infants in NICU after KC started in Sept. 2010. Infant weight, medication use, formula consumption, incubator use, hospitalization for 6 months before and after KC data were collected. Data were taken from accounting records of the trained implementation staff and from health ministry formularies. Neonates after implementation of KC had lower lengths of hospitalization by 4.64 days (p=0.017) and 71% were EXCLUSIVELY breastfed (p<0.001). The intervention cost US$23,113, but the money saved with shorter hospitalization, elimination of incubator use, and lower antibiotic and infant formula costs made up for this expense in 1-2 months. Extending KMC to 12 other facilities in Nicaragua is projected to save US$166,000 based on referral hospital incubator use estimates, or US $233,000 after one year based on more conservative incubator use estimate. Authors concluded that “Treating preterm and Low Birth weight infants with KMC implemented as a quality improvement program saves money within a short period even without considering the beneficial health effects of KMC. Implementation in more facilities is strongly recommended. KC is a low cost intervention. PT, length of stay, incubator use, quality improvement projects, recommendations. Not on charts, 12/24/2013.

Brown, L.D., & Heermann, J.A. (1997). The effect of developmental care on preterm infant outcome. Applied Nursing Res, 10(4), 190-197. On pg. 193 they identify that they encouraged KC as soon as possible on the timest of infants as part of their intervention (and they have a picture of VENT KC on page 196). 25 infants <1500 grm given NIDCAP and compared to RETROSPECTIVE sample. Treatment grp had fewer and less severe IVH, fewer days of ventilation, shorter hospitalization, greater wt gain. Retrospective comparison, IVH, Days of Vent, LOS, WGT, VENT KC, PT.

Brown, P. A., Kaiser, K. L., & Nailon, R. E. (2014- Sept/Oct). Integrating Quality Improvement and Translational Research Models to Increase Exclusive Breastfeeding. Journal of Obstetric, Gynecologic, & Neonatal Nursing, 43(5), 545-553. doi: 10.1111/j.1552-6909.2012.12492. Exclusive breastfeeding (EBF), a prenatal core measure, is associated with a longer duration of breastfeeding. The purpose of this quality improvement project was to increase the percent of healthy term singleton newborns who were exclusively breastfed at an academic medical center in the Midwest. Implementation of skin-to-skin contact between mother and newborn immediately following birth resulted in an increase in the percent of healthy term singleton newborns who were EBF from 55% to 64%. FT, Quality Improvement Project, implementation, BF, Exclusive BF, Birth KC. This might be cesarean KC too, get full article.

Brown, T., & Redmon, M. (2012). Supporting breastfeeding in the hospital: a better start. Journal Of Obstetric, Gynecologic and Neonatal Nursing, 41(Suppl): S51. doi: 10.1111/j.1552-6909.2012.0360.x. Report of a quality improvement project to meet the Joint Commission’s objective PC-05 which is exclusive breast milk feeding during an infant’s entire hospital stay. Goal was to increase rates of breast milk feeding during hospital stay and rates of infants who were exclusively breast milk fed at discharge by placing infants skin to skin during the immediate post delivery period and encouraging early pumping for moms whose infants were not breastfeeding well or were unable to nurse. All breastfeeding infants were placed in Birth KC within the first hour and allowed to self-attach to the breast for the first feeding. This increased success of breastfeeding (initiation) by 80%. They collaborated with a local pharmacy to provide easy and competitively priced breast pump rentals and lactation supplies, and educated staff on importance of supporting breastfeeding. “Patients are excited about skin to skin process and early support and intervention.” (pg. S51). FT, Birth KC, quality improvement project, Joint Commission PC-05, BF, education. Not on Charts 1-1-2013.


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Skin-to-skin contact shows benefits in the relationship developed between a mother and her premature infant. In the skin-to-skin session, fact to face exchanges are impossible in vertical infant positioning. We therefore undertook an observational, prospective, single-center study using kangaroo "supported diagonal flexion (SDF) positioning. The first purpose was to evaluate the safety of the kangaroo SDF positioning compared to the usual vertical positioning. The second was to evaluate the communication between mother and infant in SDF positioning and compare it to communication in vertical position. The diagonal positioning was safe. More communication was observed with the diagonal flexed position than the vertical. PT, descriptive observational and comparative study, communication/language development, safety, position, maternal talking to infant. Not on charts 9/15/2016; new to biblio study.

Buil A, Carchon I, Apter G, Laborne FX, Granier M, & Devouche E. (2016-July). Kangaroo supported diagonal flexion positioning: New insights into skin-to-skin contact for communication between mothers and very preterm infants. Archives of Pediatric. 4. pii: S0929-693X(16)30256-1. doi: 10.1016/j.arcped.2016.04.023. [Epub ahead of print]. Skin-to-skin contact shows benefits in the relationship developed between a mother and her premature infant. In the skin-to-skin session, face-to-face exchanges are impossible in vertical infant positioning. We therefore undertook an observational, prospective, single-center study using kangaroo "supported diagonal flexion" (SDF) positioning. The first aim was to evaluate the safety of kangaroo SDF positioning compared to the usual vertical positioning. The second aim was to evaluate SDF positioning on early communication between the mother and her infant and to improve their well-being. Fifteen mothers and their very premature infants (birth 26<32 weeks’ gestation) were assigned to one of the two kangaroo positioning modes, either the current vertical positioning (n=7) or SDF positioning (n=8). Physiological variables and critical events were recorded before, during, and after ten successive skin-to-skin contact sessions. The first and last sessions were video taping to allow later behavioral measurements. Mothers’ risk for depression and feelings about the way they experienced communication with their infant were assessed through questionnaires. In terms of the infant's physiology, no negative effects were associated with SDF positioning in comparison with the usual vertical positioning. SDF positioning led to fewer disorganized gestures, negative vocalizations, and drowsiness, in favor of more deep sleep. SDF led to more mother-infant eye-to-eye contact as well as maternal vocalizations, smiles, and caressing, although these differences did not reach significance. The score for the risk of postnatal depression decreased significantly between the first and the last session in the SDF group, whereas it did not change in the vertical positioning group. These results support the idea that the kangaroo SDF positioning technique is physiologically safe, has obvious immediate benefits on mothers' infant-directed communicative behaviors, and respects the baby's naturally flexed and asymmetrical tonic neck posture. It is an innovative, inexpensive, easy-to-use technique in daily practice, by all healthcare professionals working in a neonatal intensive care unit. These data suggest that the current kangaroo positioning technique could be improved. More studies are needed to confirm the benefits and safety of the kangaroo SDF positioning in larger groups of preterm infants. PT, quasi-experimental of Vertical vs. Supported Diagonal Flexion position. Sleep, activity, vocalizations, states, maternal behaviors, PP depression. Not on charts 7-12-16, new to biblio study

Buil A¹, Renault N², Boulonnais É², Apter G¹, Devouche E¹. (2017-Nov/Dec). [An innovative position during skin-to-skin contact in neonatology]. Sommied Pediatrie Puéric. 38(299):36-39. doi: 10.1016/j.spp.2017.09.008. [Article in French, abstract in English]. Skin-to-skin is, by its very nature, the only relational care entirely devoted to the parent-baby relationship, from the infant's time in neonatal intensive care. However, current practice is unsuited to visual and tactile exchange. A simple change to the baby's positioning helps to improve the quality of the immediate interaction between the infant and the mother, benefiting the development of the baby and parenthood. PT, clinical article, positioning, dev. Not on charts 3-25-2018.

Bulfone, G., Nazzi, E., & Tenore, A. (2011). Kangaroo Mother Care and conventional care: A review of the literature. Professions Infermieristische, 64(2), 73-82 (ITALIAN). An effective and efficient human care model is Kangaroo Mother Care. Literature review conducted to compare short and long term outcomes of KMC compared to conventional (incubator) care. Short term outcomes were HR, RR, SaO2, tCpO2, body temp, sleep wake cycles, stress and pain; Long term outcomes were mortality, somatic-psychomotor and cognitive development, infections, length of stay. 19 of 80 studies looked at were reviewed and showed that KMC reduces pain, infections, LOS, favors breastfeeding, and results in earlier and better cognitive and motor development. No differences in body temperature were found and data on HR, RR, and oxygenation are so contradictory from one study to the next that comparison between KC and incubator was not completed. PT, FT, Review of Lit, separation, sleep cycles, HR, RR, SaO2 and tCpO2, Temp, stress, pain, long term outcomes, short term outcomes, length of stay, mortality, dev, infections, BF. Not on charts 8/19/2011.


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Burke-Aaronson, A.C. (2015-March). Skin-To-Skin Care and Breastfeeding in the Perioperative Suite. MCN, American Journal of Maternal Child Nursing, 40(2), 105–109. doi: 10.1097/NMC.0000000000000113. Current trends are moving toward immediate skin-to-skin care after birth of a newborn. STSC is highly beneficial, both physiologically and emotionally, to the mother and the baby. Strategies and considerations for initiating skin-to-skin care in the perioperative suite immediately after cesarean birth, such as thermoregulation of the baby in the operative suite, equipment, baby and family positioning, and maternal monitoring, are presented. Initiating skin-to-skin care as soon as possible after birth is recommended because SSC increases BF intensity and duration.

Clinical report, FT, Birth KC, cesarean, implementation

Burkhammer MD, Anderson GC, & Chiu S-H. (2004). Grief, anxiety, stillbirth, and perinatal problems: Healing with Kangaroo Care. J Obstetric, Gynecologic, & Neonatal Nursing, 33(6), 774-782. No doi. Case study of one mother with history of stillbirth who had anxiety and BF difficulties with term newborn. When she needed BF, she cried, had memories of stillbirth baby, then relaxed. Infant moved unaided to breast, self-attached, and had successful BF. Infant breathing pattern became more regular in KC. She learned to BF on cue, protecting her baby’s sleep-wake cycle and contributing to 100% BF success, 4% nipple pain, no breast pain. Got 8 KCBF sessions in hospital, and was exclusively BF at 1 week post discharge & had 100% BF success score, 2% nipple pain, and no breast pain. “There is a sense of calm and peacefulness between Makaia (baby) and me while kangarooing. KC and BF helped ease my unsteady emotions…” After coming home from hospital, we spent most of our time kangarooing…. Within seconds of KC, Makaia’s whole body relaxes, his breathing slows to a soothing rhythm, and he has the most tranquil look in his eyes.” Pictures of KC are on page 778. Case study, FTfullterm, relaxation, mat stress, BF, BF success, nipple pain, breast pain, KC post-discharge, sleep, exclusively BF, respiratory pattern

Burton P, Kennedy K, Ahluwalia JS, Nicholl R, Lucas A, Fewtrell MS. (2013). Randomized Trial Comparing the Effectiveness of 2 Electric Breast Pumps in the NICU. Journal of Human Lactation. 29(3);412-419, doi: 10.1177/0890334413490995. Not a KC study per se, but KC is measured as an intervening variable. Mothers with preterm infants may need to express milk for considerable periods. Research to improve breast pump design has focused on compression stimuli, frequencies, and vacuums. Objective: This study aimed to compare the effectiveness of 2 electric pumps: Medela Symphony (pump S) and a novel pump (Philips AVENT Twin electronic pump; pump A). Both offer flexibility of rate and suction. Pump A also incorporates petal compression cushions. Primary outcomes were (1) milk weight expressed during 10-day study period and (2) weight of milk expressed in a 15-minute test. Methods: Seventy-one mothers with preterm infants < 34 weeks were randomized. Mothers completed 10-day diaries including weight of milk expressed. Milk weight expressed during a single 15-minute test period and data on pumping mode, skin-to-skin contact, breastfeeding at infant discharge, and mothers’ opinions of the pump were recorded. Results: There was no significant difference in milk expressed during the first 10 days between groups. Pump S mothers expressed significantly more milk during a fixed 15-minute period. Mothers using pump A awarded higher scores for certain characteristics of the pump, notably location of control button and ease of use. Similar proportions of infants received breast milk at discharge, but pump A mothers were more likely to be directly breastfeeding (odds ratio, 4.27 [95% confidence interval, 1.29, 14.1]). Conclusion: The breast pumps showed similar effectiveness in terms of milk expression and maternal opinions. The finding that breast pump design may influence breastfeeding at infant discharge merits further investigation. PT, comparative study of two breast pumps, KC is an intervening variable.


Butruille L1, Bloin A2, De Jonckheere J3, Murray S3, Margot T3, Rakza T3, Storme L1, (2017-Aug). Impact of skin-to-skin contact on the autonomic nervous system in the preterm infant and his mother. Infant Behav Dev, 2017 Aug 1;49:83-86. doi: 10.1016/j.inbeh.2017.07.003. Before, during, and after mother-newborn skin-to-skin contact (SSC), parasympathetic activity was evaluated by heart rate variability (HRV) analysis. SSC had a favorable impact on maternal and premature infant parasympathetic activities with a more pronounced response for neonates when the basal HRV values were lower, without modifications of EDIN scores, temperatures or oxygen saturation. PT, quasi-experiment, Heart rate variability, autonomic NS.

Byard, R.W. (2011). Breastfeeding and unexpected neonatal and infant death. Archives of Disease in Childhood-Fetal Neonatal Edition, 96(1); F75 DOI: 10.1136/archdischild-2011-300804. This is a review of the Becher et al. (2011) publication in same journal. “Of concern was the high percentage (53% based on 24/45 infants) of caseae identified where the episodes were attributed to airway obstruction associated with breastfeeding, skin-to-skin, or the prone position. …certain infants may suffer lethal airway obstruction while feeding. This problem was reported a number of years ago now, not only in neonates in hospital but also in infants up to 9. There are a range of potentially lethal conditions to newborns that remain unsuspected until sudden collapse. BF is important, situations may arise where certain infants may suffer lethal airway obstruction while feeding. This problem exists in hospital and at home up to 9 weeks of age (Byard RW. 1998. Is breast feeding in bed always a safe practice? J Paediatri Child Health 34, 418-419). Such events may be under-reported. Certain difficulties arise in making diagnosis of suffocation or choking. There are no pathogenic features at autopsy to enable the KCBib 2018
diagnosis of asphyxia to be made, although occasionally congential abnormalities or tumors of the oral cavity may be found to obstructive (Byard RW, Jensen L. 2007. Fatal asphyxia episodes in the very young: classification and diagnostic issues. Forensic Sci Med Pathol, 3, 177-181.) In the absence of such lesions, conclusions must be based on an evaluation of the circumstances of death and the exclusion of other possibilities. Some infants are particularly vulnerable to airway compromise and may stop breathing very quickly and without struggle once their airways are occluded (Byard RW, Barnell RH. 1995. Apparent life threatening events and infant holding practice. Arch Dis Child 75, 502-504), and this can even occur during breastfeeding while the mother is awake (Byard, 1998 citation above). A certain level of caution is needed, particularly in situations in which the mother may fall asleep due to fatigue, sedation. Potential dangers should be minimized by vigilance and supervision so that safe BF can be facilitated and promoted (Byard RW, 1998. Is breastfeeding in bed always a safe practice? J Paediatr Child Health 34, 418-419).

Byaruhanga R, Bergstrom A, & Okong P. (2005-August). Neonatal hypothermia in Uganda: prevalence and risk factors. J Tropical Pediatrics, 51(4), 212-215. The aim of the study was to determine the prevalence of neonatal hypothermia and associated risk factors. A cross sectional, descriptive study of neonatal hypothermia was performed on 300 newborns consecutively recruited day and night during 2 months at a Ugandan periurban hospital. Parallel tympanic and rectal temperature measurements were made at 10, 30, 60, and 90 min post partum. Rectal temperatures taken at 10, 30, 60, and 90 min showed that 29, 82, 83, and 79 per cent of the newborns respectively, were hypothermic. Newborns observed to have no body contact with the mother comprised 87 per cent of hypothermic newborns, whereas this was the case in 75 per cent of non-hypothermic newborns (p = 0.03). The mean birthweight was 3218 g. Low birthweight newborns constituted 9/86 (10 per cent) among hypothermic newborns, whereas this was the case in 9/209 (4 per cent) among non-hypothermic newborns at 10 min (p = 0.08). Adolescent mothers were encountered more often among mothers with neonatal hypothermia of the newborn than among non-hypothermic newborns (p = 0.025). Parity, preterm delivery, daytime or night time delivery, rupture of membranes > 24 h and location of newborns in theatre, labour ward, or nursery did not differ when hypothermic and non-hypothermic newborns were compared. A persistent pattern of high prevalence of neonatal hypothermia was confirmed and indicates that more vigorous efforts have to be undertaken, also in a tropical setting, to overcome problems of non-adherence to appropriate methods for thermo-protection of the newborn. Full Term, RCT, hypothermia, KC rewarms fast, not a bath study!

Byaruhanga, RN., Bergstrom A, Tibemany J, Nakitto C, & Okong, P. (2008). Perceptions among post-delivery mothers of skin-to-skin contact and newborn baby care in a periurban hospital in Uganda. Midwifery 24, 183-189. Qualitative with focus group discussions, five focus groups (6 moms in each group) w ith moms of normal spontaneous vaginal delivery 24-48 hours before (n = 30 of 249 moms) to learn mom’s perceptions of skin-to-skin contact and newborn baby care as a way to understand factors influencing acceptability of KC. Two main themes were: acceptability of health practices is influenced by knowledge and sensitization, and pregnant women’s choices are dependent upon social, cultural, and economic factors. Mothers had varying opinions about the usefulness of KC because some knew it would reduce the risk of infant hypothermia, others were ignorant, some believed KC was intervention to distract mother from the pain of post-delivery period. Moms perceived vernix caseosa and amniotic fluid with blood to be dirty and infectious and worried about spread of HIV when baby had not been bathed and the umbilicus was bloody and raw. Moms reported that KC gave them immediate access to their babies, enabled them to feel close to babies, and helped them initiate breastfeeding and moms considered it ‘natural.’ Some mothers were very tired after birth and found it hard having the baby on their chest (pg. 187). Some moms thought vernix is dirty and infectious (this is misconception but a common one – see page 188 for two references about how common this misconception is). The best informants for helping mothers understand KC were health care providers. A gap between knowledge and practice of KC in hospitals exists and needs to be closed. Health care providers need to be encouraged to continuously advocate for, educate, and regularly implement KC. FT, Qualitative study, Birth KC, breastfeeding, episiotomy pain, hypothermia, implementation, maternal feelings, Fullterm, 3rd world-Uganda. Temp, EDUCATION IS NEEDED

Bystrova, K. (2009). Novel mechanism of human fetal growth regulation: A potential role of lanugo, vernix caseosa and a second tactile system of unmyelinated low-threshold C-afferents. Medical Hypotheses, 72(2), 143-146. Doi: 10.1016/j.mehy.2008.09.033 Not KC per se, but tells why KC works and mentions KC on page 144. This theoretical review talks about regulation of human growth by GI hormones (their growth effects are promoted by activation of the parasympathetic system [vagal nerve] and inhibited by the sympathetic system), C-Afferent nerves, lanugo, and amniotic fluid. Vagal nerve is mainly activated by stimulation of sensory nerves in oral mucosa during sucking, resulting in GI hormone release to optimize digestion and direct metabolism toward anabolism and growth (Uvnas-moberg, K. 1989. The gastrointestinal tract in growth and reproduction. Scientific American, July, 78-83). Growth is probably achieved through the incretin effect which is glucose-induced release of insulin (pg. 143). Cholecystokinin is a GI hormone and in 24-34 wkGA infants it is doubly present during KC with NG tube feeding (Tornhage et al., 1998). The recently discovered low threshold unmyelinated C-afferents that are exquisitely sensitive to light, slow, gentle touch because it produces pleasure, so the C-afferents play a role in growth too, and these same C-afferents also reduce pain. The C-afferents constitute the second tactile system; the first tactile system is large myelinated tactile A-afferents (pg. 144). C-afferents are in the hairy skin, not the glabrous skin of the elbow, palm, etc. C-afferents convey pleasure, no pain, no temperature, itch or tickle. The C-afferents go to the insular cortex but not the somatosensory areas which are served by myelinated tactile A-afferents. Elevating vagal tone in infant occurs via activation of somatosensory skin nerves by massage, stoking, and touch (Diego MA, Field T, KCBib 2018

Bystrova proposes enhancement of vagal tone due to the unmyelinated, low-velocity low-threshold C-afferents in human, lanugo hairs, and amniotic fluid (Nordin M. 1990 low-threshold mecanoreceptive and nociceptive units with unmyelinated (C) fibers in the human suprapaorital nerve. *J Physiol (London)*, 426, 229-240.) The C-afferent nerves are found in the hairs of skin (lanugo) and at term birth only the back has lanugo which is where mother touches with her fingertips during KC and where she holds the infant’s head in position. Lanugo is silky fine hair that starts to grow at 18 wks gestation and is abundant at 20wks (5-7mm long hairs) densely coat almost all skin area (not palms, dorsal finger & toes, soles, prepuce, glans penis, labia minora), begins todissappear at 33 wks and at term covers scapula and upper limbs. Lanugo hair follicles have free nerve endings which are slowly adapting mechanoreceptors. Amniotic fluid is 98% water, 2% solids and has same density as water which is 800-fold higher than air. So when baby is moved or moves in amniotic sac, sensory stimulation of the lanugo hairs is enormously potentiated. So, for preterm infants who still have lanugo and/or the term infant with some lanugo over the brown fat deposits on the back of the neck, this is very important skin and nerve stimulation because the pleasure settings in the brain also convey “social relevance.” The novel mechanism of promotion of growth is: repeated oscillations of lanugo during fetal movements in amniotic fluid activate highly sensitive mechanoreceptors connected to unmyelinated C-afferents which send impulse to spinal cord and activate the vagal sensory zone (nucleus tractus solitaries NTS, hypothalamus and insular cortex. Activated vagal zone increases vagal tone which leads to release of GI hormones and stimulates glucose-related secretion of insulin, directing metabolism to anabolism and growth. GI hormones stimulate thickening of GI mucosa which leads to maturation of the GI tract (Mulvihill SJ et al., 1989 J Surg Res). The NTS is directly linked to paraventricular nucleus in hypothalamus which, when activated, causes release of oxytocin which directly stimulated vagal motor zone and facilitates activation of GI endocrine system. Oxytocin released within the brain causes strong anti-stress effect (Uvnas-Moberg K., 1998). Antistress pattern induced by oxytocin. *News of Physiologic Science, 12, 22-26*, which is a prerequisite for anabolism and growth. Oxytocin appears in hypothalamic nuclei after 16 weeks gestation. Activation of insular cortex gives pleasant feeling (Olausson et al., 2002), and pleasant feelings increase fetal movements, starting the cycle all over again. VERNIX caseosa contains sebaceous gland secretions and desquamated cornocytes. Sebaceous glands open into the hair canal, at same time lanugo first appears. Vernix at core body temp is much more viscous than when at room temp and vernix in utero coats the lanugo hairs, making them ‘heavier’ and significantly potentiating the effect of oscillations. After birth, C-afferents are integrated to reverse stressful situations (like the stress of being born if KC is allowed as Ludington et al. 1999 reference for same sort of information). As adults, friendly skin-to-skin contact is LIMBIC touch and it is an affiliative behavior (pg. 144). Research should detect response to gentle touch in the somatosensory cortical areas shows to be affected by stimulation of C-afferents – in the dorsal posterior insular cortex (limbic area). Concludes with “There is sufficient evidence for advantages of mother-infant closeness in postnatal care as opposed to separation. Skin-to-skin contact leads in an infant to an increase of parasympathetic nervous tone, central decrease of sympathetic nervous tone (anti-stress effect) and therefore enhanced peripheral circulation, warmth (Bystrova et al., 2003) as well as mental calming (Christenssen et al., 1995). The efficacy of these antenatal mechanisms (C-afferents, lanugo, and amniotic fluid movements) after birth depends on the postnatal sensory input. Such input is the greatest during mother-infant skin-to-skin contact. Thus, implementing skin-to-skin mother-infant contact in early postpartum as a compulsory post-birth practice is supported.” (pg. 145).

**Review, lanugo, fetal, PT, FT, stress, weight, growth, parasympathetic, sympathetic, separation** Should also see Olausson et al, 2010 reference for same sort of information. Not on charts July 10, 2010

Bystrova K, Ivanova V, Edhborg M, Matthiesen AS, Ransjö-Arvidsson AB, Mukhamedrakhimov R, Uvnas-Moberg K & Widstrom AM. (2009). Early contact versus separation: effects on mother infant interaction one year later. *Birth 36(2), 97-109.* doi: 10.1111/j.1523-536X.2009.00307.x. Epiotomopy repair was delayed to facilitate maternal-infant contact after birth. 176 mother infant pairs were randomized into grp 1: KC at birth (starting 25-30 minutes after being under receiving/warming unit and all baby care done before going to mother and continuing to 120 minutes postbirth); grp 2 infants dressed and placed in mom’s arms after birth (25-30 minutes after birth because also under warmer and got all newborn care before going to mother and continuing until 120 minutes postbirth) and roomed-in, grp 3: infants kept in nursery after birth and white mom is in maternity ward. Grp 4: infants kept in nursery after birth, but roomed-in with mom. Equal number of infants were either swaddled or dressed in baby clothes. Infants are usually swaddled for 4-5 months in Russia. Maternal infant interactions were videotaped using Parent Child Early Relational Assessment (PCERA) at 1 year after birth. KC, early swaddling or both during the first 2 hours after birth compared to separation between mom and babies positively affected PCERA variables of maternal sensitivity, infant self-regulation, and dyadic mutuality (mothers respond to infant cues and then baby responds to mother’s cues and actions and then mom responds to infant’s cues – this is mutuality in the dyad), and reciprocity at 1 year. The negative effect of 2 hour separation was not compensated for by the practice of rooming-in. These findings support the presence of a sensitive period during which contact between mother and infant may induce long-term positive effect on maternal infant interactions and they come strongly that it was the KC that produced the improvement in interaction at 1 year. Swaddling was found to decrease the mothers’ responsiveness to the infant, her ability for positive affective involvement with the infant, and the mutuality and reciprocity in the dyad. Swaddling was detrimental to maternal-infant attachment and interaction. KC for 25-120 minutes after birth, early swaddling or both positively influence mother-infant interaction one year later. Behavior at 12 months was significantly altered by KC: 30-120 minutes post birth; KC infants demonstrated self-regulation, dyadic mutuality, and reciprocity. KC mothers showed greater interaction and interest in the infant and greater reciprocity than controls. Separated infants in the nursery for first 2 hours were less regulated at 1 year, were more irritable, and had less dyadic mutuality and their mothers had less interest in infants, and less interaction. In the absence of KC, early BF

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from 30-120 minutes postbirth could elicit self-regulated behavior, a calm baby, and interested/interactive mother. Thus the first 2-3 hours postbirth is a short sensitive period. KC in this period promoted interaction between mother and infant such as visual contact and smiling and promoted ability of infants to handle stress even one year after birth. FT, RCT, dev, Birth KC, stress, maternal-infant interaction. BF, swaddling, episiotomy. See also comment in Birth 2009 June 36(2), 110-112 (Klaus, MH) and Chalmers B., (2009) in Birth 36(2):113-114. NOT ON CHARTS YET, as of 10/10/2010. Check this reference because I have seen it quoted by Bystrova, Edshberg, Lundh et al and my citation does not include Lundh at all and the sequence of names varies.

Bystrova K, Matthiesen A-S, Vorontsov I, Widstrom, A-M, Ransjo-Arvidson A-B, & Uvnas-Moberg K. (2007). Maternal axillary and breast temperature after giving birth: Effects of delivery ward practices and relation to infant temperature. Birth 34(4), 291-300. No doi. 3 grps of 176 mother infant pairs randomized to gpr 1: prone in KC (n=44); gpr 2 infants dressed and prone on mother’s chest (n=44); gpr 3 infants dressed and kept in nursery/separation (n=88). Temps measured at 15 min intervals starting at 30-120 min postbirth. Early sucking was noted. Axillary and mat breast temps rose significantly in all moms. The rise in maternal temps over time was significantly higher in multiparous than primiparous moms and was influenced only slightly by group assignment. Variation in breast temp was highest in KC group, lowest in nursery group. In mom’s arms group (group 2), variation in breast temp was larger in those moms exposed to early suckling than in those not exposed. A positive relationship between maternal axillary and infant foot and axillary temps at 120 mins post birth was found. In KC and mom’s arms groups, rise in temp in infant foot was nearly twice that in the axilla. FOOT TEMPS RISE MORE. No such relationship was established in the nursery group. Foot temp in KC group was nearly 2.0 degrees C higher than that in infants who were in mom’s arms group. Maternal temp rose after birth and rise is higher in multips and that KC and early suckling causes great variation in mat temps. Mat temp is related to infant foot and axillary temp. FT, RCT, infant axillary and infant foot temp, mat axillary, mat breast temp, swaddled holding, separation, co regulation

Bystrova K, Matthiesen A-S, Widstrom A-M, Ransjo-Arvidson A-B, Welles-Nystrom B, Vorontsov I, & Uvnas-Moberg K. (2007a). The effect of Russian Maternity Home routines on breastfeeding and neonatal weight loss with special reference to swaddling. Early Human Development 83, 29-39 . Randomized controlled trial with four groups 176 mother-infant fullterm dyads. KC began 20-25 minutes after birth (after drying, eye treatment, weighing, length, head circumference. APGARS and cord care and bath (but not after episiotomy repair because repair was done after KC ended) and continued for 25-120 minutes. Then all infants were swaddled or dressed and taken to maternity ward for rooming in. Gpr 1 KMC immediately after delivery with rooming in maternity ward, Gpr 2: dressed and placed in mom’s arm after delivery and rooming in, Gpr 3: infants kept in nursery after birth and during maternity ward stay of moms, Gpr 4: nursery after birth and then roomed in with moms in maternity ward. BF was measured on day 4 after birth, infant weight measured daily. More formula and less breastmilk for infants in nursery than in infants who roomed in with mom. Swaddling did not influence BF measures, but swaddled babies who were separated for 2 hours after birth before reuniting with mothers tended to have delayed recovery of birth weight loss compared to infants who were exposed to same treatment but dressed in clothes. Swaddled babies kept in nursery and who received breastmilk supplements had significantly delayed recovery of weight loss compared to infants getting only breastmilk. Day 5 of predicted weight gain in exclusively BF infants showed sig increase/100 ml of breastmilk compared to predicted weight gain on Day 5 of supplements/000 ml. Supplements have negative influence on amount of ingested milk, supplement feeding or short separation after birth when combined with swaddling negatively affected infant weight gain. No differences in number and duration of breastfeeding, amount of ingested breast milk, amount of supplements between the three rooming-in groups (KC, mom’s arms, and separation). Birth KC is considered the normal experience after birth, thus they were the controls and swaddling and separation are being considered as the unusual treatments and trying to justify them. RCT, Fullterm, Very Early KC, swaddling, separation, weight gain, Breastfeeding duration, number of feeds, Birth KC, rooming-in, separation, episiotomy. KC is routine. Not on charts yet.

Bystrova K, Widstrom AM, Matthiesen AS, Ransjo-Arvidsson AB, Welles-Nystrom B, Vorontsov I, & Uvnas-Moberg K. (2007b). Early lactation performance in primiparous and multiparous women in relation to different maternity home practices: a randomized trial in St. Petersburg. International Breastfeeding Journal 2, 9-23. A randomized controlled trial of 176 mother-infant pairs randomized into 4 groups: gpr 1 was KC in delivery for 25-120 mins+ rooming in + feeding on demand, n=37; gpr 2 was 40 infants dressed and placed in maternal arms + rooming in + feeding on demand; gpr 3 (= 38) infants were kept in cot in delivery and nursery and no rooming in and fed on schedule of 7 times per day, gpr 4 (=38) infants were kept in cot in delivery and later roomed in + feeding on demand. In each group equal numbers were swaddled or clothed. On day 4, number of breastfeeds, amount of milk ingested, duration of “nearly exclusive” breastfeeding were recorded as was intensity of breast engorgement and visual analog scale of daily maternal feelings of being “low/blue.” On day 4 multips had lower milk production then primips when separated from infants and feeding on the schedule of 7 feeds/day. Data collected at 25-120 minutes postbirth and on day 4 in maternity ward and daily maternal feelings. No diff in milk production between primips and multips in other groups. Multips had higher perception of breast engorgement and lower intensity of feeling “low/blue” than primip mothers. Early sucking was shown to positively affect milk production irrespective of parity. Gpr 1 and 2 infants who suckled within first two hours of birth ingested significantly more milk on Day 4 than those who had not (284 ml vs. 184 ml), regardless of being in KC or swaddled. The biggest predictors of sufficient milk supply were suckling within 2 hours of birth, intensity of breast engorgement, duration of breastfeeds on Postpartum Day 3 for primiparous women. For multiparous women, the predictor was rooming-in. Maternal feelings of being low/blue were related to milk ingestion and milk production (pg. 11 of the article). They make the point that previous studies have not segregated effects of KC vs effects of suckling within 2 hours of birth and KC Bib 2018
this article does and it is the suckling that made the difference in milk production, not the KC because the swaddled group also had same amount of milk as KC group: RCT, FT, Birth KC of 25-120 mins, BF, milk production, maternal feelings Not on charts as of 6/5/09

Bystrova K, Widstrom AM, Matthiesen AS, Ransjo-Aarvidsson AB, Welles-Nystrom B, Wassenberg C, Voronsov I, & Uvnas-Moberg K. (2003). Skin-to-skin contact may reduce negative consequences of the "the stress of being born": A study on temperature in newborn infants, subjected to different ward routines in St. Petersburg. Acta Paediatrica 92 (3), 320-326. No doi. RCT of 176 fullterm newborn mother dyads, grp A got KC for 120 mins, starting 20-25 minutes after birth and after all infant treatments and bath). grp B got held in arms swaddled or clothed, grp C kept in cot in nursery swaddled or clothed. Axillary, thigh, back (interscapular) and foot temperatures from 30-120 min postbirth. First temp taken at 30 minutes post-birth. All temps rose significantly in all TX grps (grp A and B), except for foot temp over the 90 minute observation period. Largest increase in temps was seen in KC group (p. 324) and the rise was more pronounced at the most peripheral sites (thigh and foot). Foot temp rose from 28.5-31.5 mKC group. Most of the change occurred during the first 30 minutes, except foot temp rise was delayed by 60minutes in the swaddled infants held in mother’s arms. Foot temp dropped sig in nursery grp C and drop was greatest in swaddled group C babies. Foot temp rose most in KC group and remained high in KC group. KC after birth may be a natural way of reversing stress-related effects on circulation induced during labour because KC babies were more relaxed. FULL TERM, Axillary, Thigh, Back, Foot Temps, RCT, VEKC, rate of temp rise, swaddled, relaxation

Cadwell, Karin & Turner-Mafield, Cindy. (2009). Chapter 4. Getting breastfeeding off to a good start. The first hour after birth. In Continuity of Care in Breastfeeding. Best Practices in the Maternity Setting. Boston: Jones and Bartlett Publ. Pgs. 49-56. In this chapter, which starts with “More maternitycare facilities are experiencing the magic of skin to-skin contact in the first hour.” (p. 49), the chapter goes on to convey the importance of mother-baby contact during the first hour after birth (pg. 50), expectations for care in the first hour after birth (p. 51), evidence for skin-to-skin care in the immediate postpartum period (increased infant survival, decreased stress and increased homeostasis for the baby, improved temperature regulation, improved breastfeeding outcomes and maternal attachment behavior, spontaneous breastfeeding), Common barriers to optimal practice in the first hour of life and strategies to overcome barriers (routine practice of mother baby separation, routine procedures take priority over breastfeeding and time for mother and baby to be together, lack of education about importance of early skin-to-skin contact, and the assumption that KS is reserved for only healthy babies, not those who are immature, sick, or uncoordinated or struggling with motor and state regulation (pg.55). This chapter shares many recommendations too.


Caetano L.C., Scocchi, C.G., & Angelo, M. (2005-July-Aug). Living the mother-child-family triad in the Kangaroo Method. Revista Latino Americana de Enfermagem 13(4), 562-568. Doi:10.1590/S0104-11692005000400015. This study focuses on the experience of 18 families in a 247 Kangaroo Mother Method (KM) unit in Brazil (6 moms stayed 45 days) and aims to understand the functioning of the family dynamics and to apprehend the family transformations as a result of their experience in the method. The study used Symbolic Interactionism as a theoretical and Grounded Theory as a methodological reference framework. Data revealed the following phenomena: having an unexpected evolution and outcome of pregnancy, which is a phase in which the parents go through a pregnancy and suffer due to its premature interruption; coping with the prematurity of the child, in which the parents get into the world of prematurity and face the need to act for the child's survival; and living with the decision and the experience together with the child, which reveals the possibility of staying in hospital in the KM or not. These phenomena led to the central category: weighing the risks and benefits between staying with the child in the kangaroo method or with the family. Moms felt it was natural thing to do and it gave them hope that everything would be alright. Qualitative, PT, Portuguese, maternal feelings.

Calais E., Dalbye R, Nyqvist KH, & Berg M. (2010). Skin-to-skin contact of fullterm infants: an explorative study of promoting and hindering factors in two Nordic childbirth settings. Acta Paediatrica,99, 1080-1090. DOI: 10.1111/j.1651-2227.2010.01742.x. Descriptive study of 117 postnatal mothers and 107 fathers/partners in two settings were surveyed: two settings where Birth KMC was implemented as standard of care one in Sweden and one in Norway, consecutively tested, answered questionnaire at 2 week postpartum. Satisfaction with support for KC in postnatal care and being a mother in Swedish setting promoted KC during the first day postpartum; previous knowledge about KC increased practice of KC on postpartum days 2 and 3. Receiving visitors apart from parent and sib lings was a hindering factor. KC was practiced to a larger extent in Sweden. In Norway, parents received more visitors and were more satisfied with the received information and support for KC in the postnatal period. Caregivers need to give parents adequate support for practicing KC with newborn healthy term infant and it is important to develop information routines during the antenatal period as well as in relation to KC at birth to effectively introduce and implement KC. Full term, Routine KC, Postpartu/kammad KC, # of visitors/visiting, implementation, antenatal information. Birth KC.

package on coverage of early skin-to-skin contact (SSC) and exclusive breastfeeding - the therapeutic components of kangaroo mother care. A multilevel community and facility intervention in Ethiopia trained health workers in 10 health centres and the surrounding communities to promote early SSC and exclusive breastfeeding for all babies born at home or in the facility. Changes in SSC and exclusive breastfeeding were assessed by comparing baseline and endline household surveys. Overall practice of SSC at any time following delivery increased significantly from 13.1 to 44.1% of mothers. Coverage of immediate SSC also increased significantly from 8.4 to 24.1%. Breastfeeding within the first hour increased from 51.4 to 67.9% and exclusive breastfeeding within the first three days increased from 86 to 95.8%. At endline, SSC was significantly higher among facility births than home births and community health workers had limited contact with mothers. While targeted behaviours improved overall, the programme did not achieve adequate increases in SSC and exclusive breastfeeding among home deliveries to expect a reduction in mortality for low birthweight babies. Newborn care programs in Ethiopia should continue to encourage facility delivery while strengthening coverage of community programmes. PT, FT, 3rd world, quasi-experimental of KC intervention, BF, exclusive BF, birth KC, mortality, Not on charts 1/17/2017

Callister, L. C. (2015 May-June). Kangaroo mother care for preterm infants globally. MCN: American Journal of Maternal Child Nursing, 40(3), 198. A report that benefits of KC are well established but its use is less than optimal and not routine. The article says that Engmann et al. think KC should be scaled up around the world and that several tools can help implementation: KMC Toolkit compiled by Save The Children’s Saving Newborn Lives (www.healthynewbornnetwork.org/page/kangaroo-mother-care-toolkit), a 2012 KMC Implementation Guide has been developed by US Agency for International Development and Maternal and Child Health Integrated Program, Save the Children, and the White Ribbon Alliance (www.healthynewbornnetwork.org/resources/kangaroo-mother-care-implementation-guide). One Filipino mother’s comments about doing KC are included and can be accessed by going to www.healthynewbornnetwork.org/topics/Kangaroo-mother-care-kmc loved doing KC. He always seemed content and happy were he was. KMC helped me a lot, giving me the reassurance that I needed by letting me feel my son’s steady heartbeat, smell his sweet fragrance and feel his little body next to mine” (pg. 198). Mom said, “The whole time we did KMC, my son’s heartbeat remained strong and normal and he maintained his body temperature. Despite many benefits, global implementation has not kept pace with the ROBUST, LONG-STANDING evidence (Engmann et al., 2013). Reasons are social and cultural barriers, reluctance of health care providers, lack of inclusion of KMC in government newborn priorities and policies. Strategies for overcoming these obstacles include encouraging professional associations in both high and low resource countries to adopt KMC as a standard of care, addressing cultural and social barriers, and educating communities and families about importance of supporting mothers in the practice of KMC. A KMC ACCELERATION PARTNERSHIP was created in 2013 to address barriers and hasten use of KMC globally. Replication of thes BAMAKO study (see Sylla, 2011 on bib) is needed, more blogging and facebook mothers are needed to encourage other mothers, use of social media to spread the word about KMC. Review, implementation, not enough KC being done. Qualitative studies documenting perspectives of mothers are recommended. Review, accelerating KMC, implementation, barriers, staff issues, not enough KMC being done, far behind the evidence. Not on Charts 5/25/2015


Campbell-Yeo, M., Disher, T., Benoit B, Johnston, C., (2015). Understanding kangaroo care (KC) and its benefits to preterm infants. Pediatric Health, Medicine, and Therapeutics, 2015(6), 15-32. Doi: http://dx.doi.org/10.3147/PHTM-5S1389 The holding of an infant with ventral skin-to-skin contact typically in an upright position with the swaddled infant on the chest of the parent, is commonly referred to as kangaroo care (KC), due to its simulation of marsupial care. It is recommended that KC, as a feasible, natural, and cost-effective intervention, should be standard of care in the delivery of quality health care for all infants, regardless of geographic location or economic status. Numerous benefits of its use have been reported related to mortality, physiological (thermoregulation, cardiorespiratory stability), behavioral (sleep, breastfeeding duration, and degree of exclusivity) domains, as an effective therapy to relieve procedural pain, and improved neurodevelopment. Yet despite these recommendations and a lack of negative research findings, adoption of KC as a routine clinical practice remains variable and underutilized. Furthermore, uncertainty remains as to whether continuous KC should be recommended in all settings or if there is a critical period of initiation, dose, or duration that is optimal. This review synthesizes current knowledge about the benefits of KC for infants born preterm, highlighting differences and similarities across low and higher resource countries and in a non-pain and pain context. Additionally, implementation considerations and unanswered questions for future research are addressed. PT, FT, Review, Little KC being done. Not on Charts


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contribution of parents, there is a need to find innovative ways to assist parents to become actively involved in their infant’s care. We developed a YouTube video to disseminate evidence-based information on the effectiveness of skin-to-skin contact and breast-feeding for infant pain management. The 2-minute 39-second video launched on December 2, 2014, and was promoted through Web-based and in-person communication and YouTube advertisements. Data were collected using YouTube analytics and an online survey. Post-18 months from its launch, the video had a reach of 157,938 views from 154 countries, with most viewers watching an average of 73% of the video (1 minute 56 seconds). Parents (n = 32) and healthcare providers (n = 170) completed the survey. Overall, both reported that they liked the video, found it helpful, felt more confident, and were more likely to use skin-to-skin contact (16% and 12%) and breast-feeding (3% and 11%), respectively, during future painful procedures. Despite the high-viewing patterns, alternative methods should be considered to better evaluate the impact on practice change. PT, FT, evaluative study, video for parents, parent involvement, pain, NOT ON CHARTS 2-2018


Campbell-Yeo, M.L., Johnston, C.C., Benoit, B. Latimer, M., Vince, M., Walker S-D, Streiner, D., Inglis, D. & Cadwell, K. (2013 Nov). Trial of repeated analgesia with kangaroo mother care (TRAKC Trial). BioMed Central Pediatrics, 13, 182 (10 pages, open access, available from http://www.biomedcentral.com/1471-2431/13/182. This is a proposal for a study of the sustained efficacy of Kangaroo Care in reducing pain for all routine painful procedures for the duration of NICU stay. They will randomly assign 258 preterm infants (stable, < 36 6/7) to KC, 24% oral sucrose, and KC-24%Sucrose for any painful procedure (heel lance, venipuncture, IV, oro/nasogastric tube insertion). Pain intensity will be measured by Premature Infant Pain Profile and neurobehavioral function at term age will be measured by Neurobehavioral Assessment of Preterm Infants (NAPI). Co variates are gestational age, cumulative exposure to KC during non-painful procedures and maternal cortisol. Cortisol will also be taken. First study to measure repeated use of KMC for pain. Uses the Brain Opioid Theory framework. And will ask questions of nurses and mothers regarding clinical feasibility of using KC for all routine procedures. This will be the first study to examine the repeated use of KMC for managing procedural pain in preterm neonates. It is also the first to compare KMC to sucrose, or the interventions in combination, across time. Based on the theoretical framework of the brain opioid theory of attachment, it is expected that KMC will be a preferred standard of care. However, current pain management guidelines are based on minimal data on repeated use of either intervention. Therefore, regardless of the outcomes of this study, results will have important implications for guidelines and practices related to management of procedural pain in preterm infants. PT, Pain, comfort, development, cortisol, duration of KC in non-painful context is measured too. Check on charts.

Campbell-Yeo, M.L., Johnston, C.C., Joseph, K., Feeley, N.L., Chambers, C.T. & Barrington, K.J. (2009) Co-bedding as a comfort measure for twins undergoing painful procedures (CComForT Trial). BMC Pediatrics, 9:76. This is an abstract of a planned, NOT YET DONE, study using skin to skin contact between twins for pain reduction because skin to skin contact between infant and mother reduces pain. Because the possibility exists that pain reduction is from maternal presence OR from stabilization of regulatory processes from direct skin contact, they are trying co-bedding skin to skin contact between 128 twins. (x in co-bedding and x in standard care). It is a randomized controlled trial and pain will be measured from videotapes of facial actions using PIPP. , RCT, PAIN, PT, FACIAL MEASURES, PIPP

Campos, A.D.C.S, Carvalho, M.P.L., Rolim, K.M.C., & Alencar, A.J.C.D. (2008). Experie with the mother kangaroo method: Mothers’ perception (Portuguese). Review of RENE, 9(3), 28-36. Purpose was to explore mothers’ perceptions of 24/7 KMC in Brazil. Qualitative study of 13 mothers (19-39 years old). Mothers related that KMC strengthened the bond between mother and newborn, and mothers recognized and appreciated the physical benefits for the infant and the opportunity to learn how to take care of the premature baby. PT, Qualitative, maternal feelings, attachment

Canadian Paediatric Society, Fetus and Newborn Committee (2012). Practice Point. Kangaroo Care for the preterm infant and family. Paediatrics and Child Health, 17(3): 141-143. No doi. This position statement encourages the use of KC with preterm infants 26 weeks GA and older. "Prematurity birth is believed to disrupt the neonate’s smooth and integrated neurobehavioral development, resulting in disorganization of the nervous system. This may manifest as disturbances in physiological function, stress and behavior.” (pg. 142) KC is skin-to-skin contact, an alternative to traditional NICU care and moms held their infants 24hrs/day and infants were discharged as soon as mom knew how to care for infant – it improved attachment and reduced mortality (Charpak et al. 2005). Lawn 2010 confirmed KMC reduced mortality in low income countries. Advanced countries use KC to promote BF, bonding, involve parents in care and humanize the NICU experience (pg. 141). Duration of KC usually lasts 1-3 hrs and is most often for STABLE PTs (no assisted ventilation) but is increasingly offered to those on ventilator support and those as little as 600 g and whoare 26 wks GA or younger at birth (pg.142). NICUs KCBib 2018
should have guidelines for KC that include GA and Wgt criteria, assessing readiness and tolerance, physiologic monitoring for stability & stress, protocols for safe transfer & these guidelines area available (L-H 2003; L-H 2008; Kledzik 2005; DiMenna 2006, Nyqvist 2010 state of the parental reluctance. KC is safe becuze Mori (2010 found increase of 0.22C body temp, no change in HR, and clinically insignificant decrease (0.60%) in SaO2 and these parameters were STABLE (unaffected by prematurity during KC)(pg.2). Then says KC does NOT increase frequency or duration of apnic epiodes, and no increase in oxygen consumption (Bauer 1996), and the slight increase in bradycardia and oxygen desat reported by Bohnhorst 2004 was due to positioning of the infant(p.2). Stability was seen in assisted ventilation infants too (de Oliveira Azevedo 2011). Some centers routinely and successfully provide STSCare for infants with chest tubes and on ventilators, including high-frequency oscillatory ventilation (DiMenna 2006). During KC cardiorespiratory and temp stability is achieved, preterms exhibit decreased arousal and decreased REM sleep, suggesting more mature organization, KC increases sleep time and quiet sleep time and at term infants who got KC demonstrate longer periods of quiet sleep and alert wakefulness, shorter periods of active sleep, and more organized sleep-wake cycles – suggesting more rapid improvement in state organization (Feldman et al. 2002/2003). Infants 25-35 wks GA who got KC in hospital stay had higher Mental and Psychomotor scores at 6 (Feldman, E.S.W 2002) and 12 months( Oghi 2002). KC is associated with longer duration of BF, higher milk volumes, higher exclusivity rates and higher BF rates at discharge (Rentfrew 2009; Hake-Brooks & Anderson, 2008) . KC decreases incidence of nosocomial infection (Conde-Agudelo 2011).

“Early KC likely increases the chance of the infant being colonized with maternal flora rather than NICU flora, which may include antibiotic resistance organism and coagulase-negative staphylococcus. Because KC is only undertaken between individual infant-mother dyads, it should not increase the spread of infection from one infant to another during infectious outbreaks.”pg. 142. Preterm birth and admission to NICU result in separation of mother and baby, interrupting attachment. KC moms have feeling of being needed, increased confidence in knowing their infants and a sense of their role as a mother (Johnson AN, 2007). Moms look at and touch their infants more frequently, show more positive affect, and are more responsive to their infant’s signals than moms who did not provide KC (Feldman ESW 2002). After discharge these mothers and fathers provided a better home environment and were more sensitive to their infant. During KC, the infant experiences maternal heart sounds, rhythmic maternal breathing, warmth, and prone positioning, gentle stimulation across the auditory, tactile, vestibular and thermal sensory systems which may modulate pain perceptions. KC is efficacious in reducing physiologic and behavioral responses to pain in PT infants 28-36 wks GA (Johnston et al., 2003; Johnston et al., 2008). “Nurseries that care for preterm infants should be encouraged and supported in implementing this practice. Further research is required to examine the impact of KC on ventilated infants who are <26 wks GA, examining outcomes such as intraventricular hemorrhage, weight gain and neurodevelopment.

“(pg. 143). PT, apnea, attachment, barriers, breastfeeding, development, duration, infection, maternal feelings, mortality, oxygen desat, pain, policy/guidelines/Position Statement, separation, sleep, stability, NICU humanize/policies, home environment, future research... See also Jeffreries and Canadian Paediatric Society which is same article but does not have "practice point" at the beginning and also has no doi., 2013 article which is the same as this but in a separate journal.


Cantrill R, Creedy D, & Cooke M. (2004). Midwives' knowledge of newborn feeding ability and reported practice managing the first breastfeed. Breastfeeding Review, 12(1), 25-33. Continuous uninterrupted KC at birth facilitates finding nipple and effective BF, but is not consistently used. Newborn feeding Ability Questionnaire measures nurses' knowledge and practice in supporting first breastfeed, and given to 3500 staff nurses (midwives in Australia are equivalent of staff nurses) by mail; 31.6% (N=1105) responded. Mean knowledge was 85.94 (Range was 40-110; total possible on tool is 110); practice mean score was 95.89 (range of 57-117, total possible score is 120). All respondents said that KC immediately after birth was important, but few understood the “continuous, uninterrupted” aspects of Birth KC for correct attachment and effective suckling. Practice of continuous, uninterrupted KC is poorly understood, not uniformly practiced. Fullterm, Descriptive study of BF knowledge, BF support/practice, Birth KC, Breastfeeding, Implementation, Knowledge of KC questionnaire.

Cantrill RM, Creedy DK, & Cooke M. (2008). Assessing midwives' breastfeeding knowledge: Properties of the Newborn Feeding Ability questionnaire and Breastfeeding Initiation Practices scale. International Breastfeeding Journal, 3(7)(April 30, 2008), online journal only, pages 1-12. Retrieved 8/22/08. Available from http://www.internationalbreastfeedingjournal.com/content/3/1/7. This provides two scales, one of which has many items about KC to elicit knowledge about effects of skin to skin contact on infant feeding, infant physiological stability, newborn innate abilities, and effective breastfeeding practices. Predictive ability of scales is moderate. Midwives (nurses in the british terminology) with high knowledge scores were more likely to report best practices when assisting mothers with breastfeeding; midwives with more personal breastfeeding experience scored higher on all scales. Individual learning needs and effectiveness of education can be evaluated with these tools. Response rate was 31.6% (n=1107)to 3500 nurses). Fullterm, tool development, KC knowledge and practices,knowledge of KC questionnaire. Not on charts yet.


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that skin to skin contact is a part of BF and provides the direct (by blocking nociceptive transduction or transmission or activation of descending inhibitory pathways or by activating attention and arousal systems that modulate pain (pg. 114) and indirect mechanisms (reduce total amount of noxious stimuli to which infants are exposed) of how SSC reduces pain. Review, pain, PT

Carbajal R, Gall O, & Annequin D. (2004). Pain management in neonates. Expert Rev Neurother (May) 4(3), 491-505. A clinical review that says accurate assessment of pain is needed, evidence for pain management strategies exist, and reviews these after talking about main source of pain being procedural pain in neonate, Says skin to skin contact can reduce pain indirectly by reducing total amount of noxious stimuli to which infant is exposed and directly by blocking nociceptive transduction or transmission or by activation of descending inhibitory pathways or by activating attention and arousal systems that modulate pain. National guidelines are needed to improve pain management. He is from France. This is exactly same as previous citation. Review, pain, PT, PT

Carbajal R, Rousset A, Daanan C, Coqury S, Nolent P, Ducrocq S, Saizou C, Lapillonne A, Granier M, Durand P, Lencien R, Courso A, Hubert P, de Saint Blanquat L, Bottlé PY, Annequin D, Cimerman P, Anand KJ, Breart G. (2008). Epidemiology and treatment of painful procedures in neonates in intensive care units. J Amer Med Assoc 300(1), 60-70. To: 10.1001/jama.300.1.60 Each infant received a median of 115 procedures over course of hospitalization and a mean of 16 (Range= 0-62) painful ones per day. 69.6% of all procedures were painful in these 33 week infants. Of 42, 413 painful procedures over course of all infants hospitalization, 2.1% were treated pharmacologically, 18.2% nonpharmacologically, 20.8% with pharm and non-pharm interventions, 79.2% had no specific analgesia. In Paris, many painful procedures are experienced and very few have pain management interventions. Kangaroo Care is Listed as one type of non-pharmacologic intervention. Pain, PT, number # of pain ful procedures.

Carbasse, A., Kracher, S., Hauser, M., Langlet, C., Escande, B., Donato, L., Astruc, D., & Kuhn, P. (2013). Safety and effectiveness of skin-to-skin contact in the NICU to support neurodevelopment in vulnerable preterm infants. J Perinatal and Neonatal Nursing, 27(3):255-62. To: 10.1097/JPN.0b013e318239dc349 Skin-to-skin contact (SSC) is a cornerstone of neurodevelopmentally supportive and family-oriented care for very low-birth-weight preterm infants (VLBW PIs). However, performing SSC with unstable and/or ventilated VLBW PIs remains challenging for caregiving teams and/or controversial in the literature. They assessed the safety and effectiveness of SSC with vulnerable VLBW PIs in a neonatal intensive care unit over 12 months. Our second aim was to evaluate the impact of the respiratory support (intubation or not) and of the infant's weight (< 1000 g) on the effects of SSC. Vital signs, body temperature, neurodevelopmentally supportive and family

Carfott S, Williamson PR, & Dickson R. (2003). A systematic review of randomized controlled trials evaluating the effect of mother/baby skin-to-skin care on successful breast feeding. Midwifery 19(2), June, 2003, pg. 148-155. Used same method as Cochrane reviews, reviewed 7 randomized trials and found quality questionable in 4 of 5 studies about duration of BF. No studies on success of BF. Findings “fail to support the current initiative to implement changes in clinical practice to include skin-to-skin contact. Methodological flaws within the included studies prohibit firm conclusions being reached with regard to the effect of skin-to-skin contact on the duration of BF, timing of first BF or baby physiological factors (temperature and behavior)." This review highlights the need for further primary research to assess the effect of skin-to-skin contact on the BF experience (pg. 148). Across the studies, KC was given for 15-90 minutes. Two studies in Spain, 1 Canada, 1 Austria, and 3 in Guatemala. A major weakness of this review is that she did not use the Swedish Studies, nor any of U.S. FULLTERM, Review. BF, Meta-Analysis

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Carfoot, S., Williamson, P.R., & Dickson, R. (2004). The value of a pilot study in breastfeeding research. *Midwifery* 20, 188-193.RCT pilot with fullterm infants who got 45 minutes of KC starting after weighing after birth, or 45 minutes of regular swaddled holding after weighing, drying, dressing. More than 75% of KC infants had success of 1st breastfeeding using IBFAT (BAT) score of 8 and that was more than controls (62%). Fullterm, RCT, BF success, VEKC.

Carfoot, S., Williamson, P., & Dickson, R. (2005). A randomized controlled trial in the north of England examining the effects of skin-to-skin care on breastfeeding. *Midwifery* 21(1), 80-83. RCT of 102 VEKC dyads (quickly dried, and weighed and then given to mother and removed from mother for dressing, measuring and perineal suturing - got minimum of 45 minutes of KC and then breastfeeding for about 45 minutes), 102 routine care (dried and wrapped in towel and then given briefly to mother, and interrupted for weighing, measuring, dressing - then given back to mother for swaddled holding for 45 minutes). In the KC dyads 89/98 (91%) babies had successful 1st feed vs. 82/89 (83%) controls (No significant difference) Success of first BF was measured by IBFAT with latch added so that a score of 8 or more was called “successful”. 42/97 KCers and 40/100 controls EXCLUSIVELY BF @ 4 months. (Non Significant difference). Infant temp 1 hour postbirth higher in KCers (p = 0.02), more mos 87/97 (90%) KCers were very satisfied with their care (KC) vs. 60/102 (59%), 83/97 (86%) of kcers and 31/102 (30%) controls said they prefer to receive same care in future. Limitation of study was that mothers changed groups and were retained in original group for statistics (p.<.76). In summary, no benefits to BF success or exclusively BF, and only temp was higher and maternal satisfaction with care higher in KC group. RCT, Fullterm, BF Success, BF Success Tool, maternal satisfaction, maternal preference, Temp, BF Exclusivity at 4 months, Episiotomy KC, VEKC (not birth KC because taken to warmer to be dried and weighed before KC began).


Carlo, W.A., McClure, E.M., Chomba, E., Chakraborty, H., Hartwell, T., Harris, H., Lincetto, O., & Wright, L.L. (2010). Newborn care training of midwives and neonatal and perinatal mortality rates in a developing country. *Pediatrics*, 126(5), e1064-e1071. DOI: 10.1542/peds.2009-3464 (some similarities and some differences from above). Tested the hypothesis that two training programs of midwives in 2 cities in Zambia would reduce incrementally 7-day neonatal mortality rates for low risk deliveries in two primary care community health clinics. “A total of 71699 neonates were enrolled” (I think this sample size is wrong). Taught WHO’s Essential Care of Newborn (universal precautions and cleanliness, routine neonatal care, resuscitation, thermoregulation, breastfeeding, kangaroo care, care of small infants and common illnesses AND the American Academy of Pediatrics Neonatal Resuscitation Program (in depth basic resuscitation). Data were collected at the end of each training program at three different times. Essential care of newborn decreased all-cause 7-day neonatal mortality rates from 11.5 deaths/1000 live births to 6.8 deaths/1000 live births. 7-day neonatal mortality rates were further decreased after the resuscitation training. 3rd world, mortality, essential care of newborn. Not on charts as of 10/24/2010.

Carlsson SG., Fagerberg H, Horneman G, Hwang C-P., Larsson K, Rodholm M, Schaller J., Danielsson B., & Gundewall C. (1978). Effects of various amounts of contact between mother and child on the mother’s nursing behavior. *Developmental Psychobiology*, 11, 143-151. 50 fullterm dyads in 3 groups: extended contact (KC in BF position for 1-2 hours immediately after birth and for 2-4 hrs between meals – n=17), extended contact in KCBF position for 1-2 hrs immediately after delivery but not between meals after that (n=17), routine care (hold baby for max of 5 minutes after birth- no KC after that as placed in crib at side of mother after washing, Irng,etc. N=16). Watched when baby took nipple in mouth & recorded q 15 sec. TIL 2 mins after baby let go of nipple. Moms showed more smiling, talking, and other contact behaviors than routine care moms during feeding interactions. KC for 1-2 hrs immed. after birth influenced feeding behavior during the following four days. Fullterm, RCT, KCBF position, Maternal behaviors, Birth KC.

crib at mom’s side. (Mom held infant for up to 5 min after birth, then taken away, washed and put in crib). Observations began when infant took nipple and continued for two minutes after letting go of nipple. This was six weeks Postpartum assessment of feeding in the home. No group differences at 6 weeks as seen in 1978 study because feeding at 6 wks is so routinized that it has lost its significance as a means of communication. **Fullterm, KCBF position**


Carmichael, A. Matulionis, B. (2014). Implementing the Gentle C-Section. A birth experience more like a vaginal delivery. *Journal of Obstetric, Gynecologic, and Neonatal Nursing, 43* (Suppl 1), S13-S14. doi: 10.1111/1552-6909.12379 An evaluative report of quality improvement project aimed to enhance the birth experience of women having cesarean birth and to improve breastfeeding within one hour of birth. Gentle C section mimics vaginal birth by allowing mother to watch the delivery and have skin to skin contact immediately after birth. Evidence shows that KC immediately after birth increases success and duration of breastfeeding, improves bonding, and facilitates thermoregulation. They made an MD-narrative UTUBE video called Gentle C-Section and formed a committee to plan the change. Challenges were maintaining a sterile field, allowing enough space for all personnel and father, having a nursery nurse stay with the infant for the full hour of skin to skin contact. They videotaped the first two tries and interviewed the parents to make changes. Took 4 months to do the first gentle c-section and as of August 2013 they had done five gentle c-sections and results are: 100% initiated BF in the first hour after birth and parental satisfaction with the birth experience was better. Now they are using advertising to market Gentle C-section to the community. **Fullterm, Evaluative study, implementation, quality improvement, Birth KC, breastfeeding, bonding, thermoregulation, marketing, video. Not on charts**

Carter, N.E. & Harper, J. (2012). Keeping mothers and newborns together after cesarean. How one hospital made the change. *Nursing for Women’s Health, 16*(4), 290-295. A quality improvement project report of how this women’s specialty hospital in South Louisiana that delivers about 8000 infants annually with 3000 by cesarean section changed from the tradition of separating the mother from their infants after cesarean to keeping mothers and babies together in skin-to-skin contact. Barriers to the change were perceived lack of physical space and some mothers, i.e. those haves tubal ligations, are not able to hold their infant skin to skin, or so the nurses thought. **Motivators for change were: NOT FINISHED**

Caruana E. (2008). Review summaries: evidence for nursing practice: Early skin-to-skin contact for mothers and their healthy newborn infants. *J. Advanced Nursing 62*(4), 439-440. This is a review of Moore’s Cochrane analysis of 2007. Relates no adverse effects of early KC were reported; implications for nursing are: 1. early KC improves maternal and infant outcomes, with no reported short term nor long term adverse effects. 2) the timing of KC is important: in first two hour post birth infants are alert and if they receive KC then and remain undisturbed and unmedicated, they will often self-latch at about 1 hour post birth. 3) to ensure that the infant’s temperature remains within safe range, KC should be uninterrupted and infant should be dried well and covered with warm blanket and head needs to be covered with dry cap that is replaced if it gets damp. More trials are needed. No independent from Moore’s article commentary or review is presented. **Review. Full term, breastfeeding, temperature**


Castillo, M.S., Corsino, M.A., Calibo, P., Zeck, W., Capili, D.S., L. C. Andrade, 4 K. A. Reyes, 2 7 R. C. Alfonso, 2 M. B. Ponferrada, 1 and M. A. Silvestre (2016). Turning Disaster into an Opportunity for Quality Improvement in Essential Intrapartum and Newborn Care Services in the Philippines: Pre- to Posttraining Assessments. *Biomedical Research International 2016: 6264249*. doi: 10.1155/2016/6264249 On 8 November 2013, super typhoon Haiyan made landfall in the Philippines, severely disrupting health service delivery. Reestablishment of essential services for birthing mothers and their newborns became high priority. *Methodology. Following a baseline assessment, an Essential Intrapartum and Newborn Care (EINC) training package was implemented and posttraining assessments (1 and 3 months after training) were undertaken. Updated EINC training modules contained brief didactic sessions on basic topics: Essential Intrapartum and Newborn Care, breastfeeding support, kangaroo mother care, Infant and Young Child Feeding in Emergencies (IYCF-E), partograph use, and the recent WHO recommendations on basic newborn resuscitation, correct administration of magnesium sulfate, and postnatal care of mothers and newborns. Skills sessions consisted of “coaching sessions” with demonstration/return demonstrations using manikins and delivery kits. Workshops culminated with action planning sessions on effective mainstreaming of EINC in their practice. These planning sessions allowed the participants to voice out their concerns and their apprehensions and discuss among themselves ways to contextualize these changes and address them. Baseline assessments (n = 56 facilities) revealed gaps in provider’s skill and shortage of life-saving commodities. Facilities lacked newborn bags/masks (9%), towels (6%), and magnesium sulfate (39%). Service providers lacked skills in partograph use (54%), antenatal steroid (44%) use, and breastfeeding initiation (50%). At 3 months after training (n = 51 facilities), dramatic increases in correct partograph use (to 92%), antenatal steroid use (to 98%), breastfeeding initiation (to 86%), kangaroo mother care (to 94%), availability KCBib 2018
of magnesium sulfate (to 94%), and bag/masks (to 88%) were documented. Gaps persisted for skills in assisted vaginal delivery and removal of placental fragments. Health human resources suffered serious setbacks not only due to substantial loss of lives among health care providers but also due to lack of training and technical capacity (in basic newborn resuscitation, care of the low birth weight, kangaroo mother care, breastfeeding, and Infant and Young Child Feeding in Emergencies (IYCF-E)).

Conclusion. Health services were severely disrupted after super typhoon Haiyan. Our study demonstrates that essential birthing services and quality improvements to strengthen local health systems can be restored in a timely manner even in immediate postdisaster settings. PT, FT, Report of disaster care, essential care of newborn, not on chart !7-19-2016, new to biblio study.

Castral TC, Warnock F, Leite AM, Haas VJ, & Scochi CG. (2008). The effects of skin-to-skin contact during acute pain in preterm newborns. European J. of Pain, 12(4): 464-471. Doo: 10.1016/j.ejpain.2007.07.012 Randomized clinical trial of 59 stable (GA =30 weeks) given heel stick got either 15 minutes of KC before, during and after stick (n=31), or 28 got routine lance in incubator. Neonatal Facial Coding Scale was significantly lower in KC throughout whole procedure. Both groups of infants cried and showed increased heart rate during puncture and heel squeeze and these changes were less for KC infants. KC promoted reduction in behavioral state measures and less physiologic increase during procedure. It is recommended that KC be used as a nonpharmacologic intervention to relieve acute pain in stable premature infants born 30 weeks gestation or older. available now from doi:10.1016/j.ejpain.2007.07.012. PT, RCT, pain, crying, heart rate, facial, behavioral state. Not on charts yet.

Castral, T.C., Warnock, F.F., Rubeiro, L.M., Vasconcelos, M.G., Keite, A.M., & Scochi, C.G. (2012). Maternal factors regulating preterm infants’ responses to pain and stress while in maternal kangaroo care. Review Latina Americana Enfermagem, 20(3), 435-443. No doi. The relationship between maternal factors and the response of 42 preterm infants to pain and stress experienced during heel puncture while in maternal kangaroo care in nICU was investigated by measuring the neonates' facial actions, sleep and wake states, crying, salivary cortisol levels, and heart rate, in addition to the mothers' behavior, salivary cortisol levels, and mental condition during baseline, procedure, and recovery phases. The influence of the maternal explanatory variables on the neonatal response variables were verified through bivariate analysis, ANOVA, and multiple regression. The mothers’ behavior and depression and/or anxiety did not affect the neonates’ responses to pain and stress, though the mothers’ levels of salivary cortisol before the procedure explained the variance in the neonates’ levels of salivary cortisol after the procedure (p<0.036). Additionally, the mothers’ baseline levels of salivary cortisol along with the neonates’ age explained the variance in the neonates’ heart rate (p<0.001). The ability of mothers to regulate their own stress contributed to the infants’ responses to pain and stress. PT, depression, anxiety, PAIN, STRESS, salivary cortisol, crying, sleep, synchrony, co-regulation synchrony, heart rate, correlational

Catherine ZG1, Béatrice P2, Fabrice L1, Claire H2, Alain D3. (2015-Nov.) Skin-to-skin contact with an umbilical venous catheter: prospective evaluation in a level 3 unit. Eur J Pediatr. [electronic version] The aim was to assess the incidence of complications related to skin-to-skin contact (SSC) in newborns with an umbilical venous catheter (UVC). We carried out a prospective follow-up study of all UVCs in a level 3 unit where SSC is systematic. A total of 333 babies were included (mean gestational age of 31.3 weeks (24-41)), mean birth weight of 1618 g (454-4900). Two hundred sixty-three babies (78.9 %) had SSC, at a mean postnatal age of 24 h (3-144 h). Two babies presented with a significant umbilical bleeding, all in the first 3 h, before

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In 17 cases of UVC leaking, this necessitated an unwanted withdrawal of the UVC; of these, 14 UVCs (82 %) were in subhepatic position. In five cases of UVC displacement, babies had no SSC. The overall incidence (3 % [95 % CI= 1.4-5.4]) and incidence density (6.2/1000 UVC-day [95 % CI = 3-11.4]) of catheter-associated infections are similar to those identified by the French multicenter network NEOCAT in 2012 (5 % [95 % CI = 4.1-5.9] and 11.3/1000 UVC-day [95 % CI = 9.3-13.2]). In this prospective, non-randomized study in a level unit, routine practice of SSC with a UVC does not seem to influence the incidence of mechanical and infectious complications. What is known? • SSC is beneficial for preterm infants. • Fear of mechanical problems and/or infections with a UVC is an obstacle to early use of SSC. What is New? • In this study, SSC for preterm infants with a UVC is associated with low risks of mechanical complications, and does not seem to be associated with any higher risk of catheter-related infections.

**PT descriptive prospective evaluation study, UVC (Umbilical VENOUS CATHETER), safety, infection, routine KC, start within 24 hours of birth, Valenciennes, France, micropreemie**


Cattaneo A., Davanzo R, Uxa F, & Tamburlini G. (1998). Recommendations for the implementation of Kangaroo Mother Care for low birthweight infants. *Acta Paediatr.*, 87(4): 440-445. This is report of the 1996 INK meeting recommendations and includes 4 research goals: 1) work on effectiveness and safety of KMC as a means of stabilizing prematures and LBWs just after birth 2) further health systems research on its application in different settings, KMC at birth for VLBW in 1st and 2nd level maternity units with very limited resources, 3) conduct research on developmental (long term and short term) outcomes, and 4) KMC for home deliveries not assisted by trained personnel. KC is a low cost intervention. *PT, Guidelines, Implementation, research goals, development, end-not on chart*

Cattaneo A, Davanzo R., Worku B, Surjono A., Echeveria N, Bedri A, Hukari, E., Osorno L, Guadetta B, Setyowireni D, Quintero S, & Tamburlini G. (1998). Kangaroo mother care for low birthweight infants: A randomized controlled trial in different settings. *Acta Paediatr.*, 87(9): 976-983 Multicenter (Ethiopia, Indonesia and Mexico) study with 143 mothers, median entry age of infant was 10 days (R=1-74) KMC produced breastfeeding/breastmilk feeding rates at discharge of 83%, 98%, and 80%. Mexican KMC infants with early discharge had more common overall BF (88 vs 70%) and BF exclusivity (80 vs. 16%) than controls. Length of stay shorter for KMC. Transfer back to conventional care was 13.4%. 91% of moms were happy with KMC and 83% comfortable with KMC. 80% of moms considered the KMC method to be convenient. No episodes of hypothermia nor apnea. PT, Randomized Controlled Trial (RCT), Morality, BF, Length of Stay, transfer back rate, 3rd world, apnea, hypothermia, maternal feelings

Cattaneo, A., & Tamburlini, G. (1997). News from the Regions-Newsletter from Italy. *Journal of Tropical Pediatrics, 43: 251-252.* This is a brief report of the work accomplished at the October, 1996 World Health Organization-Bureau of International Health sponsored Consensus Conference on Kangaroo Mother Care. *PT*

CBS Evening News. (2009). Mother’s Milk a lifesaver for Preemies? San Diego, April 10, 2009. This is a transcript of the presentation made on CBS Evening News about the benefits for mothers milk by preemies highlighting a program at UC San Diego. When I accessed this article, a four page print out came which included two pages of poste d comments. One comment on page 3 was “I hope more follow-up is done on this topic (other benefits of human milk on preemies, i.e. ROP, weight gain, etc. obstacles that mom face when trying to breastfeed , etc). Also, I urge the CBS staff to uncover how ‘development care’ and ‘kangaroo care’ help preemies’ physiologic stability and neurologic development. These are fascinating wonders that unfortunately not all the NICUs are practicing.” I accessed this report on 6/15/2009 and it is available from [http://www.cbsnews.com/stories/200904/10/eveningnews/main4935867.shtml](http://www.cbsnews.com/stories/200904/10/eveningnews/main4935867.shtml) PT

Cederfeldt J, Carlsson J, Begley C, Berg M. (2016-Mar). Quality of intra-partum care at a university hospital in Nepal: A prospective cross-sectional survey. *Sexual & Reproductive Healthcare.*, 7:52-57. doi: 10.1016/j.srhc.2015.11.004. To investigate the quality of intra-partum care provided to women with an expected normal birth at a university hospital in Nepal.A prospective cross-sectional study was conducted during three weeks in November 2013. Nurses at the labor ward collected data from 292 consecutive births. Of these, 164 women of low risk were expected to have a normal birth and were included in the study; 107 (65%) were nulliparous. The self-administered questionnaire covered maternal characteristics, previous pregnancies and births, current pregnancy, labor and birth. Nine items assessed care management, five of which comprised the Bologna score with a total possible score of 5: presence of a companion, use of partograph, non-use of augmentation, non-supine position, and skin-to-skin contact. The women were assisted by physicians (56%), nurses (42%) or students under supervision (2%). All were in good health after birth. Two had a postpartum hemorrhage exceeding 500 ml and 49% had an episiotomy. Apgar score in all neonates was ≥ 7 at five minutes. KCBib 2018
Mean Bologna score was 1.43 (variance 0-3). The management of care in normal birth could be improved in the studied setting, and there is a need for more research to support such improvement. FT, evaluative, 3rd world, BirthKC?, Apgar Score, Bologna Score for Excellence in Quality of Maternity Care, guidelines, implementation


Centers for Disease Control and Prevention. (2005). See also United States Dept. of Health and Human Services CDC: This is a report related to breastfeeding that says on page 1 that KC should be encouraged to promote breastfeeding. See reference under Shealy for full citation. On page 1 of the book it states "maintaining skin-to-skin contact between mother and baby after birth has been demonstrated to have a positive effect on breastfeeding." "Breastfeeding is an extremely time-sensitive relationship" (pg. 2). Policy, BF, Full term, guidelines, Birth KC, breastfeeding

Centers for Disease Control and Prevention has three areas of involvement: 1) the National Survey of Maternity Practices in Infant Nutrition and Care (mPINC) surveys which occur every two years. 2) Breastfeeding report cards which are conducted every two years (2007, 2009, 2011) (BF report card shows how BF is being protected, promoted and supported in each state using 5 outcomes from Healthy People 2010 (Ever breastfed, BF at 6 months, BF at 12 months, Exclusive BF at 3 months, and Exclusive BF at 6 months) and 9 processes) [Average mPINC score, % live births in BFFI facilities, % BF infants receiving formula before 2 days of age, # of IBCLC/1000 live birth, # of LLL groups/1000 live births, # of State Dept. FTEs dedicated to BF, State legislation about BF in public places, State legislation mandating employer lactation support, and BF coalition with public website] indicators, and 3) the National Immunization Survey which asks questions about BF, birth, and many factors related to immunity. The last national Immunization Survey was conducted in 2007 and the results from 1999-2007 are reported as CDCP 2010 below. Be sure to see Dept. of Health and Human Services CDCP citations below under DHHS and United States Dept. of Health and Human Services, too.

Centers for Disease Control and Prevention (CDCP). (2007). The CDC National Survey of Maternity Practices in Infant Nutrition and Care (mPINC). Hospital Survey. OMB # 0920-0743, Expires 07/31/2009. Available from http://www.cdc.gov/breastfeeding/pdf/mpinc_hospital_survey.pdf. Survey conducted by Diane Manninen, Ph.D., Task Leader, Battelle, 1-866-826-4176. This is a national (USA) CDC survey of hospitals to assess their promotion of breastfeeding. Among the infant nutrition and infant care questions are these that pertain to Kangaroo Care: “A4: Approximately, how many mothers are encouraged to hold their healthy full-term infants skin-to-skin for at least 30 minutes within an hour of birth for uncomplicated vaginal births?” Few=0-9%, Some = 10-49%, Many = 50-89%, Most = 90%+, Not sure. Question A5 is “Are routine newborn procedures (e.g. APGAR, cord clamping, foot printing) after uncomplicated vaginal birth done while the mother is holding the healthy full-term infant skin-to-skin?” Rarely=0%, Sometimes = 10-49%, Often 50-89%, Almost always= 90%+ and Not sure. Question A9 is “Approximately how many mothers (regardless of feeding method) are encouraged to hold their healthy full-term infants skin-to-skin for at least 30 minutes on a two hour trial?” With few,some, many, most, and not sure being possible answers. The survey, generally considered precursors to development of JCAHO mandated care requirements, is being performed for the Centers for Disease Control and Prevention, the National Center for Chronic Disease Prevention and Health Promotion, the Division of Nutrition and Physical Activity, and the Maternal and Child Nutrition Branch of CDCP. All from Atlanta, GA. Full term, breastfeeding, Birth KC, guidelines, implementation. See results of study that follow as CDCP 2008 reference. BE sure to see CDC 2011 to see how the questions have changed from 2007 to 2009

Centers for Disease Control and Prevention. (2008). Breastfeeding-related maternity care practices at hospitals and birth centers – United States, 2007. Morbidity and Mortality Weekly Report, 57/23 June 13, 2008, 621-625. The CDC survey was conducted on 2700 birth facilities in 2007 and found that many birth facilities in US are not fully supportive of breastfeeding. Birth facilities reported their practices and policies in caring for women who chose to breastfeed and responses were scored 0-100 points. The least supportive states (scores 48-58) were Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Oklahoma, West Virginia. Scores of 75-81 were highest and were in states Vermont, New Hampshire, Maine, and Oregon. Laurence Grummer-Strawn, chief of nutritional branch of CDC’s Division of Nutrition, Physical Activity, and Obesity, said “These findings underscore the importance of improving the way hospitals and birth centers provide assistance, encouragement, and support of breastfeeding. We have a great deal of work to do to accomplish our national objectives related to breastfeeding, and birth facilities can make a huge contribution to this effort.” Full term, birth KC, guidelines, breastfeeding. SEE DEPT Health and Human Services and CDCP for report on OHIO.


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Centers for Disease Control and Prevention, Division of Nutrition, Physical Activity, and Obesity. (2009b and 2011). Improving hospitals’ support for breastfeeding. Retrieved from www.cdc.gov/mpinc/7/5/2010 or www.cdc.gov/mpinc and we retrieved it on Sept. 11, 2011. This document was updated March 2011. www.cdc.gov/breastfeeding/pdf/mpinc/maternity_care_practices.pdf to list the specific document that lists 6 strategies to improve hospital support of breastfeeding. STSC is the very first strategy and says “Doctors and midwives place newborns skin-to-skin with their mothers immediately after birth, with no bedding or clothing between them, allowing enough uninterrupted time (at least 30 minutes) for mother and baby to start breastfeeding well.” FT, Guideline, duration of 30 mins of KC is important.


Centers for Disease Control and Prevention. (2011). Maternity Care Practices. Available from http://www.cdc.gov/breastfeeding/Maternitycarepractices. Poster August 4, 2011 a nd accessed 9/15/2011. This sheet starts w ith a definition section that says “maternity care practices related to breastfeeding take place during the intrapartum hospital stay. Some maternity care practices differ in their effect on breastfeeding. Both the use of medications during labor and cesarean birth have been shown to have a negative effect on breastfeeding; however, providing continuous support during labor and maintaining skin-to-skin contact between mother and baby after birth have been demonstrated to have a positive effect on breastfeeding” pg. 1. FT, PT, BF, Birth KC Not on Charts 9/18/2011 SEE ALSO United States Dept. of Health and Human Services Centers for Disease Control Citation.

Centers for Disease Control and Prevention (2011a). Breastfeeding Report Card-United States, 2011. Centers for Disease Control and Prevention National Immunization Survey, Provisional Data, 2008 births. Retrieved from http://www.cdc.gov/breastfeeding/data/NIS_data/index.htm . This report car relates that the report card is in its 5th year, and steady improvement in 3 and 6 month exclusive breastfeeding is seen. Less than 5% of US infants are born in Baby-Friendly Hospitals and the hospital period is critical for mothers and babies to learn to breastfeed and hospitals need to do more to support them. Hospitals can participate in the Maternity Practices in Infant Nutrition and Care (mPINC) survey, and use their results to improve maternity care practices.” All past performances on Breastfeeding report cards can be accessed http://www.cdc.gov/breastfeeding/data/reportcard.htm The mPINC scores for each state are reported and it is this score that reflects the 2009 mPINC questions which were: 1) skin to skin contact among vaginal births: how many patients experience mother-infant skin to skin contact for at least 30 minutes within one hour of uncomplicated vaginal birth? (question changed from 'encouraged to hold’ to ‘experience skin-to-skin”). mPINC scores ranged from 51(Mississippi)-81% (81% in Rhode Island and New Hampshire) across all states. FT, BF, mPINC, Not on charts 10/27/2011

Centers for Disease Control and Prevention. (2011b). Vital Signs: Hospital practices to support breastfeeding- United States, 2007 and 2009. Morbidity and Mortality Weekly Report. 60(30), 1020-1025. “Childhood obesity is a national epidemic in the US. Increasing the proportion of mothers who breastfeed is one important public health strategy for preventing childhood obesity” pg. 1020. However, few hospitals have model breastfeeding policies (14%), limit breastfeeding supplemental use (22%) or support mothers post-discharge (27%). From 2007 to 2009, the percentage of hospitals with recommended practices covering at least nine of the 10 indicators increased only slightly, from 2.4% to 3.5%. Most US hospitals have policies and practices that do not conform to international recommendations for best practices in maternity care and interfere with mothers’ abilities to breastfeed. Hospitals providing maternity care should adopt evidence-based practices to support breastfeeding. Suboptimal breastfeeding in the US annually results in an estimated 2.2 billion in additional direct medical costs (Bartick M, Reinhold A. 2010. The burden of suboptimal breastfeeding in the US: a pediatric cost analysis. Pediatrics 125, e1048-e1056). The number of BFH in US rose from 1.8% in 2007 to 4.5% in 2011 (CDC. Breastfeeding report card-US, 2011. Atlanta, GA: US Dept. Health and Human Services. CDC; 2011 available at http://www.cdc.gov/breastfeeding/data/reportcard.htm Accessed 10/27/2011. FT, obesity, BF, BF cost, mPINC, post-discharge support for BF. Does not mention KC per se, but the CDC considers birth KC an evidence-based breastfeeding support practice. Not on charts 10/27/2011

Cerezo MR, de Leon R., Gonzales BJV. (1992). Mother child early contact with “the mother kangaroo” program and natural breast feeding. Rev Latino Amer Perinatol 12, 54-60. Randomized controlled trial of 61 infants in incubator and 51 infants in KC. Infants were observed during 3 month follow-up visits in NICU follow-up clinic. 78% of KC infants were exclusively BF (34% for controls) at 3 months and no differences in morbidity, serum bilirubin/glucose, hematocrit, blood culture, other cultures, feeding methods during hospitalization, and increase in weight over the 30 days post discharge between groups. Preterm, RCT, BF, Morbidity, Weight gain, infections, blood values.

Cesariotti, M. (2012). Brighter tomorrow stories contest winning entry. From parent to NICU nurse. NANN Central, 28(2), pg. 3. This is the member’s newsletter of the National Association of Neonatal Nurses. Ms. Cesariotti wrote in relating her experience as a mother of a 26 weeker several years ago “As parents we pushed the boundaries of our NICU 12 years ago when family-centered care was in its infancy. We requested skin-to-skin – then known as kangarooing-sometimes twice a shift, demanded Isabel receive only breast milk, and participated in nearly all touch times.” Susie’s comment on 7/20/2012: we are so removed from natural caregiving of our sick infants that we call the contact periods “touch times” and why wasn’t she allowed to do that? We have still a long way to go. PT, informal care report, implementation (had to push the boundaries).

Chalmers B. (2009). Commentary: Sensitive publications and sensitive periods. Birth 36(2), 113-114. This is a commentary on Bystrøva et al., 2009 (the one year interaction follow-up) and it says that lack of intention-to-treat analysis is a detriment. Page 113 states “This process (the care of infant under radiant warmer for almost a half hour after birth) is a far cry from the immediate, noninterventionist, skin-to-skin, mother-infant contact following birth that is advocated by current evidence-based approaches.” and “In St. Petersburg, delaying nurturing would have been ideal if the mother and infant had been allowed to be together from the moment of birth” (so mom would not bleed in what she needed to add but did not add this comment). On page 114 it states “In addition, circumstances in which the study can be replicated – where immediate mother-infant contact after birth is not routine – will (hopefully) be rare in years to come.” Birth KC, commentary, Full-term, recommendation. Separation. Not on charts yet.


Chambers, M.B., Morrison, B., Ludington-Hoe, S.M. (2011). Maternal perception of birthing center nurses support of first breastfeeding. Presentation at 7th Annual Cleveland Clinic Nursing Research Conference Journey Forward in Nursing Research. May 6, 2011 Cleveland Clinic Lyndhurst Campus. A fullterm birth KC study conducted at Fairview Hospital in Cleveland in which nurses have for 4 years been starting birth KC within 1-2 minutes of birth and continuing until the first feeding at breast has been accomplished. Nurses were asked their perceptions of this practice. GET RESULTS FROM BARB.

Chan G, Bergelson I, Smith ER, Skotnes T, Wall S. (2017-Dec). Barriers and enablers of kangaroo mother care implementation from a health systems perspective: a systematic review. Health Policy Plan. 32(10):1466-1475. doi: 10.1093/heapol/czx098. Kangaroo Mother Care (KMC) is an evidence-based intervention that reduces neonatal morbidity and mortality. However, adoption among health systems has varied. Understanding the interaction between health system functions-leadership, financing, healthcare workers (HCWs), technologies, information and research, and service delivery-and KMC is essential to understanding KMC adoption. We present a systematic review of the barriers and enablers of KMC implementation from the perspective of health systems, with a focus on HCWs and health facilities. Using the search terms ‘kangaroo mother care’, ‘skin to skin (STS) care’ and ‘kangaroo care’, we searched Embase, Scopus, Web of Science, Pubmed, and World Health Organization Regional Databases. Reports and hand searched references from publications were also included. Screening and data abstraction were conducted by two independent reviewers using standardized forms. A conceptual model to assess KMC adoption themes was developed using NVivo software. Our search strategy yielded 2875 studies. We included 86 studies with qualitative data on KMC implementation from the perspective of HCWs and/or facilities. Six themes emerged on barriers and enablers to KMC adoption: buy-in and bonding; social support; time; medical concerns; training; and cultural norms. Analysis of interactions between HCWs and facilities yielded further barriers and enablers in the areas of training, communication, and support. HCWs and health facilities serve as two important adopters of Kangaroo Mother Care within a health system. The complex components of KMC lead to multifaceted barriers and enablers to integration, which inform facility, regional, and country-level recommendations for increasing adoption. Further research of methods to promote context-specific adoption of KMC at the health systems level is needed. Review, KC adoption, implementation, barriers, enablers. NOT ON CHARTS.

Cham GJ et al., Sept. 2017. Something about barriers and enablers of KMC. Health Policy and Planning. GET THIS, now on pubmed! See also Carolyn Crist, Sept. 7, 2017 citation that follows.

Chan GJ, Valsangkar B, Kajeepeta S, Boundary EO, Wall S. (2016-June). What is kangaroo mother care? Systematic review of the literature. Journal of Global Health. 6(1):010701. doi: 10.7189/jogh.06.010701 Kangaroo mother care (KMC), often defined as skin-to-skin contact between a mother and her newborn, frequent or exclusive breastfeeding, and early discharge from the hospital has been effective in reducing the risk of mortality among preterm and low birth weight infants. Research studies and program implementation of KMC have used various definitions. To describe the current definitions of KMC in various settings, analyze the presence or absence of KMC components in each definition, and present a core definition of KMC based on common components that are present in KMC literature. We conducted a systematic review and searched PubMed, Embase, Scopus, Web of Science, and the World Health Organization Regional Databases for studies with key words "kangaroo mother care", "kangaroo care" or "skin to skin care" from 1 January 1960 to 24 April 2014. Two independent reviewers screened articles and abstracted data. We screened 1035 articles and reports; 299 contained data on KMC and neonatal outcomes or qualitative information on KMC implementation. Eighty-eight of the studies (29%) did not define KMC. Two hundred and eleven studies (71%) included skin-to-skin contact (SSC) in their KMC definition, 49 (16%) included exclusive or nearly exclusive breastfeeding, 22 (7%) included early discharge criteria, and 36 (12%) included follow-up after discharge. One hundred and sixty-seven studies (56%) described the duration of SSC. There exists significant heterogeneity in the definition of KMC. A large number of studies did not report definitions of KMC. Skin-to-skin contact is the core component of KMC, whereas components such as breastfeeding, early discharge, and follow-up care are context specific. To implement KMC effectively development of a global standardized definition of KMC is needed. Review, PT, definition of KMC, components of KMC. New to biblio study, not on charts 6/2/2016.

hand-searched references of published reviews and articles. Two independent reviewers screened articles and extracted data on carers, health system characteristics and contextual factors. We developed a conceptual model to analyse the integration of kangaroo mother care in health systems. We screened 2875 studies and included 112 studies that contained qualitative data on implementation.

“However, in spite of the evidence that KC could reduce deaths in preterm newborns, country-level adoption and implementation of kangaroo mother care has been limited and global coverage remains low. Few studies have examined the reasons for the poor uptake of kangaroo mother care.” (p. 130). Kangaroo mother care was applied in different ways in different contexts. Mothers used words like “relaxed, calm, happy, natural, instinctive and safe to describe the bonding process that mothers an fathers reported using and after KMC” (pg. 131 & 133). “Mothers observed their newborns to sleeping longer during SSC: infants were described as less anxious, more restful, more willing to breastfeed and happier than when in an incubator” (pg. 133) “Health care workers had limited uptake of KMC due to a lack of belief in KMC and limited knowledge of KMC. Mothers reported lack of support from health care workers” (pg. 133) For success of KMC, support from management and good communication among the staff were present (pg. 133). Paternal involvement played a large role in uptake of KMC. Within the maternity ward, peer support from other mothers through sharing their KMC experiences also helped promote acceptance” (pg. 134). The studies show that there are several barriers to implementing kangaroo mother care, including the need for time, social support, medical care and family acceptance. Barriers within health systems included organization, financing and service delivery. In the broad context, cultural norms influenced perceptions and the success of adoption. Kangaroo mother care is a complex intervention that is behaviour driven and includes multiple elements. Success of implementation requires high user engagement and stakeholder involvement. To overcome the barriers, the authors recommend “the problem of low use of KMC due to stigma of preterm birth is compounded by a lack of KNOWLEDGE about KMC among parents, families, and health care workers. 1) Clear articulation of benefits of KMC for mothers and for newborns, 2) creation of a community among parents, caregivers and health care workers, 3) engagement of fathers in childcare can help overcome the barriers to uptake of KMC” (p. 134). Collaboration among health care workers with shared goals and team commitments, partnering experienced nurses with inexperienced nurses can also help. Future research includes designing and testing models of specific interventions to improve uptake. Review, PT, FT. barriers, implementation, little being done, enablers, maternal feelings, paternal KC's qualitative data, cultural influences.

New to Biblio study NOT ON CHARTS 2/3/2016, paternal involvement

Chantry C.J. (2005). What should the lactation consultant know about the Academy of Breastfeeding Medicine breastfeeding management protocols? Journal Human Lactation 21(1), 39-41. Review of clinical scenario about taking fullterm infant from breastfeeding mom because dextrostick showed 37 mg/dl. “Separation of mother and infant at birth to treat hypoglycemia with breast milk substitutes was less than optimal management. Chemstrip of 37 mg/dL in an asymptomatic infant within the first 3 hours of birth is normal and does not require treatment per se” pg. 39. Serum glucose is 10-15% higher than whole blood glucose on which the heel stick screening is performed. If serum glucose is <35 (serum, not whole blood) or infant is symptomatic is to offer breastfeeding and providing formula only if the infant will not breastfeed” (pg. 39). The separation of mother and baby is inappropriate because skin-to-skin contact immediately after birth in a stable infant is the recommended routine in part because it actually is more likely to result in hypoglycemia! Skin to skin contact assists with maintenance of normal body temperature and reducing energy expenditure, concomitantly stimulating suckling and milk production. Breastfed term infants have lower concentrations of blood glucose but higher concentrations of ketone bodies than formula-fed infants. Increased ketone bodies appear to be a normal adaptation to the low nutrient intake that occurs during the establishment of breastfeeding. Suggested thresholds for glucose levels at which to intervene may not apply to breastfed infants who may tolerate lower plasma glucose levels without any significant clinical manifestations or sequelae. These recommendations are grade A recommendations based on standards of US Preventive Services Task Force and those of the Academy of Breastfeeding Medicine. Fullterm, birth KC, breastfeeding, guidelines, evidence-based practice, hypoglycemia, separation

Chaparro, C.M., & Lutter, C.K. (2007). Beyond survival: Integrated delivery care practices for long term maternal and infant nutrition, health, and development. Washington, DC: Pan American Health Organization, 2007. This is a review and guideline that says that it is absolutely essential that delayed cord clamping, immediately KC, and initiation of breastfeeding within first hour of birth be integrated with one another and included as standard delivery care practices. This is same as Lutter and Chaparro publication that follows under Lutter. Guideline, review, Birth KC, BF and delayed cord clamping. Not on charts yet

Chaparro, C.M. & Lutter, C.K. (2009). Incorporating nutrition into delivery care: delivery care practices that affect child nutrition and maternal health. Maternal and Child Nutrition, 5, 322-333. Delayed umbilical cord clamping, early skin-to-skin contact and early initiation of exclusive breastfeeding are three simple and inexpensive delivery care practices which have the potential to improve short-term and long-term nutrition and health outcomes in mothers and infants. Delayed cord clamping has benefits to preterms (prevents IVH and hematological status, and in full terms improves iron status through 6 months of age. Early skin-to-skin contact, in addition to regulating temperature, improves breastfeeding behaviors, which has important implications for long-term infants nutrition and health. But these three practices are not common in many delivery settings, so the manuscript presents discussion of immediate and long-term health and nutrition benefits and identifies policy and programme changes needed for integration and implementation of these practices into standard delivery care. Review, FT, delayed cord clamping, Birth KC, Breastfeeding. Not on charts 10/29/2011.

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Chaparral N, de Calume, ZF, & Ruiz JG (2000). “The Bogota Declaration on kangaroo mother care.” Conclusions of the second international workshop on the method. Second International Workshop of Kangaroo Mother Care. Acta Paediatrica 89 (9): 1137-1140. The declaration that was adopted by all attendees was “Kangaroo mother care is a basic right of the newborn and should be an integral part of the low birth weight and full term newborn’s care, in all settings, in all levels of care, and in all countries” (pg. 1140) Bogota Declaration, PT, INK, PT

Chaparral N, de la Hoz AM, Villegas J, Gil Stat F (2016-Feb). Discriminant ability of the Infant Neurological International Battery (INFANIB) as a screening tool for the neurological follow up of high-risk infants in Colombia. Acta Paediatr. 105,pp195-e199. doi:10.1111/ap.13377. The aim of this study was to assess the discriminative ability of the Infant Neurological International Battery (INFANIB), applied at three, six and nine months of corrected age (CA), on neurological outcomes at one year of CA to infants who were getting KC for one year post birth and being treated in the KMC Programme of follow-up visit in the KMC clinic, which is where the Griffiths and INFANIB tests were administered at 3, 6, 9, and 12 months corrected age. An observational analytic study was conducted on a cohort of 5,857 infants, followed up to one year of CA in a Kangaroo mother care programme from 1993-2010 in Bogota, Colombia. Infants were included if they had two complete INFANIB results at three or six or nine months of CA and at 12 months of CA, including the Griffiths Scale. The outcome was defined as the presence of a neurological abnormality, as evidenced by the results of both the INFANIB and Griffiths Scale. The sensitivity of the INFANIB at three months was 62.2% and specificity was 76.1%, with a receiver operating characteristic (ROC) area of 0.69. At six months the results were 77.5% for sensitivity and 74.4% for specificity (ROC 0.76) and at nine months they were 77.2% for sensitivity and 91.1% for specificity (ROC 0.84). The INFANIB was an appropriate neurological screening test with regard to determining which Colombian infants would benefit from a timely intervention for neuromotor disorders because any abnormal or transient result was then sent to early intervention. But, overall, the INFANIB is apparently unable to fully discriminate between subjects with a normal and abnormal neurodevelopmental status at 1 year corrected age (Pg. e198). On page e197 in Table 3 it presents outcomes for the KC infants at one year: normal results in both tests = 5601/5857 (95.6%); infants with abnormal result in the neurological exam = 256/5857 (4.4%); abnormal result in both tests = 45/256 (17.6%); Abnormal and transient result = 56/256 (21.9%); transient result INFANIB and Griffiths normal = 9/256 (3.5%); transient result INFANIB and Griffiths normal = 96/256 (37.5%).


Chaparral N, & Figueroa, Z. (2006). Mortality and morbidity in a cohort of low birth weight infants under kangaroo mother care (KMC): quality of care and KMC practical guidelines. Available from KMC foundation. Not published elsewhere. This sounds very much like Chaparral, Ruiz-Pelaez Figueroa, Kangaroo Research Team, 2006 publication that follows. An evidence-based quality assessment in one cohort of LBW infants (N =2773 eligible infants) at one hospital from 2002 to 2005. KMC was defined as continuous skin-to-skin contact, exclusive breastfeeding whenever possible, and early discharge with close follow-up. Compliance with KMC components was measured. Mean GA = 33 weeks, mean BW =1719 g, entry age into KMC =21 days, entry weight = 1814 g. Lost to one year follow-up =9.3%, cumulative mortality was 0.5% up to term age and 1.6% at one year corrected age. 20% readmitted for problems, exclusive BF was 61% at term age, 25% still BF at one year. At term age weight = 2750 gm, length = 46 cm, head circumference = 34.5 cm, and at one year corrected age weight = 8460g (KC infants did gain weight), length =71.5 gm, head circumference =45.5 cm, 5% some degree of psychomotor delay and 2.5% had cerebral palsy. Compliance with KMC was high, results were good.Slight but nonsignificant decrease in mortality. Guideline is that close monitoring of compliance and frequent feedback to clinical site may explain success of program. Descriptive, implementation, motor development, mental development, head circumference, exclusive BF, BF duration, cerebral palsy, readmission, weight, length, quality of care, mortality, morbidity, guidelines, definition of KMC, 1-yr follow-up, home KC, third world, 24 hr/day KC, PT NOT ON CHARTS YET.

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Chapar N, Figueroa de Calume Z, Hamel A, Medina C, Cifuentes C. (2002-2012). Rev Salud Publica (Bogotá).17(4):500-513. doi: 10.15446/rsap.v17n4.53273.(Spanish). Objective was to explore the clinical course of a cohort of newborns <1000 gr or <29 weeks of gestational age at birth after discharge from the Kangaroo Mother Care Program (KMC). Telephone surveys with parents of a cohort of 569 premature babies treated in 3 KMC programs between 2002 and 2012. The study contacted 65.4 % of the cohort, averaging 4 years old. 34 patients (6 %) passed away, 65 % during the first 6 months of life. 63 % were re-hospitalized, 32 % presented antecedents of intraventricular hemorrhage, 30 % had chronic lung disease, 5.2 % had cerebral palsy or mental retardation, and 2.7 % had convulsions. 72 % were monitored by a pediatrician, 65 % needed physical therapy, and 39 % needed speech therapy. 7 % repeated years in school and 9% of those over 4 years old had not begun to write. 4 % of those who could write had difficulties. 81 % of those over 6 years old had difficulties dressing themselves; 55 % did not practice sports. Extremely premature or low birth weight premature babies have a higher level of respiratory and neurological consequences that affect their quality of life and that of their family. It is important to strictly monitor their health after 12 months in order to promptly detect and manage neuro-psychomotor and sensorial developmental disorders. PT, descriptive evaluative study, 4 year development, not on charts


Chapar N, Ruiz JG. (2007). Breast milk composition in a cohort of pre-term infants’ mothers followed in an ambulatory programme in Colombia. Acta Paediatrica 96(12), 1755-1759. Descriptive study of 113 moms in ambulatory 24/7 KMC program who delivered “healthy” preterms who were appropriate for gestational age. Moms got intense BF instruction before discharge. Samples of hindmilk and foremilk upon entry into KMC and weekly thereafter until term. Protein concentration varied inversely with postconceptual age and postnatal age. Fat concentration was higher in hind milk than foremilk in samples of the same feed. Lactose increased steadily with PCA. Calcium/phosphorus ratios were stable, approximate 2:1 and similar in samples of different PCA and postnatal age. Mineral concentration is inadequate for preterm infants. Protein concentration decreases steadily to mature milk levels by 3rd week postnatal age, regardless of birth gestational age. Thus, for 3rd week onward, infants 32 weeks and less need protein fortifier. Feeding hind milk increases caloric density and fat intake (see Ann Johnson’s study of 20 mins of KC holding brings hind milk up first for the feeding). Preterm, descriptive, Breastfeeding, milk composition.


Chapar N, Ruiz JG. (2016-Oct). The Kangaroo Mother Care Method: From scientific evidence generated in Colombia to worldwide practice. J Clin Epidemiol. pii: 50895-435616(30549-2. doi: 10.1016/j.jclinepi.2016.05.019. [Revised at 2017] Kangaroo Mother Care (KMC) is a human-based care intervention devised to complement neonatal care for low birth weight and premature infants. Kangaroo position (skin-to-skin contact on the mother's chest) offers thermal regulation, physiological stability, appropriate stimulation and enhances bonding and breastfeeding. Kangaroo nutrition is based on breastfeeding and kangaroo discharge policy relies on family empowerment and early discharge in kangaroo position with close ambulatory follow-up. We describe how the evidence has been developed, and how it has been put into practice by means of direct preterm infants care and dissemination of the method, including training of KMC excellence centers in many countries not only in Latin America but worldwide. PT, Review 2017

offers thermal regulation, physiological stability, appropriate stimulation, and enhances bonding and breastfeeding. Kangaroo nutrition is based on breastfeeding, and kangaroo discharge policy relies on family empowerment and early discharge in kangaroo position with close ambulatory follow-up. We describe how the evidence has been developed and how it has been put into practice by means of direct preterm infants care and dissemination of the method, including training of KMC excellence centers in many countries not only in Latin America but worldwide. PT, Review, Excellence Centers


Kangaroo Mother Care (KMC) for infants of low birth weight an open, randomized, controlled trial of a Colombian social security referral hospital was conducted. A total of 1084 consecutive infants who were born at <2000 g were followed, and 746 newborns were randomized when eligible for minimal care, with 382 to KMC and 364 to “traditional” care. Information on vital status was available for 693 infants (93%) at 12 months of corrected age. KMC consisted of skin-to-skin contact on the mother’s chest 24 hours/day, nearly exclusive breastfeeding, and early discharge, with close ambulatory monitoring. Control infants remained in incubators until the usual discharge criteria were met. Both groups were followed at term and at 3, 6, 9, and 12 months of corrected age. The main outcomes measured were morbidity, mortality, growth, development, breastfeeding, hospital stay, and sequelae. Baseline variables were evenly distributed, except for weight at recruitment (KMC: 1678 g; control participants: 1713 g). The risk for death was lower among infants who were given KMC, although the difference was not significant (KMC: 11 [3.1%] of 339; control participants: 19 [5.5%] of 324; relative risk: 0.57; 95% confidence interval: 0.17-1.18). The growth index of head circumference was statistically significantly greater in the group given KMC, but the developmental indices of the 2 groups were similar. Infants who weighed <1500 g at birth and were given KMC spent less time in the hospital than those who were given standard care. The number of infections was similar in the 2 groups, but the severity was less among infants who received KMC. More of these infants were breastfed until 3 months of corrected age: These results support earlier findings of the beneficial effects of KMC on mortality and growth. Use of this technique would humanize the practice of neonatology, promote breastfeeding, and shorten the neonatal hospital stay without compromising survival, growth, or development. PT, RCT, 24/7 KMC, morbidity, mortality, head circumference, development, breastfeeding, infections, length of stay LOS, Not on Charts

Charpak N2, Ruiz JG, Motta S. (212-Jan-Feb). [The clinical course and one year forecast for a cohort of premature infants who were discharged with home oxygen in Bogota, Colombia]. Rev Salud Publica (Bogota). 2012 Jan-Feb;14(1):102-15. Documenting the clinical course and forecast for a concurrent cohort of discharged preterm infants who received home oxygen in Bogota, Colombia. This was a prospective study of a concurrent cohort of 194 newborn infants having 34 weeks gestational age (GA) or less at birth who were born in 12 institutions and followed up for one year of corrected age to assess mortality, morbidity, growth and development. Oxygen dependency was mild in 49 infants (25.3%), and moderate-severe in 145 of them (74.7%). There were 33 deaths; vital status was known in 169 infants at 40 weeks GA (87.1%) and 103 (53%) at 1 year. Breast feeding at term was successful in 150 (76.7%) of the cohort were still receiving home oxygen at 40 weeks and 12.7% at 3 months and oxygen was discontinued on average on postnatal day 109. 56.8% of the cohort were readmitted to hospital at least once, 47% of them because of respiratory conditions. Only 71 % had ophthalmological screening and retinopathy of prematurity (ROP) was detected in 38 % of cases (4 severe cases: 3 laser surgery and 1 blind infant). Neuro-psychomotor and sensorial screening tests were only performed on 19 % of the infants. More than 60 % of newborn infants discharged with home oxygen lacked structured follow-up. Oxygen-dependency in infants is complex; our data suggested that there is plenty of room for improvement in Bogotá in that respect. Not ON Charts


A review of methods and types of programs of KMC as well as a summary of physiologic, breastfeeding, bonding, maternal behavior/stress, infant development outcomes. This contains summary reviews of outcomes and emphasizes practice guidelines and outcomes for implementing KMC in a variety of levels of neonatal care and in low-middle- and high-income countries. Defines KMC as continuous skin to skin contact between mother and infant, exclusive breastfeeding, and early home discharge in the Kangaroo position (514). Pg. 515 says KMC is not “alternative medicine”, but a scientifically sound intervention. Clinical dilemma of asking mom to hold in KMC her dying infant has to be resolved, and we should avoid emergence of suboptimal quality (what does this mean?). Duration, frequency? Without monitoring? With a stressed vs relaxed mom?, and KC should not be taken to community level before introduced properly for care of stable infants in hospital (what is proper introduction?) And why not?). Paper reviews the KMC position, KMC nutrition, and discharge/follow-up policies and outcomes of KMC research. KC position is strictly upright, start at birth and ASAP in NICU, avoid separation (515). Continuous KC is for minimal care incubator infants; intermittent KC (ideally 2 hr or more)

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should begin before feeding. Review, community, continuous KC, end of life KC, position, birth KC, alternative medicine, guidelines, temperature, implementation.

Charpak N, Ruiz-Pelaez J.G. (2006). Resistance to kangaroo mother care implementation in developing countries: proposed solutions. *Acta Paediatrica* 95(5), 529-534. Between 1994 and 2004, 44 teams were sent to 25 developing countries to initiate KMC and some were not successful. 17 open-ended questions were answered by 15 coordinators at successful sites and by 15 coordinators at unsuccessful sites. The early discharge component with ambulatory follow-up was the most difficult component to implement and other barriers were difficulties arising from health professionals, mothers and families that reflected local cultural practices. Solutions are active surveillance for sources of resistance and identification of obstacles and practice solutions. Descriptive, qualitative comparison, barriers, resistance to KMC, BF, early discharge, PT implementation, third world, 24hr/day KC. NOT ON CHARTS YET

Charpak, N., Ruiz-Pelaez, J.G., & Charpak, Y. (1994). Rey-Martinez Kangaroo mother program: An alternative way of caring for low birth weight infants? One year mortality in a two cohort study. *Pediatrics*, 94(6 Pt1), 804-810. Infants < 2000 gm birthweight observed in two hospitals, one that gave KMC 24/7 once stable (about 32-34 wk and until 37-38 wks when KC not tolerated) and the other did not, got incubator care only. Enrolled when ready for minimal care. KMC infants (n=162) were 24/7 KMC until not tolerated any more (about 37 weeks postmenstrual age), and discharged early. Controls (n=170) were in incubators and had later discharge. Both followed up to one year. KMC infants had higher relative risk of death, grew less in first 3 months, and had higher proportion of developmental delay at 1 year, survival was similar between groups, but weight gain and neurodevelopment questions remain. PT, descriptive of two groups, Mortality, 12 month follow-up, development, weight gain, length of stay, 3rd world. Comment in Pediatrics. Dec. 1994, 94(6 PT1), 931-932.


Charpak N., Ruiz-Pelaez, J.G., & Charpak, Y. (2001). A randomized, controlled trial of kangaroo mother care: results of follow-up at 1 year of corrected age. *Pediatrics* 108(5), 1072-1079. A randomized trial of 382 KMC and 364 traditional care preemies <2000 gm who were randomized when off of O2 support and getting only minimal care. 24/7 KMC, nearly exclusive BF, and early discharge were KMC conditions. Evaluation at term age, 3,6,9, and 12 months corrected age. Risk of death lower but not significantly lower in KMC, head circumference greater in KMC, developmental indices (Griffith psychomotor at 6 and 12 months; and more cerebral palsy in incubator group) not different between groups. Shorter hospital stay for <1500 grams (up to 50% shorter). Number of infections the same between groups but severity less in KMCers. Many KMCers were breastfed to 3 months age. KMC humanizes neonatology, promotes BF, shortens hospital stay without compromising survival, growth, and development. PT, RCT, mortality, infection, length of stay, head circumference, BF, humane care. Psychomotor development, cerebral palsy, 3rd world. Not on charts yet.

Charpak, N., Ruiz-Pelaez, J.G., Figueroa de Calume, Z. & Charpak, Y. (1997). Kangaroo mother versus traditional care for newborn infants <2000 grams: A randomized, controlled trial. *Pediatrics* 100(4), Oct. 1997, 682-688. 382KMC and 364 traditional care newborns were followed in this RCT. 24 hour/day 7 days a week KMC given in upright position at different hospital than traditional infants and moms taught KMC and ambulatory KMC + early discharge. Early discharge criteria are: have overcome major adaptation to extraterine life, have received treatment for infection or other problems, suck and swallow properly, achieve 20 g/day weight gain (p. 683). Traditional care stayed in hospital until usual discharge criteria met (wgt of 1700 grams or more, regulates temp, gains weight). Term age results reported here. No differences in #: proportion of deaths; #: proportion of infections (14% in each) (infection was one that required antibiotic), weight, height, head circumference, #: of infants total or partially (some formula) breastfeedind, no diff in readmission rate.. Differences were: KMC had earlier discharge (1.1 days sooner), lower #: of severe infections (nosocomial infections requiring rehospitalization – KMC 3.8%, controls 7.8%), proportion of subjects getting only formula was lower in KMC. KMC is not associated with increased risk of dying, there’s no reduction in early physical growth in KMC, early discharge did not increase admissions, and 50% shorter stay could mean less crowding. KMC is safe. She differentiates intermittent skin-to-skin contact from KMC and says skin-to-skin contact is only one component of KMC. RCT, PT, Mortality, Wgt, height, head circumference, infections, Fortified breastfeeding, length of stay, skin-to-skin contact is not KMC, readmissions, 3rd world

Charpak, N., Ruiz-Pelaez, J.G., Figueroa Z., & Kangaroo Research Team. (2005). Influence of feeding patterns and other factors on early somatic growth of healthy, preterm infants in home-based kangaroo mother care: a cohort study. *Journal of Pediatric Gastroenterology and Nutrition*, 41(4) Oct., 430-437. Prospective descriptive study of 129 healthy preterm infants sent home on ambulatory KC and exclusive BF. In hospital, formula given to infants who did not gain 15 g/day for 3 consecutive days. At term age (at home by then?) 60/126 infants gained wgt adequately with exclusive BF. In 14 who need supplements, adequate wgt gain achieved before term age and supplements were stopped. More immature infants need supplementation more frequently, infants with lower weight for GA

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at birth were less likely to achieve adequate weight by term age. Growth indices at term age in KMC group were between 10-25th percentile, similar to non KMC preterms. PT, weight, home KC, exclusive BF.

Charpak N, Ruiz-Pelaez JG, & Motta, S. (2006). One year follow-up of a cohort of preterm infants (< 34 weeks GA) discharged with ambulatory oxygen in Bogota, Colombia. GET CITATION. 206 newborns were followed-up from 7 KMC programs. 4 infants died, 21 (35%) lost to follow-up at term age and 99 (48%) at 12 months. At term age exclusive BF = 54 (26.2%), growth at 12 months was normal, 16% still had supplemental home oxygen at 3 months and oxygen continued until infants were 106 days old maximum, 73% were readmitted at least once and 67% of readmissions were due to respiratory problems. 50% had ophthalmology screening and ROP was 35% of those. 19% had neuromotor tests at 1 year that showed no differences in mental and motor development. (IS THIS CORRECT?)

Descriptive, PT, follow-up, mortality, home KC, home oxygen, exclusive BF, mental development, motor development, readmissions, weight and length, ROP, third world, 24 hr/day KC

Charpak N, Tessier R, Ruiz JG, Hernandez JT, Unza F, Villegas J, Nadeau L, Mercier C, Maheu F, Marin J Cortes D, Gallego JM, Maldonado D. (2017-Jan). Twenty-year Follow-up of Kangaroo Mother Care Versus Traditional Care. Pediatrics.139(1). pii: e20162063. doi: 10.1542/peds.2016-2063. Kangaroo mother care (KMC) is a multifaceted intervention for preterm and low birth weight infants and their parents. Short- and mid-term benefits of KMC on survival, neurodevelopment, breastfeeding, and the quality of mother-infant bonding were documented in a randomized controlled trial (RCT) conducted in Colombia from 1993 to 1996. The aim of the present study was to evaluate the persistence of these results in young adulthood. From 2012 to 2014, a total of 494 (69%) of the 716 participants of the original RCT known to be alive were identified. 441 (62% of the participants in the original RCT) were re-enrolled, and results for the 264 participants weighing ≤1800 g at birth were analyzed. The KMC and control groups were compared for health status and neurologic, cognitive, and social functioning with the use of neuroimaging, neurophysiological, and behavioral tests. The effects of KMC at 1 year on IQ and home environment were still present 20 years later in the most fragile individuals, and KMC parents were more protective and nurturing, reflected by reduced school absenteeism and reduced hyperactivity, aggressiveness, externalization, and socio-deviant conduct of young adults. Neuroimaging showed larger volume of the left caudate nucleus in the KMC group. This study indicates that KMC had significant, long-lasting social and behavioral protective effects 20 years after the intervention. Coverage with this efficient and scientifically based health care intervention should be extended to the 18 million infants born each year who are candidates for the method. In summary, Kangaroo mother care offers a long-lasting behavioral benefit, with people on their 20s who received such care as a low-birth weight baby less likely to be aggressive or hyperactive than a control group. Charpak and colleagues re-enrolled 441 participants from a randomized controlled trial from the 1990s. They found those who received kangaroo care also had larger brains and were more likely to have survived than their low-birth weight counterparts in the control group. Additionally, the families appeared to be more protective and nurturing. PT, descriptive follow-up, Cognitive development, parents protective/nurturing, parental involvement reduced aggressive behavior in kids, reduced absenteeism, less socio-deviant behavior. Not ON Charts 17/7/2016

Chavula K1, Likomwa D1, Valsangkar B2, Luhanga R1, Chimtembo L1, Dube Q2, Gobezie WA3, Guenther T2. (2017-Dec). Readiness of hospitals to provide Kangaroo Mother Care (KMC) and documentation of KMC service delivery: Analysis of Malawi 2014 Emergency Obstetric and Newborn Care (EmONC) survey data. J Glob Health. 2017 Dec;7(2):020802. doi: 10.7189/jogh.07.020802. Malawi introduced Kangaroo Mother Care (KMC) in 1999 as part of its efforts to address newborn morbidity and mortality and has continued to expand KMC services across the country. Yet, data on availability of KMC services and routine service provision are limited. Data from the 2014 Emergency Obstetric Newborn Care (EmONC) survey, which was a census of all 87 hospitals in Malawi, were analyzed. The WHO service availability and readiness domains were used to generate indicators for KMC service readiness and an additional domain for documentation of KMC services was included. Levels of KMC service delivery were quantified using data extracted from a 12-month register review and a KMC initiation rate was calculated for each facility by dividing the reported number of babies initiated on KMC by the number of live births at facility. We defined three levels of KMC readiness and two levels of KMC operational status. 79% of hospitals (69/87) reported providing inpatient KMC services. More than half of the hospitals (62%; 54/87) met the most basic definition of readiness (staff, space for KMC and functional weighing scale) and 35% (30/87) met an expanded definition of readiness (guidelines, staff, space, scale and register in use). Only 15% (13/87) of hospitals had all KMC tracer items. Less than half of the hospitals (43%; 37/87) met criteria for KMC operational status at minimum levels (≥1/100 live births), and just 16% (14/87) met criteria for KMC operational status at routine levels (≥5/100 live births). Our study found large differences between reported levels of KMC services and documented levels of KMC readiness and service provision among hospitals in Malawi. It is recommended that facility assessments of services such as KMC include record reviews to better estimate service availability and delivery. Further efforts to strengthen the capacity of Malawian hospitals to deliver KMC are needed. PT, 3rd world, utilization/implementation, NOT ON CHARTS.


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Chermont, A.G., Falcao, L.F., de Souza Silva, E.H., de Cassia Xavier Balda, R. & Guinsburg, R. (2009). Skin-to-skin contact and/or oral 25% dextrose for procedural pain relief for term newborn infants. *Pediatrics*, 124(6): e1101-e1107. doi: 10.1542/peds.2009-0993 An RCT of 640 healthy term infants assigned at 12-72 hours of life to get IM injection of hepatitis B vaccine in right thigh according to 4 groups: no analgesia (routine care group), oral 25% dextrose 2 min before injection, KC for 2 mins before injection and persisting throughout the injection, and oral dextrose + KC. Neonatal Facial Coding System and Neonatal Infant Pain Scale and Premature Infant Pain Profile scores before, during thgh cleansing, during injection, and 2 minutes after injection were scored. Oral dextrose reduced duration of pain. KC decreased level and duration of pain, dextrose + KC was more effective than either treatment separately for term newborns and acts synergistically to decrease pain. PT, RCT, Pain, injection, sucrose water, PIPP, duration of KC was 2 minutes.

Chia P, Sellick K, & Gan S. (2006). The attitudes and practices of neonatal nurses in the use of kangaroo care. *Australian Journal of Advanced Nursing*, 23(4), 20-27. NO DOI. Descriptive survey and interview of 34 nurses to survey their attitudes and practices of KC in a Melbourne NICU and their concerns with promoting KC. There are 2 tables that convey the survey that was used: Opinions on the benefits of KC (KC promotes bonding, has a positive effect on physical well being of infant, enhances parental confidence, results in more effective breastfeeding, benefits of KC have been overstated, should not be done with intubated infant, should be done with infants weighing 1000 grams or more, should begin within a few hour of birth, all parents should be encouraged to do KC, all parents should be given relevant information on KC, nurses should remain with parents for support and assistance during KC, facilitating KC is professionally satisfying, nursing should facilitate KC when the NICU is quiet, facilitating KC is an added burden to NICU nurses), and then KC practices and activities (encouraged mothers in participation of KC, assisted mothers in KC participation, encouraged fathers to participate in KC, assisted fathers in participation in KC with different weight infants, provided information on KC, participating in a continuing education program about KC, been supervised in techique of KC). All nurses had assisted and encourage parents to participate in KC and the majority agreed on the benefits of KC for infants and mothers. There was general acceptance that KC could be used with low birth weight infants requiring intubation and all but 2 nurses found facilitating KC to be satisfying. There was uncertainty about KC’s role in promoting breastfeeding, Barriers to KC were heavy staff workloads, insufficient education, lack of organizational support and absence of clear protocols, especially for low birth weight infants. Nursing STRONGLY supports KC, but have educational and practical concerns that need to be addressed. Nurses need educational programs, skill development, physiologic monitoring of infant, transfer technique skills, and supervised practice. PT, Implementation, knowledge of nurses, BF, satisfaction of nursing, barriers, ventilated KC. Not on charts 2/1/2011.

Chidambaran AG, Manjula S, Adhisivam B, Vishnu BB. (2014). Effect of Kangaroo Mother Care in reducing pain due to heel prick among preterm neonates: a crossover trial. J Matern Fetal Neonatal Med. 27(5), 488-490. doi: 10.3109/14767058.2013.818974 India study. Preterm neonates undergo several painful procedures in NICU including heel prick for blood sugar monitoring. Non pharmacological interventions have been tried to decrease this procedural pain. There are only a few studies on Kangaroo mother care (KMC) in reducing pain among preterm neonates. (SML does not agree with this statement because as of June 2013 there are more than X studies of KMC effects on pain in this bibliography) This crossover trial was conducted at a tertiary care teaching hospital in south India. Premature Infant Pain Profile (PIPP) related to heel prick was assessed in 50 preterm neonates undergoing KMC and compared with 50 preterm babies without KMC (This design does NOT sound like cross-over, instead it sounds like a control group trial which maybe even more rigorous than the cross over trial method if randomization to groups was incorporated). PIPP scores at 15 min and 30 min after heel prick were significantly less in KMC group compared to control group. Mean PIPP difference between baseline and 30min after heel prick was also significantly lower in KMC group compared to control group. Conclusion: KMC is effective in reducing pain due to heel prick among preterm babies. PT, Pain, 3rd world Not on charts 7/10/2013.

Children’s Hospital of Philadelphia. (2007). Guidelines for Healthcare Professionals—Skin-to-skin contact (Kangaroo Care). Available from http://www.chop.edu/consumer/jsp/diagnosis/generic.jsp?id=81947 This is a hospital protocol for KC with preterm infants. Infants must not have chest tubes or intracardia lines (RA, LA). Family must be willing to participate and spend at least one hour. Outcomes are that infant will maintain neurobehavioral organization, physiologic stability in oxygenation, heart rate and thermoregulation during transfers and holding, that there will not be any adverse effects associated with KCBib 2018
with transfer or KC such as exsudation and thermal instability, and that a bonding process is begun. Documentation of the KC session should include treatment interventions, and then duration of KC, infant’s tolerance of KC, vital signs and pain score for intubated infant during KC on the Flow Sheet. On the progress note, problems encountered during KC and action taken as well as interdisciplinary patient-family education flowsheet of the teaching that was completed should be recorded. Guidelines, protocols, Vent KC possible, preterms


Hospital protocol and step by step procedure to conduct the transfer of ventilated infants into and out of KC. Equipment, procedure, transfers (parent-assisted and nurse-assisted), after transfer, and documentation (on flow sheet write duration and tolerance of KC and in Progress Notes write problems encountered and actions taken and on Patient-Family Education flowsheet write the KC teaching that has been completed) are all covered. Preterm, vent KC, guidelines

Choiu, Y.B., & Blume-Peytavi, U. (2004). Stratum Corneum Maturation. A review of neonatal skin function. Skin Pharmacology and Physiology, 17,57-66. This is NOT an article about KC, but on pg. 63 the statement is made that "evaporative heat loss in infants <30 weeks GA could exceed resting heat production in these infants, meaning if an infant cannot increase his/her heat production to maintain his/her body temperature, then his/her body temperature will fall. The clinical importance of these findings is obvious, and strategies, i.e. emollient application, skin-to-skin contact kangaroo care), plastic heat shield, plastic blankets to minimize TEWL in preterm infants are being developed." Preterm, temperature

Chou, S.T., Chen, L.C., Yeh, H., Wu, S.R., & Chien, L.Y. (2014). Early skin to skin contact, rooming-in, and breastfeeding: a comparison of the 2004 and 2011 national surveys in Taiwan. Birth, 41(1), 33-38. doi: 10.1111/birt.12090. We examined progress in the practice of early skin-to-skin contact and rooming-in, and their association with breastfeeding, using national samples of postpartum women in the years 2004 and 2011 in Taiwan. This study was a secondary data analysis using 2004 and 2011 national surveys of 12,201 and 12,405 postpartum women, respectively. More women had early skin-to-skin contact in 2011 than in 2004 (54.9% vs 20.6%, p < 0.001). Although fewer women practiced rooming-in in 2011 than in 2004 (33.8% vs 45.8%, p < 0.001), the percentage of women rooming-in for 24 hours improved from 6.1 percent to 22.7 percent from 2004 to 2011, and for rooming-in from 12 to less than 24 hours, the percentage improved from 4.3 percent to 10.9 percent (p < 0.001). The rate of breastfeeding increased by 50 percent during hospitalization (from 57.4% to 85.6%) and by 15 percent at 6 months postpartum (from 20.1% to 50.2%). After adjustment for background characteristics, women who had early skin-to-skin contact were more than twice as likely to breastfeed their infants during hospitalization, and about 1.2 times as likely to breastfeed at 6 months postpartum. The odds ratio for breastfeeding at 6 months generally increased as the duration of rooming-in increased in 2004 (OR ranged from 1.37 to 2.47). In 2011, only rooming-in for 12 to less than 24 hours (OR = 1.31) and 24 hours (OR = 1.98) daily significantly increased the odds ratio for breastfeeding at 6 months postpartum. Significant improvements in early skin-to-skin contact, the duration of rooming-in, and breastfeeding were observed in Taiwan. Early skin-to-skin contact and rooming-in for more than 12 hours were associated with increased chances for exclusive breastfeeding and breastfeeding at 6 months postpartum. Early KC has the benefit of increasing breastfeeding rate and improving breastfeeding outcomes. PT, Comparative Descriptive ccomparative study, BF, Birth KC, PP KC. Not on charts.

Chisa, R. (2009). Skin-to-skin in the delivery room of a Level 3 maternity ward: Practical aspects and safety. Descriptive and semi-experimental study of 50 midwives and 58 mother-infant couples in the Besancon Teaching Hospital Maternity Ward. Revue Sage – Femme, 8(3), 138-144. Activity did not impede Birth KC and all moms said would renew the skin to skin experience if give birth again and patients were satisfied. Birth KC is compatible with level 3 maternity ward. This harmonization of midwifery practices will enable infant safety in the DR while responding to the desires of the mothers. Birth KC is a first step in a care protocol favoring establishment of the mother-infant relations. Birth KC, Full term, Birth KC, safety, maternal satisfaction. Not on charts

Chisenga JZ, Chalanda M, Ngwale M. (2015-Feb). Kangaroo Mother Care: A review of mothers’ experiences at Bwaila hospital and Zomba Central hospital (Malawi). Midwifery. 31(2):305-315. doi: 10.1016/j.midw.2014.04.008. Kangaroo Mother Care is an intervention that can help reduce neonatal mortality rate in Malawi but it has not been rolled out to all health facilities. Understanding the mothers’ experience would help strategise when scaling-up this intervention to review experiences of mothers Kangaroo Mother Care at two hospitals of Bwaila and Zomba. Quantitative, descriptive using open interviews. two central hospitals in Malawi.113 mothers that were in the Kangaroo Mother Care unit and those that had come for follow-up two weeks after discharge before the study took place. Mothers had high level of knowledge about the significant benefits of Kangaroo Mother Care but 84% were not aware of the services prior to their hospitalisation. 16.8% (n=19) were not counselled prior to KMC practice. Mothers preferred KMC to incubator care. There were factors affecting compliance and continuation of KMC, which were lack of support, culture, lack of assistance with skin-to-skin contact, multiple roles of the mother and stigma. mothers had a positive attitude towards KMC once fully aware of its benefits.there is need for awareness campaigns on KMC services, provision of counselling, support and assistance which can help motivate mothers and their families to comply with the guidelines of KC. PT, evaluative study, maternal knowledge, maternal preference, barriers, positive attitudes, 3rd world

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This is a review of thermoregulatory interventions in the first few minutes of life to have normothermia in the newborn. It says that there are many new ways to promote normothermia: increased environmental temperature, skin-to-skin contact, radiant warmers, plastic coverings, hats, exothermic mattresses, and heated humidified gases. But still some infants get hypothermia which leads to co-morbidities and death. KC can be used for temperature stability because there is sufficient evidence to recommend this practice. Gaps in evidence and research opportunities exist. “We must also ensure that established thermoregulatory methods for which evidence already exists are given as much emphasis as other aspects of newborn care and are implemented meticulously in all health care settings”.

**PT., review, temp., stability, guideline/recommendation, Birth KC, GET THIS ARTICLE**

Chiu, S-H, & Anderson GC. (2009). Effect of early skin-to-skin contact on mother-preterm infant interaction through 18-months: randomized controlled trial. *International J. of Nursing Studies, 46*(9), 1168-1180. RCT of 100 infants who started KC early after birth and then intermittently throughout the next five days (Amt of KC was very little – see Anderson, Chiu et al., 2003) vs. those preterms put in regular NICU without early KC. AT 6 (N=69 infants) and 12 months (N=70 infants) NCAST feeding was videotaped and scored. No difference in feeding between groups. At 6,12, and 18 months (N=76) the NCAST teaching was videotaped. KC infants scored lower on the teaching at 6 months (negative outcome, more controlling mother). Authors conclude that the data is inconclusive due to low dose of KC (<4% of the hospitalization), small sample size (but this is a good sample size in general, but I do not k now what their aprior or actual power was for these outcomes), and insensitive measures of interaction (they suggest Parent-Child Early Relational Assessment and/or behavioral coding during play).

**PT, RCT, interaction, teaching, feeding, negative effect**

Chiu, S-H, Anderson, G.C., & Burkhammer M.D. (2005). Newborn infant temperature during skin-to-skin breastfeeding in dyads having breastfeeding difficulties. *Birth, 32*, 115-121. 48 fullterm having Breastfeeding difficulty at 12-18 hours postbirth had temporal artery temperature taken before, once during, and after each of 3 consecutive breastfeeding sessions in KC on postpartum Day 1. Temp reached and remained in neutral thermal range (35.6 and 36.7) during KCBF. BF sessions differed in length from 30 minutes to 50 minutes before a feeding. Found that temps increased to neutral thermal zone when infants were cool and decreased to neutral thermal zone when infant was too warm (pg. 119). In two infants temp went from 36.2 to KC to 36.4 and 36.6 at 30 mins of KC and stayed at that level. An infant’s temp of 35.7 dropped to 36.8 and another’s from 37.4 to 37.2 during KC. “Data suggest mother has ability to modulate infant’s temperature during KC, if given the opportunity” (pg. 119). A need for a wrap is inferred from the statement “training sessions on KC may need to be provided for hospital staff. It is possible that with incorrect KC position, infant temperature may decrease.” (pg. 120). KCBF guidelines are: infant should wear diaper small enough to maximize ventral surface, mom should wear clothing that can open down the front, wear hospital BF gown backwards as opening is too small for BF, put head cap on infant if birth kc is given, if ambient temp is cool place blanket (maybe warmed blanket) over infant’s back. FT Descriptive, temporal artery temp, KCBF, Fullterm, thermal synchrony, KC wrap/education needed, guidelines for KCBF, Early KC

Chiu S-H, Anderson GC, & Burkhammer MD. (2008). Skin-to-skin contact for culturally diverse women having breastfeeding difficulties during early postpartum breastfeeding. *Breastfeeding Medicine, 3*(4), 231-237. Descriptive evaluative secondary analysis of 48 full term culturally diverse infants whose mothers reported breastfeeding difficulties at a mean of 16.9 hours post-birth. All dyads received KC for four breastfeeding sessions (three on Postpartum Day 1 and one on Postpartum Day 2 before discharge). The Index of Breastfeeding Status was administered at each feeding and at discharge and at one week and one month later. Black mothers had lower exclusive Breastfeeding (33%) and higher breastfeeding cessation (46.7%) at one month than other mothers; all other indices were generally the same across the different cultures. Even so, breastfeeding outcomes exceeded those in studies which included all breastfeeding mothers whether or not they were having difficulty. Thus, KC for breastfeeding provided in the hospital in a time-sensitive manner by a warm perceptive person (Maria Burkhammer) can transcend the likelihood of early BF cessation for mothers regardless of race/ethnicity. FT Descriptive, BF, long term breastfeeding, African-American

Cho ES, Kim SJ, Kwon MS, Cho H, Kim EH, Jun EM, Lee S. (2016-July-Aug). The Effects of Kangaroo Care in the Neonatal Intensive Care Unit on the Physiological Functions of Preterm Infants, Maternal-Infant Attachment, and Maternal Stress. J Pediatr Nursing. 31(4), 430-438 pii: S0882-5963(16)00053-1. doi: 10.1016/j.pedn.2016.02.007. This study was conducted to identify the effects of kangaroo care on the physiological functions of preterm infants, maternal-infant attachment, and maternal stress. For this study, a quasi-experiment design was used with a nonequivalent control group, and a pre- and post-test. Data were collected from preterm infants with corrected gestational ages of ≥33weeks who were hospitalized between May and October 2011. Twenty infants were assigned to the experimental group and 20 to the control group. As an intervention, kangaroo care was provided in 30-min sessions conducted thrice a week for a total of 10 times. The collected data were analyzed by using the t test, repeated-measures ANOVA, and the ANCOVA test. After kangaroo care, the respiration rate significantly differed between the two groups (F=5.701, p=0.020). The experimental group had higher maternal-infant attachment scores (F=25.881, p<.001) and lower maternal stress scores (F=47.320, p<.001) than the control group after the test. In other words, kangaroo care showed significantly positive effects on stabilizing infant physiological functions such as respiration rate, increasing maternal-infant attachment, and reducing maternal

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stress. This study suggests that kangaroo care can be used to promote emotional bonding and support between mothers and their babies, and to stabilize the physiological functions of premature babies. Kangaroo care may be one of the most effective nursing interventions in the neonatal intensive care unit for the care of preterm infants and their mothers. PT, maternal stress, attachment, Pretest-posttest quasi experiment, duration of KC, RR, stability. Not on charts 3-22-16 New to biblio study

Chomba E, McClure EM, Wright LL, Carlo WA, Chakraborty H., & Harris H. (2008). Effect of WHO newborn training on neonatal mortality by education. Ambul Pediatr 8(5): 300-304. The WHO’s Essential Newborn Care course sets the minimum accepted standard for training midwives and physicians on aspects of infant care (resuscitation, breastfeeding, kangaroo care, small baby care, and thermoregulation) many of which are provided by the mother. This descriptive study evaluated effect of the Essential Newborn Care course on all causes of infant mortality within 7 days of birth (early mortality) in Zambia in moms who had completed 7 years of education and moms with 8 or more years of education. ENC is associated with decreases in early mortality – rate dropped from 11.2/1000 live births pre-ENC to 6.2/1000 with ENC. Mortality decreased in moms with 7 yrs education, but no change in moms with 8 or more years education. PT, FT, 3rd world, descriptive, mortality, essential newborn care. Not on charts 4/29/09

Chong Lee H see Lee, H.C. according to Pubmed

Christensson, K., (1996). Fathers can effectively achieve heat conservation in healthy newborn infants. Acta Paediatrica, 85, 1354-1360. Paternal KC with FULL TERM newborns from CS deliveries. 44 infants studied and glucose levels were higher in KC than cot babies at 90 minutes postbirth and at 24 hrs. postbirth, mean axillary temp was higher in KG group. Father is as good as incubator RCT, FULLTERM, FATHERS, temp, Blood glucose, CS, Birth KC/VEKC

Christensson, K., Cabrera, T., Eriksson B., Uvnas-Moberg, K., & Winberg, J. (1995). Separation distress call in the human infant in the absence of maternal body contact. Acta Paediatrica, 84, 488-473. Conducted in Spain. Primiparous and multiparous women of NSVD given 90 minutes of KC postdelivery (Grp A, n=15) or left in cot for 90 minutes (Grp B, n=14) or placed first in cot and then given KC later (Grp C, n=15). Temperature increased (Grp A KC axillary temp at 90 minutes post birth = 36.9 and control = 36.4) and crying was significantly less in the KC group A. Thermoregulation by KC persists for 2-3 days and is mediated by increased cutaneous circulation due to sympathetic activity. Examined if the comfort provided by KC was associated with changes in peripheral blood levels of CCK and oxytocin. No such effects could be documented, but possibility still exists that maternal body contact causes a central release of the peptides CCK and oxytocin, mediating the comfort response in infants. RCT, FULL TERM, separation, temperature, comfort response, CCK, oxytocin, crying, sympathetic activity. Birth KC/VEKC, RELAXATION See also Michelsson 1996 below


Christidis I, Zetter H, Rosegger H, Englel H, Kurz R, Kerbl R. (2003). Infrared thermography in newborns: the first hour after birth. Gynaek Geburtshilfliche Rundsch, 43 (1), 31-35. Surface temp within 1 hr of birth was examined in 42 fullterms (AGA) with infrared thermography. Immed. after birth, surface temp is uniform picture, skin temp is significantly cooler than core. Soon, peripheral sites become cooler but trunk has constant temp; bathing in warm water leads to more even temp profile, radiant heaters and KC provided within the first hour of birth with mother prevented heat loss and produced uniformly warm thermogram of infant. Descriptive, Full Terms, temperature profile. Get full article.

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Chromá, J. & Sikorová, L. (2012). Effect of non-pharmacological methods for alleviation of pain in newborns (Czech) Cas Lek Cesk. 151(6): 294 - 298. Review article of 30 studies examining non-pharmacologic methods for pain reduction and classified them according to Fineout-Overholt, Johnston 2005 method of 3 levels of data. Nutritive sucking is currently considered the most effective method for alleviating pain in newborns. Analysis of studies shows that non-pharmacological methods used to control pain in neonates are much more effective when used in combination with other non-pharmacological methods, such as music therapy, swaddling, facilitated tucking, multiple-stimulation, kangaroo care and non-nutritive suction. Non-pharmacological procedures are effective and lead to pain relief especially in procedural performance as heel lancet and venipuncture for blood sampling. Review, pain

Cromá, J., & Sikorová, L. (2012). [Effect of non-pharmacological methods for alleviation of pain in newborns]. [Article in Czech] Cas Lek Cesk. 151(6):294-8. Review of the literature to analyze currently most used non-pharmacological methods from 2000-2011 for pain alleviation in newborns for the best evidence-based practice. Evaluation found evidence (30 studies) was carried out according to the table-level evidence (Fineout-Overholt, Johnston 2005). The selection was included in the evidence level I, II, III. Nutritive sucking is currently considered the most effective method for alleviating pain in newborns. Analysis of studies shows that non-pharmacological methods used to control pain in neonates are much more effective when used in combination with other non-pharmacological methods, such as music therapy, swaddling, facilitated tucking, multiple-stimulation, kangaroo care and non-nutritive suction. Non-pharmacological procedures are effective and lead to pain relief especially in procedural performance as heel lancet and venipuncture for blood sampling. Review, pain.

Chwo, M.-J., Anderson, G.C., Good, M., Dowling, D.A., Shiau, S.-H.H., & Chu, D.-M. (2002). Randomized controlled trial of early Kangaroo care for preterm infants: Effects on temperature, weight, behavior, and acuity. J Nursing Research (Taiwan), 10 (2), 129-142. 34 healthy LATE preterm infants in TAIWAN were randomly assigned before first feed on day following birth. KC was done first at a mean of 21 hours and was done during BF; controls were clothed and wrapped and held that way for one hour, three times a day during feedings. KC vs. controls showed KC had higher Tympanic temps (37.3 vs 37.0), more quiet sleep (62 vs 22%), more inactive awake, less drowiness, less crying (2 vs 6%). No diff in weight loss or acuity (LOS). PT, RCT, tympanic temp, sleep, inactive awake, drowsy, cry, body length of stay, late preterms

Chwo, Miao-Ju., & Huang, Li-Hung. (2002). Effects of very early kangaroo care on infant’s extraterine adaptation and maternal birth-related fatigue. Presentation at International Conference on Tradition, Evidence, and Innovations in Nursing, March 21-23, 2002. Phuket, Thailand. 49 fullterm dyads randomly assigned to KC (n=24)(60 minutes of KC after newborn care) or control (n=25) (routine newborn care, no skin-to-skin contact). Temp, HR, SaO2 and Beh. State and maternal fatigue measured at beginning and every 15 minutes. KC had sig. Higher Temp (37.30 vs. 37.00 at 60 min), no sig diff in HR, or SaO2 at any time, no Bradycardia in either grp a

Cignacco E., Denhaerven K, Melle N, Buhrer C, & Engberg S (2009). Variability in pain response to a non-pharmacologic intervention across repeated routine pain exposure in preterm infants: a feasibility study. Acta Paediatr. 98(5): 842-846. Doi: 10.1111/j.1651-2227.2008.01203.x Not a KC study, but Sucrose. Two hospitals were used to study one group of 9 infants (28 2/7-31 4/7 GA who received sucrose 2-3 minutes before stick for repeated heel sticks occurring between 2-14 days of life as part of routine clinical care. Pain assessed by Bernese pain scale, PIPP, and visual analog scales and salivary cortisol 20-30 min after stick. 72.94% of variability was within subjects, indicating inconsistency in pain response across 5 repeated heel sticks. No sig differences in salivary cortisol before and after heel sticks, indicating no stress-induced peak after painful stimulus. However, a general decrease in cortisol occurred overall over the heel sticks (did he consider maturation of cortisol? Over hospitalization period, cortisol levels decrease according to this finding and that of Grunau RE, Holsti L, Daley DW, Oberlander T, Weinberg J, Solimano A et al., 2005. Neonatal procedural pain exposure predicts lower cortisol and behavioral reactivity in preterm infants in the NICU. Pain 2005, 113: 293-300. Circadian rhythm of cortisol? Pulsatile release of cortisol that has half life of one hour? Pain, PT, repeated pain, cortisol, sucrose, but not KC


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morphine for pain reduction did nothing. Similar to Johnston’s maternal voice study. NOT a KC study. Preterm, Opioids, massage, vanilla taste and pain PAIN, NOT KC.


Clarke, A. (2009). International Child Health. Paediatric Nursing, 21(7); 32-33. Health care professionals in economically strong nations are in a good position to support and learn from their colleagues in low-income countries. This is a review of a meeting of the International Child Health Group, a specialty group of the Royal College of Paediatrics and Child Health. David Southall, medical director of Childhealth Advocacy International, reported that “improving outcomes with limited resources was the background to the development of Kangaroo Mother Care (KMC) in Bogota in 1978. This comprehensive care for babies involves skin-to-skin contact with mother or father 24 hours a day in the upright position – bringing benefits in thermoregulation, reduced infection, breastfeeding, and emotional comfort. Initially an alternative to hospital care for stable low-birthweight babies in countries where access to technology was poor, the evidence for its many benefits means that KMC is no longer regarded as ‘poor man’s’ care, and it is now practiced in many countries, rich and poor.” (pg. 33). Has lovely picture of KC on page 32 with a caption saying “Kangaroo care: continuous skin-to-skin contact between mother and child.” Review, PT, temp, infection, BF, comfort, guideline

Clarke, J. (2014). The first embrace. Nursing Standard, 29(4), 26-27. doi: 10.7748/ns.29.4.26.630] As a midwife with more than 20 years' experience, ensuring all babies have skin-to-skin contact immediately after birth is something I am passionate about. FT, birth KC

Clarke LL & Deutsch MJ. (1997). Becoming baby-friendly. One hospital’s journey to total quality care. Lifelines, Dec, 1997, pg. 30-37. The story of how one Kaiser Hospital became baby-friendly. On page 35 it says “Kangaroo care, originally encouraged to support the development and enhance the well-being of the premature infant, is practiced in our unit as a first step in encouraging suckling and latch-on for infants separated from their mothers. These tiny, fragile babies teach us what nature has always known—nurturing is a reciprocal process and mothers and babies do it best.” The step 4 in this article is the USA Baby Friendly step 4 that deletes KC at birth and only says help mothers initiate breastfeeding within one hour of birth. FT, PT, implementation, breastfeeding BF, Baby friendly. Late KC. Not on charts yet (4/29/09).

Cleary GM, Spinner SS, Gibson E., & Greenspan JS. (1997). Skin-to-skin parental contact with fragile preterm infants. J American Orthopaedic Association, 97(8): 457-460. Case study of 29 wk GA twins given maternal and PATERNAL KC for 2 hrs on 19th day of life when on nasal cannula. All physiologic patterns were more stable, NO bradycardia, no central or obstructive apnea, no periodic breathing or desats during KC and this pattern persisted more than 2 hrs after KC ended. Case study, PT FATHERS (all data collapsed and reported as Parental KC; PROTOCOLS included), HR, Bradycardia, Apnea, PB, Desats, Residual KC, twins, nasal cannula

Cleveland, L.M. (2008 Nov-Dec). Parenting in the neonatal intensive care unit. JOGNN (J. Obstet Gynecol Neonatal Nurs 37(6): 666-691. doi: 10.1111/j.1552-6909.2008.02288.x. A systematic review of the literature was conducted to answer the following 2 questions: (a) What are the needs of parents who have infants in the neonatal intensive care unit? (b) What behaviors support parents with an infant in the neonatal intensive care unit? Only research published in English between 1998 and 2008 was included in the review. 60 studies were selected. Existing research was organized into 1 of 3 tables based on the question answered. Nineteen articles addressed the first question, 24 addressed the second, and 17 addressed both. Six needs were identified for parents who had an infant in the neonatal intensive care unit: (a) accurate information and inclusion in the infant's care, (b) vigilant watching-over and protecting the infant, (c) contact with the infant, specifically Kangaroo Care (d) being positively perceived by the nursery staff, (e) individualized care, and (f) a therapeutic relationship with the nursing staff. Four nursing behaviors were identified to assist parents in meeting these needs: (a) emotional support, (b) parent empowerment, (c) a welcoming environment with supportive unit policies, and (d) parent education with an opportunity to practice new skills through guided participation. NICU staff should provide coaching, guidance and support for practicing KC in the NICU. PT, Review, parental need/thoughts, Support, implementation, family integrated care.

4-32 days of life showed physical safety could be maintained during KC. Physiol. variables remained WNL during KC. KC enabled interactive relationship, promoted bonding. No exclusion criteria for KC’s use. All wore hats, covered by blanket and parent’s shirt. Smallest was 25 wks who did KC at 10 days of age at 680 grams. Minimum KC was 30 minutes, range was 58-84 mins of KC. 2 infants had UA lines, 6 with PICC lines. Stability of baseline HR. No bradycardia or no HR drift, no apnea, no cold stress and temp stability was maintained. Vent KC, bonding, HR, Brady, Apnea, temp, stability, micropreemie, PT

Clifford PA, Stringer M, Christensen H, & Mountain D. (2004). Pain assessment and intervention for term newborns. J Midwifery Womens Health 49 (6), 514-519. She begins with review that infants perceive pain even preivable fetuses. Review of NIPS, CRIES, PAIN, and OPS scales. On pg 516 she says “skin-to-skin contact is an effective intervention during heel lance procedures for blood assays. The physiologic mechanisms supporting tactile-induced pain reduction are not known, but it is theorized not to be opioid-mediated” (cites Gray et al. 2002 as source). “Prior to a painful procedure, implementation of one of the nonpharmacologic interventions should be used” (517). Interventions available to reduce or eliminate pain, such as KC, are discussed in this review article on term infant pain. Review, Fullterm, pain


CNN (Cable News Network), (2010). Mother brings miracle baby back to life after 2 hours! August 28, 2010. This is the report of a twin 27 weeker who the obstetrician tried to resuscitate for twenty minutes, could not do so, and gave the “dead” baby to the mother, saying “Your son did not make it.” The report came from a newspaper in the United Kingdom and was picked up by CNN. The report shows pictures of the parents grieving when given the baby, and the mother put the baby in skin to skin contact and the gasping that had occurred occasionally (and which was viewed as reflex, death throes gasping) became more regular and then the baby started gasping regularly and moved and grabbed the mother’s finger, licked breastmilk off her finger and then looked at her. Baby is presented 5 months after birth and is doing well. PT, miracle baby, end-of-life care/compassionate KC. See also Today Show, 2010. Nils Bergman suggested that the infant was so stressed by preterm birth that his HPA axis just put him in disassociated mode and systems shut down and the best survival program he could mount was occasional gasps and that heart beat must have been very rare and barely audible and that is why they could not pick it up, and then when given to mother, vagal nerve parasympathetic drive took effect, helped medulla oblongata regulate heart beat and respirations, and infant recovered enough to survive. There is a story of one infant saved by KC in Ludington & Golant 1993 book. I checked with a pediatric neurologist who believes the baby may have had a pda that was open and as soon as it closed (usually do so within 20-30 mins of birth if they will spontaneously close) he recovered, but the pediatric neurologist said that he knows babies who have been “barely alive” for many minutes and then revive. Dr. Christine Smilie also wrote to me and stated that as a resident 25 years ago she was the pediatrician at a delivery of a 24 weeker who was 425 grams and was told that they don’t do anything to save babies under one pound except support the family. So she gave the baby to the parents and stayed with them to support them and the baby made gasping breathing movements irregularly and parents held the swaddled infants for many hours because the baby stayed like that for many hours before succumbing. Today, Dr. Smilie wonders if they should have done KC for that baby, because he lived a long time after birth and might have been helped by KC. PT, End-of-life KC To comment on CNN news briefs about Kangaroo Care as occurred with the miracle baby brought back to life August 328, 30, 31 and Sept, 3, 4, 2010, write to vcm@cnn.com (VCM stands for viewer communications management. See also Daily Mail 2010 and Today Show 2010 on bib.

Codipietro L, Ceccarelli M, Ponzone A. (2008). Breastfeeding or oral sucrose solution in term neonates receiving heel lance: a randomized, controlled trial. Pediatrics. 2008;122(3). Available at: www.pediatrics.org/cgi/content/full/122/3/e716pmid:18762508. This is a study of SSC and breastfeeding during heel lance and the combination reduced pain. Get this reference and see if it really is a SSC study as Feldman-Winter, 2016 claims it is. FT, Pain, BF, not on chart

Cohain, J.S. (2010-2011). Waterbirth and GBS. Midwifery Today, International Midwife, Winter, 96: 9-10. No DOI. A report of one case of Group B Strept among 4432 water births, a rate of GBS that is significantly less than when infants are born out of the water (called DRY birth). One of the reasons given for the low rate of GBS infection is that skin to skin contact at birth promotes health and in waterbirth, the infant is immediately placed on the mother’s chest skin to skin even before cord is cut. She cites the Miracle baby report that BIRth KC even helped bring back a dead baby in Australia (see CNN, Today Show, Daily Mail citations for this too) NOT ON CHARTS

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impact of kangaroo care on preterm infant stress. Enfermeria Clinical, 21(2), 69-74. NO DOI. Quasi-experimental, one group pretestposttest study in Spain to determine if 51 29-34 weeks postmenstrual age preterm infants in an incubator has less physiologic stress
symptoms (HR, irregular breathing, apnea, oxygen saturation drop) and lower behavioral stress responses (trunk arching, hyperextension,
very open fingers, contraction of facial muscles, irritability and exaggerated/sustained extension of arms and legs) . Basal stress (in
incubator), during KC, and after KC were measured. No loss of subjects, Statistically different variables after KC were irregular breathing,
trunk arching, hyperextension, very open fingers, contraction of face muscles, apnea, irritability, and exaggerated /or sustained extension of
arms and legs. Oxygen saturation was 94.73% +/-3.05% before KC, 95.92 +/-2.97% after KC. HR ranged from 158.14 +/-17.48 bpm
before KC and 151.47 +/-4.47 bpm after KC. KC is related to a decrease in occurrence of neonatal stress variables, helping to organize
motor and physiologic systems to achieve state of tranquility. PT, pretest-test-posttest, ventilated KC, HR, Sao2, apnea, crying,
STRESS Not on charts 5.19.2011
(No volume or # for this journal). Descriptive, End-of-life KC, PT
Colonna F, Robieux I., Santin E., Camper M, & Nadalin, G. (2009). Fathers in the operating room and early skin-to-skin contact
during cesarean section: it can be done! Quader ni ACP, 16(1): 10-14. This relates information about fathers in the operating room and
having skin to skin contact during cesarean section, saying it can be done. FT, Cesarean section, Paternal KC, BirthKC/VEKC.
NEED TO GET THIS. CAN’T FIND IN US 8/15/09.
model for the care of low birth weight newborns in developing countries. International Journal of Gynaecology and Obstetrics, 31, 335rd
339. 3 World, Preterm
Colson, S. (2008). Bring nature to the fore: The nature-nurture debate and breastfeeding competencies.. The Practising Midwife,
8(11), 14-19. “Taken together with known physiological benefits associated with skin to skin contact during the first ostnatal hour, the
importance of supporting a hormone-enhancing postnatal environment conductive to breastfeeding initiation may be an urgent midwifery
priority” (pg.14 ) and in Table 1 on page 14 it states, “Midwifery breastfeeding competencies . The overall aim is to provide a hormoneenhancing environment that supports the initiation of exclusive breastfeeding. 1. Biological nurturing, 2. Skin to skin contact, 3 hospital
acquired infection, mother baby nurturing diary, oxytocin, breast-bottle feeding reflext assessment, “ The rest of the article addresses in a
very small way that skin to skin is part of a midwife’s knowledge and practice competencies. Review, PT, FT, BF, Birth KC NOT ON
CHARTS AS OF 10/29/09.
breastfeeding. Early Human Development, 84(7): 441-449. Qualitative and descriptive quantitative study of Biological Nurturing position
and regular breastfeeding position on number of Primitive Neonatal Feeding Reflexes seen. This is not a KC study, but she talks about the
KC position (prone, chest to chest while mother is at 15-25degree incline rather than vertical) as being BIOLOGICAL NURTURING
because in this position the 17 Primitive Neonatal Reflexes (sucking, swallowing, rooting, hand to mouth, swiping breast, head turn, head
bobbing) are expressed more often than when mom is upright and holds infant at side. FT, Descriptive, Prefeeding behaviors, position.
NOT A KC STUDY
Colson, S. (2014). Does the mother’s posture have a protective role to play during skin-to-skin contact? Research observations
birthweight infants. Cochrane Database Systematic Reviews, (3): CD002771 doi: 10.1002/14651858.CD002771.pub2 (Update of
Cochrane Database Systematic Review 2003 (2): CD002771 3rd one below. 16 studies, 2518 infants filled inclusion criteria. 14 RCTS
tested KMC in LBW infants AFTER stabilization, one evaluated KMC in LBW before stabilization, and one compared early onset KMC
with late onset KMC in relatively stab le LBW infants. 11 studies used intermittent KMC and 5 evaluated continuous KMC. AT discharge
or 40-41 weeks postmenstrual age, KMC was associated with reduction in risk of MORTALITY, (RR=0.600 imn 7 trials of 1614
infants; risk of NOSOCOMIAL INFECTION (RR=0.42) at discharge, 6 months, and latest follow-up and decreased risk of respiratory
tract infection at 6 months – pg. 15 – all finding in intermittent KC groups but not in continuous KC groups), No differences in
DIARRHEA or READMISSION to Hospitals (pg. 16)., HYPOTHERMIA (RR=0.23) at discharge, LENGTH OF STAY (mean
difference 2.4 days). At latest follow-up, KMC was associated with a decreased risk of MORTALITY (RR=0.68; 9 trials, 1952 infants)
and severe infection/sepsis (RR=0.57). KMC was found to increase some measures of infant GROWTH (WEIGHT GAIN per day mean

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difference of 3.9 grams; and HEAD CIRCUMFERENCE GAIN per week-mean difference of 0.18 cm – but no differences in weight gain, head circumference and length at discharge or term age (pg. 16). BREASTFEEDING (increased likelihood of BF and EXCLUSIVITY of BF at discharge, 1-3 months, and results same for intermittent as continuous KMC), and MOTHER-INFANT ATTACHMENT and SATISFACTION with birth experience (pg17). “Data support the use of KMC in LBW INFANTS as an alternative to conventional neonatal care mainly in resource-limited settings. Further info is required concerning effectiveness and safety of early onset continuous KMC in unstabilized LBW infants, long term neurodevelopmental outcomes, and costs of care” (pg.2).

Although current evidence is mainly limited to the use of KMC in low/middle income countries, there is emerging evidence that use of KMC could improve breastfeeding rates in high income countries. Subgroup analyses suggest that both continuous and intermittent KMC are beneficial for stabilized LBW infants.” (pg. 20). “There is a clear need for randomized trials with an adequate sample size that evaluate the use of continuous or intermittent KMC in high income settings and report results mainly on infant mortality,”(pg. 20). Only 5 randomized controlled trials (256 infants; studies were Bier 1996; Neu 2000; Roberts 2000; Rojas 2003; Whitehall 1998) met inclusion criteria. “Although some data are available on long term neurodevelopmental outcomes, continuing follow-up and additional data of randomized children are justified as more subtle differences in later childhood may become apparent (and cites Roberts C, Anderson PJ, Doyle LW, & Victorian Infant Collaborative Study Group. 2010. The stability of the diagnosis of developmental disability between the ages of 2 and 8 in a geographic cohort of very preterm children born in 1997. Arch Dis Childhood 95(10), 786-790) “ pg 20 end quote.

“Further well-designed economic evaluations are needed to assess the cost effectiveness of KMC in low, middle, and high income settings.”(pg 18 says Cattaneo 1998 said cost of care was 50% less for KMC (US $19,289 vs. $39,764 and Sloan 1994 found it cheaper for KMC too). Further exploration of mother-infant attachment should be included in future trials as this element is inconsistently evaluated across studies.”(pg 20). In summary, KMC reduces mortality, morbidity, infections, length of stay, and improves bonding, BF, and maternal satisfaction. PT, meta-analysis, Mortality, morbidity (severe illness), Infections, hypothermia, length of stay, growth (weight gain, head circumference) breastfeeding and exclusivity of BF, maternal-infant attachment and satisfaction, developmental outcome, cost of KMC, RESEARCH needs.

Conde-Agudelo, A., & Diaz-Rossello, J.L. (2014). Kangaroo mother care to reduce morbidity and mortality in low birthweight infants. Cochrane Database Syst Rev. (4): CD002771. Kangaroo mother care (KMC), originally defined as skin-to-skin contact between a mother and her newborn, frequent and exclusive or nearly exclusive breastfeeding, and early discharge from hospital, has been proposed as an alternative to conventional neonatal care for low birthweight (LBW) infants. To determine whether there is evidence to support the use of KMC in LBW infants as an alternative to conventional neonatal care, a meta-analysis of randomized controlled trials was conducted. The standard search strategy of the Cochrane Neonatal Group was used. This included searches in MEDLINE, EMBASE, LILACS, POPLINE, CINAHL databases (all from inception to March 31, 2014) and the Cochrane Central Register of Controlled Trials (The Cochrane Library, Issue 3, 2014). In addition, we searched the web page of the Kangaroo Foundation, conference and symposia proceedings on KMC, and Google Scholar. Randomized controlled trials comparing KMC versus conventional neonatal care, or early onset KMC (starting within 24 hours after birth) versus late onset KMC (starting after 24 hours after birth) in LBW infants. Data collection and analysis were performed according to the methods of the Cochrane Neonatal Review Group. Eighteen (18) studies, including 2751 infants, fulfilled inclusion criteria. Sixteen studies evaluated continuous KMC in LBW infants after stabilization, one evaluated KMC in LBW infants before stabilization, and one compared early onset KMC with late onset KMC in relatively stable LBW infants. Thirteen studies evaluated intermittent KMC and five evaluated continuous KMC. KMC began before 10th day post-birth. 13 studies conducted in low to middle income countries. At discharge or 40-41 weeks postmenstrual age, KMC was associated with a reduction in the risk of mortality (typical risk ratio (RR) 0.60, 95% confidence interval (CI) 0.39 to 0.92; eight trials, 1736 infants), nosocomial infection/sepsis (typical RR 0.45, 95% CI 0.27 to 0.76), hypothermia (typical RR 0.34, 95% CI 0.17 to 0.67), and length of hospital stay (typical mean difference 2.2 days, 95% CI 0.6 to 3.7). At latest follow up, KMC was associated with a decreased risk of mortality (typical RR 0.67, 95% CI 0.48 to 0.95; 11 trials, 2167 infants) and severe infection/sepsis (typical RR 0.56, 95% CI 0.40 to 0.78). Moreover, KMC was found to increase some measures of infant growth, breastfeeding, and mother-infant attachment. There were no significant differences between KMC infants and controls in neurodevelopmental and neurosensory impairment at one year of corrected age. Sensitivity analysis suggested that the inclusion of studies with high risk of bias did not affect the general direction of findings or the size of the treatment effect for the main outcomes. The evidence from this updated review supports the use of KMC in LBW infants as an alternative to conventional neonatal care mainly in resource-limited settings. Intermittent KC in resource rich NICUs has NOT been associated with decreased mortality and data are currently insufficient to determine an effect. Further information is required concerning effectiveness and safety of early onset continuous KMC in unstabilized or relatively stabilized LBW infants, long term neurodevelopmental outcomes, and costs of care. KC is a low cost intervention. Meta-Analysis, PT, Cost, KMC/continuous KMC, unstable infants, dev, mortality, infection, temperature, hypothermia, LOS, BF, growth, attachment. Not on charts

Conde-Agudelo, A., & Diaz-Rossello, J.L. (2016-Aug). Kangaroo mother care to reduce morbidity and mortality in low birthweight infants. Cochrane Database Systematic Reviews, August 23, 8, CD002771. Kangaroo mother care (KMC), originally defined as skin-to-skin contact between a mother and her newborn, frequent and exclusive or nearly exclusive breastfeeding, and early discharge from hospital, has been proposed as an alternative to conventional neonatal care for low birthweight (LBW) infants.

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OBJECTIVES: To determine whether evidence is available to support the use of KMC in LBW infants as an alternative to conventional neonatal care before or after the initial period of stabilization with conventional care, and to assess beneficial and adverse effects. Randomized controlled trials comparing KMC versus conventional neonatal care, or early-onset KMC versus late-onset KMC in LBW infants were reviewed. Twenty-one studies, including 3042 infants, fulfilled inclusion criteria. Nineteen studies evaluated KMC in LBW infants after stabilization, one evaluated KMC in LBW infants before stabilization, and one compared early-onset KMC with late-onset KMC in relatively stable LBW infants. Sixteen studies evaluated intermittent KMC, and five evaluated continuous KMC. KMC versus conventional neonatal care: At discharge or 40 to 41 weeks' postmenstrual age, KMC was associated with a statistically significant reduction in the risk of mortality (risk ratio [RR] 0.60, 95% confidence interval [CI] 0.39 to 0.92; eight trials, 1736 infants), nosocomial infection/sepsis (RR 0.35, 95% CI 0.22 to 0.54; five trials, 1239 infants), and hypothermia (RR 0.28, 95% CI 0.16 to 0.49; nine trials, 989 infants; moderate-quality evidence). At latest follow-up, KMC was associated with a significantly decreased risk of mortality (RR 0.67, 95% CI 0.48 to 0.95; 12 trials, 2293 infants; moderate-quality evidence) and severe infection/sepsis (RR 0.50, 95% CI 0.36 to 0.76; eight trials, 1463 infants; moderate-quality evidence). Moreover, KMC was found to increase weight gain (mean difference [MD] 4.1 g/d, 95% CI 2.3 to 5.9; 11 trials, 1198 infants; moderate-quality evidence), length gain (MD 0.21 cm/week, 95% CI 0.03 to 0.38; three trials, 377 infants) and head circumference gain (MD 0.14 cm/week, 95% CI 0.08 to 0.22; four trials, 495 infants) at latest follow-up, exclusive breastfeeding at discharge or 40 to 41 weeks' postmenstrual age (RR 1.16, 95% CI 1.07 to 1.25; six studies, 1453 mothers) and at one to three months' follow-up (RR 1.20, 95% CI 1.01 to 1.43; five studies, 600 mothers), any (exclusive or partial) breastfeeding at discharge or at 40 to 41 weeks' postmenstrual age (RR 1.20, 95% CI 1.07 to 1.34; 10 studies, 1696 mothers; moderate-quality evidence) and at one to three months' follow-up (RR 1.06, 95% CI 1.05 to 1.31; nine studies, 1394 mothers; low-quality evidence), and some measures of mother-infant attachment and home environment. No statistically significant differences were found between KMC infants and controls in Griffith quotients for psychomotor development at 12 months' corrected age (low-quality evidence). Sensitivity analysis suggested that inclusion of studies with high risk of bias did not affect the general direction of findings nor the size of the treatment effect for main outcomes. Early-onset KMC versus late-onset KMC in relatively stable infants: One trial compared early-onset continuous KMC (within 24 hours post birth) versus late-onset continuous KMC (after 24 hours post birth) in 73 relatively stable LBW infants. Investigators reported no significant differences between the two study groups in mortality, morbidity, severe infection, hypothermia, breastfeeding, and nutritional indicators. Early-onset KMC was associated with a statistically significant reduction in length of hospital stay (MD 0.9 days, 95% CI 0.6 to 1.2). Evidence from this updated review supports the use of KMC in LBW infants as an alternative to conventional neonatal care, mainly in resource-limited settings. Further information is required concerning the effectiveness and safety of early-onset continuous KMC in unstabilized or relatively stabilized LBW infants, as well as long-term neurodevelopmental outcomes and costs of care.


Conde-Agudelo A, Diaz-Rosello JL, Belizan JM. (2003). Kangaroo mother care to reduce morbidity and mortality in low birthweight infants. Cochrane Database Systematic Reviews, (2):CD002771. This is the Feb. 11, 2003 update. They reviewed 5 new studies out through Dec. 2002 (Tessier et al., 1998 was one). ALL STUDIES HAVE TO BE 24/7 KMC, not intermittent KC. No RCT met criteria for review (weaknesses were blinding procedures for those who collected outcomes, handling of drop outs, completeness of follow-up) so recommendations are not changed. Results of new studies (but not meta-analysis) for Mortality (no difference), Infection (decreased in KC), BF (More exclusive BF in KC), Readmissions (no differences), Weight gain (significantly more in KC), psychomotor development (no differences at 12 months), maternal competence (sig. better in KC), hypo & hyperthermia (sig. less in KC), cost (50% less for KC), and length of stay (KC= 4.5 days, control – 5.6 days) are reported on pages 8-10 and based on three studies of 1362 infants all tested in developing countries. Available through www.nichd.nih.gov/cochrane/attachment, TF, Meta-analysis – no new results, but reviews several individual studies WGT, Infection, Temp, LOS, Cost, 12 month PsychomotorDev, Maternal competence.

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Purpose was to determine if there is evidence to support the use of KMC in LBW infants as an alternative to conventional incubator-based care after the initial period of stabilization with conventional care. Three studies, 1362 infants were reviewed. All trials were in developing countries, were of moderate to poor methodological quality, particularly in blinding procedures, handling drop outs, completeness of follow-up. Most are results of a single trial. KMC (24/7 KC) associated with reduced risk for nosocomial infection at 41 wks corrected age, lower respiratory tract disease at 6 months, severe illness, not exclusively BF at discharge, and maternal dissatisfaction with method of care. KMC infants gained more weight/day (3.6 gm difference) by discharge, improved maternal competence scores, maternal perception of social support during NICU were worse for KC group. Psychomotor development at 12 months was same for both groups and no difference in mortality, KMC appears to reduce infant morbidity without any serious deleterious effects, but there is still insufficient evidence to recommend its routine use in LBW infants. Well designed RCT of this intervention are needed.” (pg. 2) PT, Meta-analysis, SINGLE TRIAL of KC, not repeated KC, Infection, Weight gain, morbidity, maternal satisfaction, maternal competence, social support, development, mortality , need good RCTs.


Crying, heart rate variability, and PIPP responses in 28 week GA twins receiving 30 mins of KC, 15 mins of KC, and incubator care before, during and throughout heel sticks conducted over three consecutive days (one procedure per day) showed that the twins cried more and had higher PIPP pain score by two or more points and tachycardia during heel stick in the incubator than in KC. Infant B had a desat (SaO2 <80%) and tachycardia (HR>180) event by the end of the heel stick squeezing and a bradycardic (HR<100) event during recovery in the incubator. HR rise was higher in incubator than in KC 15 and KC30. LF/HF ratio was lower in the long and short KC conditions compared to incubator. Both longer and shorter KC helped reduce infant pain. More behavioral state quiet sleep in KC than incubator and more active sleep and awake time in incubator than KC during the baseline period. More crying in incubator (424 secs in one baby and 190 sec in other) than in KC (526 for one baby and 72 seconds for other). PIPP wasmore than 2 points higher for both infants in incubator than KC during heel stick and recovery phases. No diff in PIPP between KC 30 and KC 15 mins. HRV ratio returned to baseline within 5 minutes after heel stick in KC, but increased more in the incubator group. Higher HF and LF values in KC15 than KC30 across all phases. Data suggest that KC30 is best duration, differences between the twins were not explored, and offered no explanation why KC30 data differed from KC15 data. PT, Case study, HR, Tachycardia, bradycardia, PIPP, crying, HRV, desat, pain, duration


A randomized cross over trial to determine effects of longer (30 mins) vs. shorter (15 mins) of KC or incubator before and throughout a heelstick. Heart rate variability (Low frequency, high frequency and LF/HF ratio) were measured throughout baseline, heel warming, heelstick and recovery in 26 stable preterm infants <32 weeks GA and 4-27 postnatal days old. HR changes from baseline to heel stick were significantly higher in incubator care than in either KC 30 or KC 15 (more stable HR), and more infants experienced decreased HR in incubator than in either KC30 or KC 15 condition. LF and HF increased from baseline to heel stick and then decreased from heel stick to recovery with incubator care; no significant changes in LF and HF were seen in either KC condition across all periods (more stable LF and HF). LF and HF were higher in heel stick phase in incubator than in KC 30 minute infants. LF/HF ratio decreased from baseline to heel stick and recovered during the recovery period in all groups and no differences between the groups in any period for the ratio were found. Infants had more quiet sleep in the two KC conditions than in incubator. Both longer and shorter periods of KC stabilize autonomic control during painful procedure in preterm infants and KC is better at reducing autonomic pain responses in preterm infants. PT, Crossed random on over, stability of HR, and HRV, sleep.


Maternal skin-to-skin contact (M-SSC) has been found to reduce adverse consequences of prematurity, however, its neurobiological mechanisms have been unknown. The purpose of the study was to examine oxytocin mechanism in modulating parental stress and anxiety during M-SSC and P-SSC (paternal SSC) with their pre-term infants.Twenty-eight stable pre-term infants and their parents (triads) were recruited in a 2-day cross-over study and 26 mothers and 19 fathers completed the study protocol. Each triad was randomly assigned to one of the two sequences: M-SSC was conducted on day-1 and P-SSC on day-2; and P-SSC on day-1 and M-SSC on day-2. Parents' saliva samples for oxytocin and cortisol assays and visual analog anxiety levels were collected pre-SSC, 30-min during-SSC, and 30-min post-SSC. Both maternal and paternal oxytocin levels were significantly increased during SSC from baseline. Maternal oxytocin dropped post-M-SSC, but paternal oxytocin continued to be maintained at a higher level during post-P-SSC. Both maternal and paternal cortisol levels significantly decreased during-SSC from baseline. Maternal cortisol continuously dropped post-M-SSC, but paternal cortisol increased post-P-SSC. Both mothers' and fathers' anxiety levels decreased during-SSC from baseline, and then increased post-SSC. Mother-father dyads also showed correlated or synchronized stress and anxiety responses in the NICU. M-SSC and P-SSC KC Bib 2018
Cong X, Lu, Cong X, Xu W, Hussain N, Galvin S, Fitzsimons M, McGrath JM, Henderson WA. (2017-May). The impact of cumulative pain/stress on neurobehavioral development of preterm infants in the NICU. *Early Hum Dev.* 108:8-16. doi: 10.1016/j.earlhumdev.2017.03.003. Vulnerable preterm infants experience repeated and prolonged pain/stress stimulation during a critical period in their development while in the neonatal intensive care unit (NICU). The contribution of cumulative pain/stressors to altered neurodevelopment remains unclear. The study purpose was to investigate the impact of early life painful/stressful experiences on neurobehavioral outcomes of preterm infants in the NICU. A prospective exploratory study was conducted with fifty preterm infants (28/0-7/26/2 weeks gestational age) recruited at birth and followed for four weeks. Cumulative pain/stressors (NICU Infant Stressor Scale) were measured daily and neurodevelopmental outcomes (NICU Network Neurobehavioral Scale) were examined at 36-37 weeks post-maternal age. Data analyses were conducted on the distribution of pain/stressors experienced over time and the

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links among pain/stressors and neurobehavioral outcomes. Preterm infants experienced a high degree of pain/stressors in the NICU, both in numbers of daily acute events (22.97±2.30 procedures) and cumulative times of chronic/stressful exposure (42.59±15.02h). Both acute and chronic pain/stress experienced during early life significantly contributed to the neurobehavioral outcomes, particularly in stress/abstinence (p<0.05) and habituation responses (p=0.01), meanwhile, direct breastfeeding and skin-to-skin holding were also significantly associated with habituation (p=0.01-0.05). Understanding mechanisms by which early life experience alters neurodevelopment will assist clinicians in developing targeted neuroprotective strategies and individualized interventions to improve infant developmental outcomes. PT, Descriptive evaluative study, pain, infant stress, cumulative stress, number of pain procedures, development. NOT On Charts 1/29/2018

Conn, N., & Discensa, D. (2009). The Preemie Parent’s Survival Guide to the NICU – How to Maintain Your Sanity and Create a New Normal. Burke, VA: PreemieWorld, LLC. This is a great book about surviving the NICU and, of course, it relates doing Kangaroo Care in many places throughout the book. Available for $24.95, has 191 pages, and go to www.preemieworld.com or see review under Snyder, 2012.

Constantinou JC, Adamson-Macedo EN, Stevenson DK, Mirmiran, M, Fleisher BE. (1999). Effects of skin-to-skin holding on general movements in premature infants. Clin Peds, 38(8), 467-471. Videotaped infants at Stanford Hospital for 60 min. prekc and 115 min.postkc to count gross movements using CIONI scale. KC by mothers and fathers lasted mean 72 min. and took auxiliary temps prekc, kc and postkc. Auxiliary temps did not change significantly across all 3 periods; infants spent 20.37% preKC and 21.47% postKC time in gross movements. Rest/activity of preterm infants is unaltered FOLLOWING KC (Did not look at movements during KC). Says results are similar to de Leeuw. PT pretest-posttest, own control. Activity (gross movements), Auxiliary temps. Paternal KC, Residual effects, motor develop

Coojmans KHM², Beijers R², Rovers AC², de Weerth C², (2017-Jul). Effectiveness of skin-to-skin contact versus care-as-usual in mothers and their full-term infants: study protocol for a parallel-group randomized controlled trial. BMC Pediatr. 2017 Jul 6;17(1):154. doi: 10.1186/s12887-017-0906-9. This is a proposal, not actual study. Twenty-to-forty percent of women experience postpartum depressive symptoms, which can affect both the mother and infant. In preterm infants, daily skin-to-skin contact (SSC) between the mother and her infant has been shown to decrease maternal postpartum depressive symptoms. In full-term infants, only two studies investigated SSC effects on maternal depressive symptoms and found similar results. Research in preterm infants also showed that SSC improves other mental and physical health outcomes of the mother and the infant, and improves the quality of mother-infant relationship. In the randomized controlled trial will investigate the effects of a SSC intervention on maternal postpartum depressive symptoms and additional outcomes in mothers and their full-term infants. Moreover, two potential underlying mechanisms for the relation between SSC and the maternal and infant outcomes will be examined, namely maternal oxytocin concentrations and infant intestinal microbiota. A parallel-group randomized controlled trial.16 mothers and their full-term infants. Mothers in the SSC condition will be requested to provide SSC. Maternal and infant outcomes will be measured at 2 weeks, 5 weeks, 12 weeks and 1 year after birth. Maternal postpartum depressive symptoms. Secondary maternal outcomes: mental health (anxiety, stress, traumatic stress following child birth, sleep quality), physical health (physical recovery from the delivery, health, breastfeeding, physiological stress), mother-infant relationship (mother-infant bond, quality of maternal caregiving behavior), Secondary infant outcomes: behavior (fussing and crying, sleep quality), physical health (growth and health, physiological stress), general development (regulation capacities, social-emotional capacities, language, cognitive and motor capacities). Secondary underlying mechanisms: maternal oxytocin concentrations, infant intestinal microbiota. As a simple and cost-effective intervention, SSC may benefit both the mother and her full-term infant in the short and long-term. Additionally, if SSC is shown to be effective in low-risk mother-infant dyads, then thought could be given to developing programs in high-risk samples and using SSC in a preventive manner. FT, RCT, OT, microbiome, duration of KC, depression, anxiety, crying, seep, wgt gain, develop, develop. Notion Charts


Cooper, L.G. (2012). The Perfect Pouch: A March of Dimes Intervention to Enhance Onset and Frequency of Kangaroo Care. Journal Obstetric, Gynecologic, and Neonatal Nursing, 41(Suppl), S49-S50. Doi: 10.1111/j.1552-6909.2012.01360.x PT, Report of the March of Dimes NICU Family Support program evaluation which revealed that the most comforting activity that could be offered in the NICU would be to hold their infants. Staff respondents reported that KC reduces stress, enhances comfort, and increases parent-infant bonding. Only 8% of staff reported routinely offering KC to families. So, March of Dimes developed the CLOSE TO ME intervention to KCBib 2018
increase early onset and frequency of KC in NICUs. CLOSE TO ME includes parent education and awareness materials, staff education materials, and items of comfort and encouragement for families. CLOSE TO ME was unveiled nationwide and evaluation was conducted in 2011 using outside consultant who used staff focus groups and preintervention and postintervention surveys, parent surveys, and a parent journaling technique. They have adapted their materials for Full TERM, well baby professionals and parents too. KC is a proven benefit to newborns and parents. Staff resistance can be overcome with Awareness, Education, and hands-on instructions. Parents can learn to ask for and advocate for KC if they know about it early in hospitalization. Having parent maintain a journal is appealing to parents who have the opportunity to heal and process. “KC can be vital to many if not all babies in the NICU, including full term babies and those in the NICU for a short stay. The physiological, medical and emotional benefits of KC are worth the additional time required in educating staff and promoting comforting space and opportunities for parents to KC their infants.” (pg. S50). FT,FT, evaluation report, implementation, education, KC is vital, need hands-on instruction. Not on charts 1-1-2013

Cooper, L.G., Gooding, J.S., Gallagher, J., Sternesky, L., Ledsky, R. & Berns, S.D. (2007). Impact of a family-centered care initiative on NICU care, staff and families. Journal of Perinatology, 27 Suppl 2, S33-S37. This was a survey of hospitals who agreed to try the Close to ME March of Dimes program. For Family Support. The majority of parent respondents who had the opportunity to do KC rated it as the most comforting activity that could be offered in the nICU. Staff is those NICUs, when asked about the importance of KC, responded that KC is highly effective in reducing parental stress and facilitating parent-infant bonding. However, in those NICUs, only 8% of staff stated that KC’s routinely performed in their units. Descriptive survey, staff issues and attitudes, attachment/bonding, routine use of KC, comfort, parental stress. Not enough KC being done. Not on Charts 5/25/2015.

Cooper, L.G., Morrill, A., Russell, R.B., Gooding, J.S., Miller, L., & Berns, S.D. (2015). Close to Me: Enhancing kangaroo care practice for NICU staff and parents. Advances in Neonatal Care, 14(6), 410-423. doi: 10.1097/ANC.0000000000000144. The benefits of kangaroo care (KC) are well supported by previously published studies, yet KC is offered inconsistently and faces obstacles in the neonatal intensive care unit (NICU). The March of Dimes designed Close to Me to facilitate and increase KC in NICUs. The program incorporates KC education for nurses and parents, as well as awareness and comfort components. The purpose of this study was to assess whether Close to Me increased favorable attitudes toward KC among nurses and parents, and changed nurse and parent behaviors to implement KC earlier, more often and for longer duration. This study took place in 5 NICUs with 48 nurse participants and 101 parent participants. It used a pre-/postprogram implementation design for nurses and a nonequivalent comparison versus intervention group design for parents. Nurses and parents were surveyed on knowledge, attitudes, perceived behavioral control, and behavior. Comparisons were made pre- and postprogram implementation for nurses and between intervention and comparison groups for parents. Nurse focus groups were conducted pre- and postimplementation and analyzed using a constant comparative analysis method. Parents recorded care behaviors and satisfaction in journals, which were analyzed similarly. After the Close to Me intervention, nurses reported more positive attitudes toward KC (P = .04), increased transfer of ventilated babies from incubators to parents (P = .01), and more parents requesting KC. Parents who received Close to Me had greater knowledge about KC (P = .03) compared with those who did not. With the Close to Me intervention, all babies born at less than 28 weeks’ gestation had KC by the age of 12 days, whereas without the intervention, some did not have KC until the age of 31 days (P < .05). March of Dimes Close to Me improved knowledge and behavior regarding KC in NICUs. By offering KC education to parents, providing KC awareness and comfort components, and providing information and encouragement on the benefits and feasibility of KC to nurses, hospitals can potentially promote earlier and more frequent use of KC, particularly with infants born less than 28 weeks’ gestation. Quasi-experiment, NICU program, staff issues, implementation, not enough KC being done, education is needed. KC is Routine according to 8% of nurses, practice is limited, barriers Not on Charts 5/25/2015.

Cornet MC, Maton P, Langendries JP, Marion W, Marguglio A, Sneets M, Vervoort A, François A (2014-Sep). Use of therapeutic hypothermia in sudden unexpected postnatal collapse. Arch Pediatr. 2014 Sep;21(9):1006-10. doi: 10.1016/j.arcped.2014.06.009. Sudden postnatal collapse of a full-term newborn is uncommon but may result in severe consequences: these include death; epilepsy; and motor, cognitive, or sensory impairment. Most authors suggest applying a therapeutic hypothermia approach when a previously healthy newborn develops moderate or severe encephalopathy after a sudden postnatal collapse occurring within the first hours or days after birth. However, this technique has still not been validated by randomized trials. Only a few cases have been reported in the literature. This article describes five apparently healthy newborns, born between 2007 and 2012, who suffered moderate to severe encephalopathy following a postnatal collapse on their first day of life. It describes their clinical history as well as their treatment and follow-up. The article focuses on the implementation of hypothermia in this indication and its limitations. Two newborns underwent classic therapeutic hypothermia, two others underwent temperature regulation (one at 34.5 °C; the other one for only 15 h because she quickly improved). One newborn, with severe pulmonary arterial hypertension, did not receive therapeutic hypothermia. Two newborns died (one had classic hypothermia and the other hypothermia at 34.5 °C), the outcome of the three survivors at three years, 18 months, and 15 months is good with only transient postural anomalies. Follow-up must be continued to assess their cognitive development and particularly their memorization processes. Additional research and centralization of the cases is required to evaluate the feasibility, safety, and benefits of therapeutic hypothermia in this situation. FT, descriptive clinical report, 5 SUPCs, new to biblio study.
Cosimano, A. & Sandhurst, H. (2011). Strategies for successful breastfeeding in the NICU. Neonatal Network, 30(5), 340-343. In this review of interventions to promote BF of preterm infants, on page 340 under “Feeding Cues” it is written “If the baby is overly agitated, it is recommended that attempts be made to comfort the baby. This can be done by placing the premature infant skin-to-skin on mother’s or father’s chest, otherwise referred to as kangaroo care, which also aids in the bonding process.” That is all there is folks, about KC, the whole article and there are no pictures of kangaroo care either. PT, Review, breastfeeding, agitation. Not on Charts 9/7/2011

Coughlin, M. E. (2014). Transformative Nursing in the NICU: Trauma-Informed Age-Appropriate Care. Springer Publishing Company. This book is about how traumatic care in the NICU (pg. 21) is and how stressful and painful it is. One chapter is about evidenced based interventions to reduce pain and stress. Trauma informed age-appropriate care in the NICU begins on page 40. See critical comments about the traumatic, medical experience in the NICU and that traumatic stress is an every occurred (pg. 32) and other comments on page 31. PT, Review, stress, pain NOT ON CHARTS

Coughlin, M.E. (2017). Skin-to-skin care for hospitalized newborns and infants. A FREE course about kangaroo care by the Quantum Caring Institute - Available at: https://quantum-caring-institute.thinkific.com/courses/skin-to-skin-care/?inf_contact_key=0e3c10fde98016dbb62926c1f57b602611b3ffdf0842c2884852777abf9beb7 If you watch the free video, you will notice that every mother is wearing a bra and the only way these premature babies are staying warm is because BRAZIL is a very hot country! Coughlin is a neonatal intensive care unit nurse and this is the BEST example of Kangaroo Care she can find? Be a critical thinker when you watch this.

Council of International Neonatal Nurses. (2010). Clinical PracticeGuideline: Late Preterm Infant. Available on the website www.coinnurses.org under documents/Guidelines. Accessed 8/29/2011. On Page 2, it has a category of Thermoregulation, and the first bullet under the subheading Thermoregulation is: “Initiate skin-to-skin contact with mother to facilitate temperature regulation of the infant.” (2nd bullet) “Maintain skin-to-skin as much as possible,” (3rd bullet) “Place in an isolette or a radiant warmer when not skin-to-skin until infant able to thermoregulate. IF an isolette or warming device is not available, then swaddle tand warm as possible. Use of skin-to-skin is another option.” All quotes are on page 2. PT, temperature, guidelines. Not on charts 8/29/2011


Country P.& Nacache L.(2012) Perinatality in the context of addiction. Presse Med. 41(12 Pt 1):1241-1247. doi: 10.1016/j.pmed.2012.07.034. The medical team has bad impressions of pregnant drug users and poor interactions with them. Opiate substitution treatment (OST) improves prenatal prognosis for both mother and child. There is no need to change OST for a stabilized woman discovering pregnancy. Nevertheless, buprenorphine appears to be first-range medication. OST posology is the most important for prenatal prognosis. Neonatal abstinence syndrome (NAS) is not linked with OST’s posology. OST is not contra-indicated for breast-feeding. Breast-feeding should be encouraged. Breastfeeding does not treat or cure NAS but allows a skin-to-skin contact that could lessen an occurring withdrawal. Clinical Review, buprenorphine, KC lessens severity of NAS.

Cowan, H.L.T. (2013). Supporting skin-to-skin care in the neonatal unit. Infant, 93(3), 89-91. This article contains a description of the “Getting it Right from the start” programme to increase KC and BF in the NICU and how successful the program was in 18 NICUs. See also the Lowson article that did the cost analysis of this program. Need to get this UK journal to complete the annotation. PT, NICU, clinical program report, not much KC being done, BF. Not on Charts 7-19-2016 and new to biblio study.

advice about KC in the first 24 hours post birth to maximize breastmilk output in the long term. The more KC the better. Review, Breastfeeding, fullterm preterm

Craig, J.W., Glick, C., Phillips, R., Hall, S.L., Smith, J., & Browne, J. (2015-Dec). Recommendations for involving the family in developmental care of the NICU baby. J Perinatol. 35(Suppl 1): S5–S8. doi: 10.1038/jp.2015.142 Family involvement is a key to realize the potential for long-lasting positive effects on physical, cognitive and psychosocial development of all babies, including those in the neonatal intensive care unit (NICU). Family-centered developmental care (FCDC) recognizes the family as vital members of the NICU health-care team. As such, families are integrated into decision-making processes and are collaborators in their baby’s care. Through standardized use of FCDC principles in the NICU, a foundation is constructed to enhance the family’s lifelong relationship with their child and optimize development of the baby. Recommendations are made for supporting parental roles as caregivers of their babies in the NICU, supporting NICU staff participation in FCDC and creating NICU policies that support this type of care. “The following recommendations for developmentally supportive care are CRITICAL components of STANDARD medical care providing for the basic human needs of all babies.” Pg. S5. These recommendations are designed to meet the basic human needs of all babies, the special needs of hospitalized babies and the needs of families who are coping with the crisis of having a baby in the NICU. Historically, model NICU care has been that baby was almost completely SEPARATED from mother and family, with baby enveloped in high technology and cared for by highly trained personnel. SEPARATION has profound negative effect on the baby’s physiologic stability as well as psychosocial well-being and brain development. Because low birth weight babies spend a prolonged period in NICU separated, they are at high risk for long term developmental and behavioral problems (Singer, L. parenting LBW at school age: maternal stress and coping. J Pediatrics 2007, 151(5), 463-469.) SEPARATION can adversely affect parent/baby relationship, resulting in adverse outcomes for the baby’s social and emotional development (Ishizaki Y. Mental health of mothers and their premature infants for the prevention of child abuse and maltreatment. Health. 2013 5(3), 612-616; Huhtala M. et al., 2012. Parental psychological well-being and behavioral outcome of VLBW infants at 3 years. Pediarrs, 2012, 129(4), e937-e944) and behavioral (Pierrehumbert B et al., 2003. Parental post-traumatic reactions after premature birth: implications for sleeping and eating problems in the infant. Arch Dis Child Fetal Neonatal Ed. 88(5), 400-404) and cognitive functioning (Brecht C et al. 2012. Effectiveness of therapeutic and behavioral interventions for parents of LBW premature infants: a review. Infant Mental Health J. 33(6), 651-665). SEPARATION may render baby at risk for abuse and maltreatment after discharge (Huhtala above; DiScala C, Sege R, Guohe L,Reece R. 2000. Child abuse and unintentional injuries: a 10 year retrospective. Arch Pediatri Adolesec Med 154(10, 16-22.) The article goes on in detail about studies confirming that NICU stress produces alterations in brain structure and function of the infant, but when moms are with babies and do KC for 8 weeks it accelerates functional brain maturation (Scher et al., 2009) and when moms are taught to reduce babies’ stressful experiences (i.e. answer a cry cuddle, hold, KC, feed, change diaper) their babies’ brains had improved cerebral white matter micro-structural development (Milgro J et al., Early sensitivity training for parent of preterm infants: impact on developing brain. Pediarrs Res 2010, 67(3), 330-335). In babies <30 weeks GA, moms who reduced stressful experiences and minimized babies stress responses had babies with fewer stress responses at term age and advanced communication at 6 months and moms were more sensitive and appropriately responded to stress signs in infants (Milgro J et al., 2013,Early communication in preterm infants following intervention in the NICU. Early Hum Dev 89(9), 755-767). He discusses how COPE training decreased maternal stress in the NICU and less depression, anxiety at 2 month corrected age (Melnnyk B. et al, 2006. Pediatrics. The recommendations are: “1. Parents should be incorporated as full participatory, essential, healing partners within the NICU caregiving team. As partners parents should; a. assume the parental role through provision of hands-on care to their baby including early, frequent, and prolonged skin-to-skin contact as is medically appropriate, with coaching, guidance and support form the NICU staff”(p. S6) (Note, KC is the first recommendation in this list). B. participate in both medical rounds nd nursing shift change reports, c. honor HIPPA and safety concerns while in NICU, and d. have full access and input to both written and electronic records. 2. Parents and family members should be supported to engage in developmentally appropriate care to become competent caregivers and advocates for the neuroprotection of their babies. Components of parent support should include guidance on how to: a. provide comfort and security through consistence of their presence for their baby whenever possible (NON SEPARATION), b. understand behavioral communication of baby so as to best interpret and respond to babies’ needs, c. Create and sustain a healing environment with respect to sensory exposures and experiences –i.e. ease pain procedures. D. provide supportive positioning and handling for this baby, including supportive oral feeding experiences, skin-to-skin contact (kangaroo care) and infant touch, e. collaborate with NICU staff to minimize their babies stress and pain in the developmentally unexpected environment of the NICU, f. safeguard their baby’s sleep, recognizing the importance of sleep t healing, growth, and brain development, g. optimize their baby’s nutrition with breast milk and breastfeeding whenever possible, and h. protect their baby’s skin and its many functions, including its role as a conduit of neurosensory information . the brain.” Pg. S6. Article continues with recommendation for staff participation (always warmly welcome family members, don’t call them visitor, simply explain things, promote baby-parent interaction tell them critical importance of parent’s presence on short and long term outcomes of babies, allow unlimited access to baby, give regular communication free of jargon to parents) and NICU policies to support family developmental care (have a lounge, kitchen, sleeping rooms, showers, learning materials, provide psychosocial support from ALL caregivers, expand family support to include grandparents and siblings, give peer to peer support (lists another article in same issue with peer to peer support guidelines), make referrals to community resources, if baby dies give palliative and bereavement care (lists another article in same issue with guidelines for end of life care, prepare for discharge by giving discharge criteria, educate about back to sleep and shaking baby KCBib 2018
syndrome and other issues about baby’s safety, opportunities to build self-efficacy and competence, giver referral appointments not just information, assess their social support system. And conduct quality improvement projects to make this care operational and develop hospital committee structure and NICU policy development should include family advocates. PT, parents as providers, family integrated care, family centered developmental care, review, guidelines, recommendations, separation, infant stress.

Craig S, Tyson JE, Samson J, Lasky RE. (1982). The effect of early contact on maternal perception of infant behavior. Early Human Development. 6. 197-204. Healthy term infants randomly assigned to KC or routine care. 23 KC placed in KC on chest covered by blanket and then wrapped for move to recovery room and then returned to KC on mother for approx 1 hr. 26 routine care infants (infant wrapped, given to mom for 10 minutes then taken to nursery). Home visits made one month after delivery and mothers interviewed regarding experience of pregnancy, delivery, and first pp months and Broussard Maternal Perception of Infant and Infant Behavior Record. Moms in both groups perceived infants as less difficult than average infant and no differences between groups seen with one hour of contact, in either male or female infants.

Breastfeeding Medicine CHARTS

Crenshaw J. (2000). Skin to skin care in the delivery room and reviews influence of early and frequent skin-to-skin contact and rooming in on breastfeeding and early attachment. “Women are encouraged to choose a birth setting that does not routinely separate mothers and babies and to plan for early and frequent skin-to-skin contact and rooming-in.” (pg. 39). “Lamaze International joins with the many organizations that recommend keeping mothers and babies together after birth. Lamaze International recommends that you give birth in a place where you and your baby can be together without unnecessary interruptions. If you are having a baby, tell your caregiver that you plan to hold your baby skin-to-skin after birth and keep your baby with you throughout your stay.” (pg 41-42).

FT, BF, separation, Birth KC, Guideline

Crenshaw J. (2013-Sept./Oct). Early skin to skin care significantly improves outcomes for mothers and infants. J. Obstetric, Gynecologic, and Neonatal Nursing, p. 504 “Early skin to skin care significantly improves outcomes for mothers and infants. However, despite the evidence, skin to skin care is often omitted, delayed, or interrupted for routine procedures (e.g. repairing an episiotomy, obtaining infant weights, completing scheduled cesarean surgery).” FT, retrospective cohort study, Birth KC, cesarean KC little KC being done.

CHARTS

Crenshaw, J.T., Cadwell, K., Brimdyr, K., Widstrom, A.M., Svensson, K., Champion, J.D., Gilder, R.E. & Winslow, E.H. (2012). Use of a video-ethnographic intervention (PRECESS Immersion Method) to Improve skin-to-skin care and breastfeeding rates. Breastfeeding Medicine, 7(2), 69-78. DOI: 10.1089/bfm.2011.0040. Descriptive study of 11 mothers who were observed during the PRECESS 5-day training period, called Part 1 of the study. Part 1 was the part in which the first stage was teaching skin-to-skin contact to nurses in a US hospital by having them do birth KC while being filmed and then reviewing their performance on the film (called reflection) and completing some educational content over a 5-day period (she calls this 5 day education/training program PRECESS Immersion Method (F=Practice, R=reflection, E=education, C = combined with E=ethnography [using video in situ], for S= sustainable, S = Success) and then the second part was review of medical records for three months starting the day after PRECESS ended. During part 1, 10(91%) of the mothers received Birth KC, 8(73%) also got uninterrupted KC until end of first breastfeeding, 9 moms intended to BF and 6 of them were exclusively BF at discharge, and five of the six babies (83%) who completed all nine instinctive stages during Birth KC were exclusively BF at discharge. Over the three month observation a significant improvement (25% greater than baseline) in number of moms getting birth KC occurred (p<0.001), predominantly by increasing the number of cesarean birth mothers who got KC. FT, Cesarean, Birth KC, BF at discharge, exclusive BF, maternal stress and maternal satisfaction. Not on Charts 2/10/2012.

Crenshaw J, Klaus PH, & Klaus MH. (2004). #6: No separation of mother and baby with unlimited opportunity for breastfeeding. J. Perinatal Education 13(2), 35-41. A position paper providing the evidence for Lamaze International’s guidelines for normal birth. #6 has to do with non-separation and provides the evidence for skin-to-skin care immediately after birth (cry less, stay warmer, breathe easier, instinctively attach and start to breastfeed usually within an hour of birth). They recommend Birth KC on page 41.
and say do not dry the infant’s hands and has good review of the hormonal cascade begun by KC. Birth KC, Full term, separation, breast search, latch, guidelines, infection (says same thing as WHO 1998). This is same as Jeanette Crenshaw citation which is how it appears in Pubmed.

Crist, C. (2017-Sept). Health facilities struggle to implement ‘kangaroo care.” Flipboard by Reuters, 1-2. Available from https://flipboard.com/@flipboard/health-facilities-struggle-to-implement/6f182e537be5?Reuters. Printed Sept 7, 2017. Practice of KC or skin to skin care is slow to catch on in healthcare facilities according to researchers. Hospitals struggle to implement it due to time constraints, lack of staff training, cultural norms, lack of government support according to stay in journal of Heath Policy and Planning. See Chan, G. 2017 in this bib). Chan says that studies predict the KC can reduce infant mortality by 40%. “If we could achieve high coverage of kangaroo mother care across the globe, we could significantly reduce newborn mortality”(pg.1). Chan et al reviewed 86 studies about KC and SSC practices that encourage parents and babies to have as much skin contact as possible in the hours and days following birth. More than half the studies were published since 2010. They found 6 main reasons why healthcare workers an their facilities struggle to implement KC regularly: 1) buy-in about benefits of KC, 2) social support, 3) time to train and provide the service, 4) medical concerns such as stability of mother and baby, 5) access to?? We’ve found that doing what is natural seems to work, but healthcare institutions separate mother and baby. Staff shortages, high turnover, and a lack of training in preterm care also slowed buy-in for KMC. 2. 49 minutes. Blanket across the infant’s back. Behav observed for 15 sec. 49 minutes. Blanket across the infant’s back. Behav observed for 15 seconds each minute x 15 minutes at 36 hrs postbirth and at 3 months of moms at play. NO diff in atta

Finish

Curry, MAH. (1979). Contact during the first hour with the wrapped or naked newborn: Effect on maternal attachment behaviors at 36 hours and three months. Birth and Family Journal 6(4), 227-235. 20 women randomly assigned to wrapped (11) or naked baby (9) during 1st hour after birth - started after 5 min APGAR and continued for 17.49 minutes. Blanket across the infant’s back. Behav observed for 15 sec each minute x 15 minutes at 36 hrs postbirth and at 3 months of moms at play. NO diff in attachment behaviors at either time. Temps taken q 15 minutes to be sure it was ok. FULLTERM, Temp, Maternal Behavior, RCT, swaddled, Birth KC/VEKC


Dabrowski, G. A. (2007) , Skin-to-skin contact. Giving birth back to mothers and babies, Nursing for Women’s Health, 11(1): 64-67. This is a clinical report that starts with national recommendations for KC and then proceeds to relate how intrapartum community hospital nurses proceeded to implement birth KC. Starts with review of KC benefits to mother-infant interaction, thermoregulation, analgesia, breastfeeding and transition to extrauterine life. The next section is implications for practice (i.e. put under radiant warmer or in KC ? Maintaining flexibility is important, start telling moms about practice before labor, etc.) and then relates their “one hospital experience” which cites that parents had read of KC on web and wanted it when they came to deliver, so hospital initiated change and this is report of change to incorporating KC immediately after birth (but common practices limit birth KC). Speaks to continuing resistance from neonatologists and others (pg. 70) and concludes with websites for further information. KC is the most helpful way a mother can provide healthy care for her infant KC is associated with higher rates of exclusive BF, FT, Birth KC, transition to extra-uterine life, implementation, exclusive BF. Not on charts yet.


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Dageville, C., Casagrande, F., De Smet, S., & Boutte, P. (2011). The mother-infant encounter at birth must be protected. Archives de Pediatrie, 18(9), 994-1000. DOI: 10.1016/j.arcped.2011.06.007. NOT a KC Study. This is a review of literature of mammals and humans and epigenetic research showing life-course changes due to separation. The medical decision to separate newborn from his mother is frequent and is not a BENIGN decision and should be evaluated. (Dr. Barbara Morrison’s comment: Is this a real decision or just a blanket practice that is no longer thought about nor questioned). There is physiology related to maternal-infant interactions and negative consequences of disrupting their interactions around birth. Mother infant bonding is common in all mammals and attachment is the result of 4 mechanisms: behavioral programming, secretion of neuroendocrine substrates, activation of sensory cues, and breastfeeding. BP plays a crucial role. Research has shown that early-life maternal separation can alter biological responses to stress, disturb learning behaviors, and impair social skills throughout the life span. Neonatal maternal deprivation at birth can lead to biological and behavioral disorders in adulthood. Recent advances in epigenetic research may partly explain how neonatal maternal deprivation at birth can lead to biological and behavioral disorders in adulthood. Separating a newborn from his mother is NOT harmless and must be carefully considered. Organization of perinatal care should be revised in France to take into consideration these results of separation. Full term infants should be allowed to be with mother at birth. PT, PT. Review, Birth KC, separation, stress, interactions, environment, NICU separation, hormones, attachment, BF, Not on charts 8/19/2011.

Dageville C, Pignol J, & De Smet S. (2008). Very early neonatal apparent life threatening events and sudden unexpected death: Incidence and risk factors. Acta Paediatrica 97(7), 866-869. Prospective study. Purpose was to determine risk factors for neonatal death within 2 hours of birth. Over one year at 22 hospitals, 62,968 live births, 2 neonatal life threatening events, no deaths. First baby (Apgars 10 & 10, NSVD,39 wks, 3080 g) had complete recovery and the second infant (Apgars 9-10, 38 wks. 3180 gsm, NSVD) had cerebral palsy. Rate for life threatening events and deaths was 0.032/1000 live births. Very slight. Less than usual for live births. Infants had to be 36 wkGA or more and ALTE had to occur in first two hours of life. ALTE criteria were marked palor/cyanosis, major hypotonia or stiffness with no apparent movement, requires at least vigorous stimulation and cardiopulmonary resuscitation. Transfer to NICU if previous measures are successful, lack of evidence of any underlying condition following appropriate investigations. Also reviewed 23 previous reports if they met the following criteria: were full term healthy neonates, had occurred in first two hours after birth, was characterized as ALTE, sudden death, near death, or sudden unexpected death. Risk factors were being left alone in Delivery room while mom gave KC, primiparous mother, infant was prone, and mother and baby alone in delivery room. Life threatening event in first 2 hours post birth is very uncommon. The common feature in 23 published cases of healthy full term infants during the first 2 hours of life revealed that all were pruripins, in skin-to-skin contact, and mother and baby were left on their own in the DR. During this critical adaptation period, ALTEs could be due to undetected perinatal events, congenital disease or malformation. The 23 cases of babies who were in KC at time of event were reported by Kuhn (2 cases), Gatti (6 cases), Espagne (2 cases), and Hays (11 cases). Of these 23 cases, 12 died and 8 had autopsies. When in Birth KC the healthy term infant has 5 of the known risk factors for conventional sudden infant death: bed-sharing, prone sleeping position, face down, head covered, soft bedding (on mom’s abdomen, chest, or breast) (AAP Task Force on Infant Sleep Position and SIDS Changing concepts of SIDS: Implications for infant sleeping environment and sleep position. Pediatrics 2000, 105, 650-656.). Add to this a drowsy mother who is left alone with her neonate, and surveillance may be lacking on part of the staff - all can lead to fatal episode. KC between mom and infant left alone in delivery room may constitute the main risk situation.” neonatal ALTE or sudden unexpected deaths during the first 2 hr after birth are possible albeit very rare. Skin-to-skin contact between the mother and infant left alone in the delivery room could be the main risk situation. This must not lead to reconsider skin-to-skin contact that has been proven beneficial and seems per se almost safe, but must induce maternity staff to pay particular attention to a skin-to-skin infant when left alone with its mother.” (pg. 866 and 868). Autopsy confirmed findings. No hospital had any written procedure describing the conditions of surveillance of skin-to-skin neonates. Fullterm, Birth KC, life threatening event, bradycardia, agnea, autopsy to confirm birth or prebirth damage, guidelines. See also Foran, 2009 for autopsy confirming prebirth damage from birth damage, but Foran is not a KC study so it is on the life threatening chart only, and not in this BIB) NO POLICY.


Dulbye, R., Calais, E. & Berg, M. (2011). Mother’s experiences of skin-to-skin care of healthy full-term new borns – a phenomenology study. Sexual and Reproductive Healthcare. 2(3), 107-111. 20 women gave KC starting at birth and continuing until end of first breastfeeding or at 2 hours of life and were interviewed one-to-two weeks later. In this qualitative phenomenology study, mothers related that babies liked KC, it stopped crying and irritability, and that maternal-infant affinity was increased. Moms wanted to give infant the BEST CARE (p. 109), and KC started a positive spiral. A mutual interaction developed which acted as a generator releasing energy to the mothers who wanted to continue the practice which increased mother-infant affinity, and increased naturalness and well-being.

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Happiness, peace and satisfaction were expressed by newborns, and crying/tailorable infants responded positively to KC. KC “is unlike anything else” (pg. 109), is “wonderful, cozy, intimate, creates security, harmony, joy and tranquility.” Some mothers expressed worry about falling asleep and dropping the baby or losing their grip when doing KC. Article states “Perhaps this fear could be reduced or even eliminated if togetherness of mother and child became an established routine” (pg. 110), but I think this must mean that if it is routine, moms will talk and support and educate each other so this is no longer a concern, PERHAPS?!. Big barrier to doing KC at home is inadequate support from relatives and negative attitude in a male dominant culture (pg. 110). This stresses the importance of family members and partners and relatives and friends to have good knowledge about the method and its benefits. Descriptive, qualitative, Full term, Birth KC, maternal feelings/satisfaction, crying, home KC, post-discharge KC, barriers. NOT On charts 7/22/2011.

Dani C, Drovandi L, Bertini G, Poggi C, Pratesi S (2017-Apr). Unexpected episodes of cyanosis in late preterm and term neonates prompted admission to a neonatal care unit. Ital J Pediatr. 43(1):35. doi: 10.1186/s13052-017-0349-9. We studied late preterm and term infants who were admitted to our neonatal care unit in a tertiary hospital for unexpected episodes of cyanosis that occurred during rooming-in for evaluation of their frequency, most frequent associated diseases, and documentation of the diagnostic clinical approach. We carried out a retrospective study of infants with a gestational age ≥35 weeks who were admitted from the nursery with the diagnosis of cyanosis from January 2009 to December 2016. Exclusion criteria were the occurrence of acrocyanosis and the diagnosis of sudden unexpected postnatal collapse (SUPC). We studied 49 infants with a mean gestational age of 38 ± 2 weeks. The frequency of admission for cyanosis was 1.8/1000 live births and was similar (p = 0.167) in late preterm and term infants. The majority of episodes occurred during the first 24 h of life (57%). Only 16 infants (33%) were discharged with a diagnosis, that was mostly (n = 5, 10%) gastro-esophageal reflux. Unexpected episodes of cyanosis caused admission of 1.8/1000 live births to the neonatal care unit without differences between late preterm and term infants. These episodes occurred mainly during the first day of life and infants were mostly discharged without a known diagnosis. Late PT, FT, cyanosis reflux. Not on charts 4/25/2017.

Danielsen, I.G. & Kymre, I.G. (2016-May). Humanity in the neonatal intensive care unit. Nursing Children and Young People, 28(4), 96-96. http://dx.doi.org/10.7748/ncyp.28.4.96.s92 Nurses have a key role in delivering care based on developmental support where proximity and comfort is essential. Our work studies interactions between nurses, infants and parents. We conducted observations and interviews with 23 nurses, doing qualitative content analysis and we interviewed 18 nurses using phenomenological descriptive analysis methods and found ethical issues of dignity and humanity resulted.

Five approaches were uncovered: (1) communication with the infant through senses, especially through hands; (2) grasping the infant’s condition by combining sensory signs with measurable parameters; (3) promoting the infant’s personality and integrity; (4) giving the infant access to parent and opposite; (5) enacting skin-to-skin care. Humanity as supporting the infant’s needs requires understanding the particular infant’s cues and signals. There is a need to acknowledge nurses perceptions of SSC as a powerful mutual experience, which is existentially crucial while simultaneously laying the ground for developmental advantages. The two works call for an acknowledgement of the need for parents to be available to premature newborns. PT, staff issues, maternal feelings, dev care, separation, parents need to be available. Not on charts 7-19-2016, new to bibliography (See also Kymre IG studies on this bib).

D’Apolito, K.C. (2006). State of the science: procedural pain management in the neonate. J Perinat Neon Nurs 20(1): 56-61. A review of non-pharmacologic approaches to pain reduction. Page 58-61 has section on KC that page 59 says “5 studies have examined efficacy of KC versus placement in a bed, warmer, or incubator during a heel stick in preterm newborns” “the average newborn gestational age was 31-33.6 weeks and all received 20-30 minutes of KC prior to heel stick. In 3 studies, HR, cry time, facial grimace, and pain scale criteria were reduced in neonates receiving a heel stick while in KC vs time spent in a bed, warmer, or incubator. (pg 60-62), “Cortisol and beta-endorphin levels were also significantly reduced for newborns receiving KC (pg. 58-59)”. “Pain reduction may relate to possible deactivation of the hypothalamic-pituitary-adrenal axis which may alter pain responses by decreasing the production of stress hormones (i.e. beta-endorphin)” (pg. 65). PAIN, PT< FT mechanisms, stress, cortisol, beta endorphin Review Cites Tsagis C, Chrousos G. 2002. Hypothalamic-pituitary-adrenal axis: Neuroendocrine factors and stress. J Psychosomatic Res 53: 865-871. NOT on CHARTS YET as of 5-20-09.


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Darmstadt G, Black R, & Santosham M. (2000). Research priorities and postpartum care strategies for the prevention and
treatment of neonatal infections in less developed countries. Pediatric Infectious Disease J. 19, 739-750.
This article speaks to the importance of adapting KMC for use in the community and to prevent infection. Infection, community KMC,
3rd world PT, FT GET THIS ARTICLE AND PUT IN FILES.

Santosham M, & Saksham Study Group. (2006). Introduction of community-based skin-to-skin care in rural Uttar Pradesh, India. Journal of Perinatal Medicine, August 17, vol 26(10), 597-604. Descriptive study portion of a cluster randomized controlled trial with 3 interventions: control group (government providers and Nutrition advisors), Essential care group (got nutrition advisor and taught KMC), and essential care group (with kmc) + THERMOSPOT for temperature measurements. Gave KMC for variable lengths of time. Community-based workers taught expectant mothers newborn care, including KC and were interviewed and had focus groups to assess KC acceptance. Maternal (axillary when not in KMC), newborn (axillary) and ambient temperatures on day one of life (mean = 17 hours postbirth) in the home where community-based KMC was introduced in India. Globally 2/3 of women deliver at home. 733 LBW, 971 fullterm were studied. 77% of moms gave KMC usually or almost always, 855 of moms with LBW gave KMC. Hypothermia (≥36.5) was high in LBW (49.2% 361/733) and normal birthweight (43% or 418/971). If ambient temp was <20 mean infant body temp was lower than when in ambient temps>20°C. Among hypothermic newborns, 42% (331/783) of their moms had lower temperatures (R=34-37) and were 6.7 to 0.1°C different from oral temperature. Acceptance of KMC was nearly universal at one month postpartum. No adverse events during KMC, KMC prevented hypothermia and protected baby from evil spirits and made babies more content. Descriptive, 3rd world, Community
KMC, fullterm, LBW birth KC, Early KC, temperatures, acceptance of KMC, home KC, hypothermia, content, evil spirits, duration, implementation, essential care of newborn


Darmstadt GL1, Munar W, Henry SK.(2014). Newborn health: Everybody's business. Global Public Health. 2014 Jun 23:1-8. Despite advances in issue-attention and in evidence of what works to save newborn lives (e.g., kangaroo mother care, antenatal corticosteroids, immediate and exclusive breastfeeding), we are still falling short on impact. To advance the unfinished newborn survival agenda, newborns must become an integral priority in developing countries where the burden of neonatal mortality is highest. Interventions must be adapted to local contexts and cultures and integrated into packages along the continuum of care delivered through the primary health-care systems that countries have at their disposal. Not on charts 7/8/2014

Dashti, Scott, Edwards, & Al-Sughayer, 2010. Determinants of breastfeeding initiation among mothers in Kuwait. Longitudinal study of 373 women to determine how soon after birth they initiated BF. Cesarean section was barrier to Birth KC and BF. LET THIS Barriers, FT, BF, birth KC NOT ON CHARTS

da Silva, L.J., da Silva, L.R., & Christoffel, M.M. (2009). Technology and humanization of the neonatal intensive care unit: reflections in the context of the health-illness process. Rev Esc Enferm USP (Portuguese), 43(3), 684-689. The theoretical article reflects on technology and humanization in neonatal care. Several conceptions of health and illness are presented and how the conceptualizations influence the way we behave and think about infants in neonatal care. KMC is presented as a relational technology that provides shelter for family-baby unity in the NICU, valuing experiences and major needs of affection and comprehension. Theory paper, non-separation, humane neonatal care, developmental care

da Silva LJ, Leite JL, Scochi CG, da Silva LR, da Silva TP (2015-May). Nurses’ adherence to the Kangaroo Care Method: support for nursing care management. Rev Lat Am Enfermagem. 2015 May-Jun;23(3):483-90. doi: 10.1590/0104-1169.0339.2579. Construct an explanatory theoretical model about nurses’ adherence to the Kangaroo Care Method at the Neonatal Intensive Care Unit, based on the meanings and interactions for care management. Qualitative research, based on the reference framework of the Grounded Theory. Eight nurses were interviewed at a Neonatal Intensive Care Unit in the city of Rio de Janeiro. The comparative analysis of the data comprised the phases of open, axial and selective coding. A theoretical conditional-causal model was constructed. Four main categories emerged that composed the analytic paradigm: Giving one’s best to the Kangaroo Method; Working with the complexity of the Kangaroo Method; Finding demotivation to apply the Kangaroo Method; and Facing the challenges for the adherence to and application of the Kangaroo Method. The central phenomenon revealed that each nurse and team professional has a role of multiplying values and practices that may or may not be constructive, potentially influencing the (dis)continuity of the Kangaroo Method at the Neonatal Intensive Care Unit. The findings can be used to outline management strategies that go beyond the courses and training and guarantee the strengthening of the care model. PT, Qualitative Grounded Theory, barriers, nurses actions about implementing KMC, 3rd world. Not on Charts

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da Silva ALAD\(^1\), Mendes ADCG\(^2\), Miranda GMD\(^3\), Souza WV\(^4\). (2017-Dec). [Quality of care for labor and childbirth in a public hospital network in a Brazilian state capital: patient satisfaction]. Cad Saude Publica;33(12):e00175116. doi: 10.1590/0102-311X00175116. [Abstract in English, article in Portuguese]. The study assessed the quality of care for labor and childbirth in the public hospital system in the city of Recife, Pernambuco State, Brazil, according to the mothers' satisfaction, using a cross-sectional exploratory study in all the public hospitals in the network, grouped according to type of hospital management and interviews with 1,000 mothers. Quality of care was measured according to management strata and the following dimensions of quality: reception; respect for individual rights; prenatal and childbirth care; and ambience. The results' significance was analyzed with the Pearson and Friedman chi-square test. There was high prenatal coverage, not linked to childbirth care, and intense migration of deliveries. Waiting time for care by the healthcare team was long, the proportion of vaginal deliveries in the municipal maternity services was 80%, and only 16% of the deliveries included skin-to-skin contact with the newborn; breastfeeding occurred in the birthing room in 11% of the deliveries. Among the various management modalities, the charitable hospital rated highest. The target dimension showed significant differences, with higher satisfaction rates for the following: respect (88.2%), kindness (86.7%), physicians' work (85.2%), and trust in the healthcare staff (84.3%). The highest rates of dissatisfaction were for: temperature on the ward (62.2%), possibility of lodging complaints (48.1%), quantity and quality of hospital clothing and bedding (49.2%), and privacy (43%). Despite positive strides, the findings show the need for reorganization of obstetric care policy, with regionalization, regulation, consolidation of networks of care, and interventions in the healthcare setting, aimed at consolidating the humanization of care. FT, descriptive evaluative study of 1000 women, quality care, birth KC, 3rd world. Not on charts 3-25-2018.


Davanzo, R., Brovedani, P, & Travani, L. (2014). Integrating health care practices with the promotion of breastfeeding. J. of Pediatric and Neonatal Individualized Medicine, 3(2), 5 pages, e030217. Doi: 1-7363/030217. (open access). Skin to skin contact and the prevention of neonatal collapse. The importance of the immediate postpartum period for healthy child development has been clarified through scientific investigation since the 1960s. The research assumption was that this is a sensitive early phase with sudden and lasting attachment between the infant and the mother [2]. Most of the many interactions of the dyad in the first hours of life are closely related to successful early breastfeeding. Immediate contact may be provided initially and most effectively by placing the infant on the mother abdomen/thorax, even before the umbilical cord has been clamped. Another way is to place the infant at the mother’s side, facing the mother. Both facilitate the touching and the eye-to-eye contact. Obviously, the immediate postnatal period is not the only moment when attachment can develop. If the process is delayed, however, it may take longer and be more difficult to achieve. In addition to contributing to early attachment, close mother-infant contact immediately after birth also favors metabolic, cardiorespiratory and thermal adaptation to the extrauterine life [3, 4]. Moreover, intimate contact with her/his mother facilitates colonization of the skin and the gastrointestinal tract of the newborn infant with mother’s non-pathogenic microorganisms.

In light of the improvement in mother-infant bonding and of the facilitation of breastfeeding, prolonged STS contact of the mother and her/his healthy newborn soon after birth and subsequently in the first days of life is recommended by the Baby-friendly Hospital Initiative [5, 6]. However, such intervention has not been completely adopted in the maternity wards of industrialized countries due to some concerns about safety. Indeed, a few reports have associated STS contact with an increased risk of sudden and unexpected neonatal collapse (SUPC) [7, 8]. The British Association of Perinatal Medicine (BAPM) defines SUPC as a severe condition that includes any term or near term (> 35 weeks gestation) infant who is well at birth and shows an unexpected cardiorespiratory collapse that requires resuscitation with intermittent positive pressure ventilation [9]. Newborn infants are affected in the first 7 days of life (particularly in the first 2 hour of life) and either die or require intensive care or develops an encephalopathy. Prone position of the infant on his/her mother’s abdomen/thorax during early STS contact has been recognized as a risk for SUPC. In many cases, the mother is primiparous, very tired, not observed by health professionals during the initiation of STS contact and breastfeeding, sometimes distracted even by the use of a smartphone [10]. In view of the risk of SUPC, STS contact in delivery room has been criticized and currently is possibly denied, for safety reasons. Consequently, immediate care of both baby and her/his mother is prone to be provided separately, thus interfering with the successful beginning of breastfeeding.

At the Maternal and Child Health Institute of Trieste (Italy), we have developed a surveillance protocol to prevent SUPC especially focused on the first 2 hours of life. Such protocol aims to promote a safe mother-infant bonding and an early beginning of breastfeeding, while correcting the risk factors for SUPC, thus possibly overcoming the dilemma on the appropriateness of newborn care in the delivery room.

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Interventions provided by our protocol include: antenatal and early postnatal oral and written information to parents, periodical assessment (position, colour, breathing) of the infant (at 10, 30, 60, 90 and 120 minutes of life) by midwives and/or pediatrician in the delivery room (Tab. 2), avoidance of mothers left alone with the baby in the first hours after birth particularly during STS contact and first breastfeeding attempts, encouragement of STS contact only when mothers are fully awake and finally discouragement of bed-sharing.

Health care practices and the promotion of breastfeeding

Table 2. Parameters included in the checklist of the protocol to prevent sudden and unexpected neonatal collapse (SUPC) in the delivery room. Records by midwife and/or paediatrician are scheduled at 10, 30, 60, 90 and 120 minutes of life.

<table>
<thead>
<tr>
<th>Parameter</th>
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<tbody>
<tr>
<td>Infant positioned with visible and unobstructed mouth and nose</td>
</tr>
<tr>
<td>Normal color (skin and mucous membranes)</td>
</tr>
<tr>
<td>Normal breathing (no retractions nor grunting nor flaring of the nares)</td>
</tr>
<tr>
<td>Normal respiratory rate: 30-60 breaths/min</td>
</tr>
<tr>
<td>Normal SpO2: &gt; 90% (only if deemed necessary)</td>
</tr>
<tr>
<td>Sub-axillary temperature at 60 and/or 120 minutes after birth (normal range: 36.5-37.5°C)</td>
</tr>
<tr>
<td>Mother never left alone with her infant</td>
</tr>
</tbody>
</table>

As there is not yet evidence of effective interventions to prevent SUPC, currently, our protocol represents a potential best practice.' (pg. 3/5. FT, SUPC, ALTE, protocol prevent SUPC, need for education. New to Biblio study

Davanzo R, Brovedani P, Travan L, Kennedy J, Crocetta A, Sanesi C, Straja T, De Cunto A. (2013). Intermittent kangaroo mother care: a NICU protocol. *Journal of Human Lactation, 29*(2):332-8. doi: 10.1177/0890334413489375. The practice of kangaroo mother care (KMC) is steadily increasing in high-tech settings due to its proven benefits for both infants and parents. In spite of that, clear guidelines about how to implement this method of care are lacking, and as a consequence, some restrictions are applied in many neonatal intensive care units (NICUs), preventing its practice. Based on recommendations from the Expert Group of the International Network on Kangaroo Mother Care, we developed a hospital protocol in the neonatal unit of the Institute for Maternal and Child Health in Trieste, Italy, a level 3 unit, aimed to facilitate and promote KMC implementation in high-tech settings. Our guideline is therefore proposed, based both on current scientific literature and on practical considerations and experience. Future adjustments and improvements would be considered based on increasing clinical KMC use and further knowledge. PT, Policy/protocol/guideline, implementation, barrier


Davanzo R., De Cunto A., Paviotti, G., Travan L., Inglesse, S., Brovedanni, P., Crocetta, A., Calilifarri, C., Corubio, E., Dussich, V., Verardi, G., Causin, E., Kennedy, J., Marzio, F., Straja, T., Sanesi, C., & Demarini, S. (2015). Making the first days of life safer: preventing sudden unexpected postnatal collapse while promoting breastfeeding. *Journal of Human Lactation, 31*(1), 47-52. doi: 10.1177/0890334414554927. This is a “policy” paper for the Journal and it relates the development of a surveillance protocol for use in the delivery room and postpartum ward. The purposes of the protocol are to promote safe mother and infant bonding and to establish successful breastfeeding without increasing the risk of SUPC and to correct the risk factors for SUPC. “As there is no known effective intervention to prevent SUPC, our protocol has been conceived as a potential best practice.” (first page of article). Early and prolonged SSC after birth has been shown to generate beneficial effects on mother infant relationship and breastfeeding (citing Moore et al., 2012; WHO Baby Friendly Revised, 2009; Ferber & Makhoul, 2004). Separation immediately after birth may hinder the attachment experience that early SSC provides (Richard & Allade, 1990). SSC is included in the ten steps to Successful breastfeeding in the BABy Friendly Initiative (WHO, revised, 2009). The fourth step suggests “to put babies in skin to skin contact with their mothers immediately after birth for at least an hour and encourage mothers to recognize when their babies are ready to breastfeed” But reports of SUPC in term, apparently healthy neonates associated with SSC has raised concerns on the safety of this practice. Stopping SSC may limit its use, interfere with mother infant relationship and successful breastfeeding and eventually hinder progress toward adoption of the BABY Friendly Hospital initiative. SUPC is rare but potentially catastrophic. Definitions of SUPC differ regarding timing of the collapse. The British Assoc of Perinatal Medicine defines SUPC as a sudden and unexpected postnatal collapse occurring within the first postnatal week in an infant born >35 weeks GA with a 5-minute APGAR of >7, appearing well at birth, and considered healthy requiring cardiopulmonary resuscitation and intensive care (with mechanical ventilation), and resulting in death or encephalopathy (Wellchild. 2011). Guigelines for the

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investigation of newborn infants who suffer a sudden and unexpected postnatal collapse in the first week of life: recommendations from a professional group on sudden unexpected postnatal collapse. London, UK: WellChild. This definition also includes some late preterm infants (34-36 wks GA). Estimated rates of SUPC differ considerably, ranging from 2.6 to 133 cases per 100,000 due to different definitions and inclusion criteria. Actual rates may be even higher as indicated in Weber et al., 2009. FT, Birth KC, SUPC, BF;

Davanzo, R., Travani, L., & Brovedani, P. (2010). Practical strategies for promoting breastfeeding in neonatal intensive care.矿校ea Pediatrics, 62(3Suppl), 205-206. (No DOI). Current literature lists the following strategies to promote breastfeeding on LBW infants, of whom usually only 5% are getting mother’s milk at discharge from NICU and only 10% suckle at the breast: 1) access at anytime for both parents to the NICU, 2) knowledge of science of lactation and multidisciplinary training as provided by Baby Friendly, 4) peer support in hospital, 5) KMC: 6) breastmilk expression using simultaneous pumping with an electric pump especially in the first two weeks. Galactagogues and enteral feeding have little benefit. Cites a Davanzo R et al, in Pediatric and Perinatal Epidemiology, 2009 study of BF practices in Italy in NICUs. KMC helps BF. FT, Review, BF, NICU


Davis, S.K., Stichter, J.F., & Poelletter, D.M. (2012). Increasing exclusive breastfeeding rates in the well-baby population. An evidence-based change project. Nursing for Women’s Health, 16(6), 460-470. Process of an evidence-based change to increase BF using PDSSA cycles and to get Baby Friendly status. USDHHS issued Healthy People 2010 in which the goals were to have 75% of mothers breastfed their babies in the early postpartum periods, 50% at 6 months and 24% at 1 years. In Healthy People 2020, the goals are 60-65% of infants BF at 6 months and 34.1% at 1 year of age (DCDCP,2010, Breastfeeding, retrieved from www.cdc.gov/breastfeeding/index.htm). The AAP (2005) says that breastmilk is the most complete form of nutrition for infants and it has a projected savings of 13 billion per year in US if exclusive BF increased from 64% to 75% in hospital and from 29% to 50% at 6 months of age (Bartick M & Reinhold A,2010). Benefits of BF well newborn were issued in a major systematic review covering more than 9,000 abstract and 400 individual studies (Agency for Healthcare, Research, and Quality, 2007. Benefits of breastfeeding and maternal and infant health outcomes in developed countries. Evidence report/technology assessment, number 153. Retrieved from www.ahrq.gov. Benefits of EXCLUSIVE BF are: exclusive BF in hospital is one of the most important influences on duration of exclusive BF post-discharge (Bartick, Stuebe, Shealy, Walker & Grummer-Strawn, 2009), exclusive BF at home are more likely to BF longer; length of BF is proportionate to the benefits reaped by mom and infant (AHRIQ, 2007). Societal benefits are potential savings achieved thru reduction of costs associated with MD fees, formula, hospital and lab costs as well as reduction of indirect costs to parents for missed time at work due to child illness (AAP, 2005; Bartick & Reinhold, 2010, Weimer, 2001 said “2 newborns could be breastfed for the price of one formula fed infant). Environment has fewer disposed of cans, bottles and the reduction in energy required for producing formula, bottles and bottle-feeding supplies (AAP, 2005). Exclusive BF rates are heavily influenced by hospital policies and nursing and medical practices (pg. 465). Hospital practices supportive of Exclusive BF are: staff help mother get started BF, show mother how to position baby, encourage feeding on demand, direct mothers to community BF resources, do not encourage supplementing breastfeeding with formula or water, do not encourage pacifier use, do not give out free formula (Declerq E, Løkkeb M, Sakala C, O’Hara M, Am J Pub Health, 99(5),929-935, 2009). On page 486 it says: “Strategies to address the barriers and insure success were: mandatory education for RNS, including a skin-to-skin education campaign to help promote exclusive BF, 2 continue daily pt. group education, and 3) change hospital policy and procedures. The seven step Evidence Based Practice Process (Melnyk, Fineout-OVHertol, Stullwell, Williamson, 2010) is 1. Cultivate a spirit of inquiry 2) ask a clinical question identifying the pt population, intervention or area of interest, comparison intervention or group, outcome and time (PICOT). 3) search for best evidence, 4) critically appraise the evidence, 5) integrate the evidence with clinical expertise, 6) evaluate the outcomes, and 7) disseminate results. . Lists the US DHHS’s strategies to overcome barriers as educate everyone 2)patient access to culturallysensitive and current info, 3) compliance with ten steps of BFHI, and 4) distribution of quality pt. educ materials. The barriers are attitude, knowledge deficits of nurses, giving out formula to BF infants, lack of support from health providers, 5) distribution of formula gift bags, and 6) pt’s cultural influences, and 7) hospital policies and practices not supportive of BF. On page 468 they give examples of the questionnaire for nurses’ knowledge and 3/6 are about KC: 1) skin to skin contact is most beneficial to momand baby if it occurs for at least 15, 30, 45, 60 minutes 2) identify the benefits of skin to skin: risk of jaundice is decreased, newborn cries less, mother-baby attachment is improved, allof the above, 3) skin to skin should be initiated at approximately 24 hours of age for babies born via cesarean – true or false. FT, Baby Friendly, exclusive BF, implementation, barriers, PDSSA cycles, Quality improvement project.

de Alba-Romero C1, Camaño-Gutiérrrez I1, López-Hernández P2, de Castro-Fernández J1, Barbero-Casado P2, Salcedo-Vázquez ML1, Sánchez-López D1, Cantero-Arribas P1, Moral-Pumarra MT1, Pallás-Alonso CI1. (2014, May). Postcesarean Section Skin-to-Skin Contact of Mother and Child. J Hum Lact. 30(3):283-286. . pii: 0890334414535506. [Epub ahead of print] The first hour postpartum is critical for long-term, healthy development. At 12 de Octubre Hospital, Madrid, Spain, we developed and implemented a multidisciplinary strategy based on a consensual, participatory protocol for all health care professionals involved in cesarean deliveries. Our aims were 2-fold: the initiation of skin-to-skin (SIS) contact with the newborn immediately after birth, regardless of the

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feeding method chosen, and the recognition of the importance of a companion present for support during the cesarean section (father or other designated by the mother). The objective of this article is to describe a policy developed to ensure timely postcesarean STS contact. Our protocol for neonatal STS contact with the mother is based on reported benefits found in literature, the World Health Organization's international recommendations, and deep respect for a process that is both natural and instinctive. We call it "humanizing the cesarean." Need to guarantee at least two hours of KC after a cesarean section and article describes pamphlet and how to do this.  

PT, Spain, birth KC, cesarean section, etc.  

De Alencar AE, Arraes LC, de-Albuquerque EC, & Alves JG. (2009). Effect of Kangaroo Mother Care on Postpartum Depression J Tropical Pediatrics 55(1), 36-38. One group pretest-posttest prospective study of 177 low income mothers of preterm infants who completed the Portuguese version of the Postpartum Depression Screening Scale upon admission to NICU and at KMC discharge. 66 mothers were depressed upon admission (37.3%), and upon discharge from KMC unit only 30 (16.9%) were depressed. No one developed depression during KMC stay.  

KMC may lessen maternal depression.  

PT, quasi-experimental, maternal feelings, depression, KMC 3rd world  

de Almeida H, Venancio SL, Sanches MT C, & Onuki D. (2010). The impact of kangaroo care on exclusive breastfeeding in low birth weight newborns. J Pediatrics (Rio Journal), 86(3), 250-253. DOI: 10.2223/JPED.1974. Prospective comparative study of infants before and after KMC was implemented. 43 Brazilian newborns (23 = 24/7 KMC, 23= controls) <2000 gm and staying for at least 7 days in NICU. KMC group infants started sucking three days before controls (infants before KMC started). Exclusive BF (even if only got expressed breast milk) rates were higher in KMC group at discharge (82.6% vs 0%, p=0.00), at 40 wks pma (73.9% vs 31.6%, p=0.01), at 3 months (43.5 vs 5.0%, p =0.005), and at 6 months (22.7 vs 5.9%, p=0.20 NOT SIGNIFICANT at 6 months). KMC is facilitator of exclusive BF.  

PT, BF, Exclusivity, 3rd World  

De Aquino RR & Osorio MM. (2009). Relactation, translation, and Breast-orogastric tube as transition methods in feeding preterm babies. J Human Lactation, 25(4), 420-426. Descriptive study of 452 prematures using retrospective chart review from IMIP Kangaroo Mother Care Unit in Northeast Brazil. AT discharge, # of exclusive BF infants was 85% (relactation program), 100% translactation program, 100% breast-OG tube program. There were 1.6% of the cases that had feeding related problems. All three programs were efficient methods in the feeding transition of preterm infants in a 24/7 KMC unit.  

PT, Descriptive, BF, 24/7 KMC, exclusivity of BF.  

De Araujo, C.L., Rios, C.T., dos Santos, M.H., & Goncalves, A.P. (2010). Mother Kangaroo Method: An investigation about the feeding method chosen, and the recognition of the importance of a companion present for support during the cesarean section (father or other designated by the mother). The objective of this article is to describe a policy developed to ensure timely postcesarean STS contact. Our protocol for neonatal STS contact with the mother is based on reported benefits found in literature, the World Health Organization's international recommendations, and deep respect for a process that is both natural and instinctive. We call it "humanizing the cesarean." Need to guarantee at least two hours of KC after a cesarean section and article describes pamphlet and how to do this. PT, Spain, birth KC, cesarean section, etc.  


De Chateau P. & Wiberg B. (1977b). Long-term effect on mother-infant behaviour of extra contact during the first post partum hour. II. A follow-up at three months. Acta Paediatrica Scand 66, 145-151. Fullterm primip moms given 15-20 min suckling and KC during 1st hr after delivery vs control (infant taken to nursery) had avg. diff. behav at 36 hrs and 3 months postbirth during free play. KC moms kissed, looked en face more and babies smiled more and cried less frequently. A greater proportion of KC moms were still BF at 3 months. Influence of KC was more pronounced in boy-mom than girl-mom pairs. Interviews revealed no diff in maternal perception of 1st week at home,infant sleeping at 3 months was same, same # had had colic and meds for colic. KC infants given night feeds twice as long, fewer reported problems with night feeding in KCs. Control moms reported more difficult adaptation to infant and needed home help longer (14.5 vs 7.6 days). FULLTERM, KCBF, BF at 3 months, maternal behavior, maternal perception, infant smile/crying, RCT, EARLY KC
De Chateau P, & Wiberg, (B.1984). Long-term effect on mother-infant behavior of extra contact during the first hour postpartum. Part II: Follow-up at one year. Scand J Soc Med. 12; 91-103. 15-20 minutes of KC during BF was given to moms and FULL TERM babies and compared to crib held infants. At 1 year, KC moms held and touched infants more frequently, talked more often positively to infant, returned to employment to a lesser extent, and had a greater proportion of infants who were sleeping in room of their own. In 4/5 parts of Gessell Development Schedule. KC babies were ahead of controls. No differences between groups on Vineland Social Maturity Scale and the Cesarees Marked Personality Scheme. KC moms breast fed 2.5mos. more. Fullterm, RCT, Early KC, KCBF, Development

Declercq E, Labbok MH, Sakala C, O’Hara M. (2009). Hospital practices and women's likelihood of fulfilling their intention to exclusively breastfeed. Am J Public Health. 99(S):929-35. doi: 10.2105/AJPH.2008.135236. Interview of mothers who had delivered term healthy infants in US hospitals and asked them how the birth experience influenced their ability to exclusively breastfeed which was their intention. Four factors were significantly associated with success in exclusively breastfeeding: the first was step 4 initiation of breast feeding in the first hour after birth when infant was placed in KC, second was NO supplementation, third was no pacifiers to suck on, and fourth was support of the mom without formula handouts. FT, survey, has good stats on US population, Exclusive BF.

Deggeie T, Amare Y, Mulligan B. (2014). Local understandings of care during delivery and postnatal period to inform home based package of newborn care interventions in rural Ethiopia: a qualitative study. BMC Int Health Hum Rights. 2014 May;14(1):17. doi: 10.1186/s12913-014-0017-7. Epub ahead of print. Despite a substantial decrease in child mortality in Ethiopia over the past decade, neonatal mortality remains unchanged (37/1000 live-births). This paper describes a qualitative study on beliefs and practices on immediate newborn and postnatal care in four rural communities of Ethiopia conducted to inform development of a package of community-based interventions targeting newborns. The study team conducted eight key informant interviews (KII) with grandmothers, 27 in-depth interviews (IDI) with mothers; seven IDI with traditional birth attendants (TBA) and 15IDI with fathers, from four purposively selected communities located in Sidama Zone of Southern Nationalities, Nations, and Peoples (SNNP) Region and in East Shewa and West Arsi Zones of Oromia Region. In the study communities deliveries occurred at home. After cutting the umbilical cord, the baby is put to the side of the mother, not uncommonly with no cloth covering. This is largely due to attendants focusing on delivery of the placenta which is reinforced by the belief that the placenta is the ‘house’ or ‘blanket’ of the baby and any “harm” caused to the placenta will transfer to the newborn. Applying butter or ointment to the cord “to speed drying” is common practice. Initiation of breastfeeding is often delayed and women commonly report discarding colostrum before initiating breastfeeding. Sub-optimal breastfeeding practices continue, due to perceived inadequate maternal nutrition and breast milk often leading to the provision of herbal drinks. Poor thermal care is also demonstrated through lack of continued skin-to-skin contact, exposure of newborns to smoke, frequent bathing-often with cold water baths for low-birth weight or small babies; and, poor hygiene practices are reported, particularly hand washing prior to contact with the newborn. Cultural beliefs and newborn care practices do not conform to recommended standards. Local perspectives related to newborn care practices should inform behaviour change messages. Such messages should target mothers, grandmothers, TBAs, other female family members and fathers. FT, PT, qualitative interviews, temp control, colostrum discarded, cold baths in LBW/PT, 3rd world, need education. Not on charts 7/6/2014.

de Graaff LF, Honig A, van Pampus MG, Stramrood CAL. (2018-Jan). Preventing post-traumatic stress disorder following childbirth and traumatic birth experiences: a systematic review. Acta Obstet Gynecol Scand. 2018 Jan 16. doi: 10.1111/aogs.13291. [Epub ahead of print] Between 9 and 44% of women experience giving birth as traumatic, and 3% of women develop a post-traumatic stress disorder following childbirth. Knowledge on risk factors is abundant, but studies on treatment are limited. This study aimed to present an overview of means to prevent traumatic birth experiences and childbirth-related post-traumatic stress disorder. Major databases [Cochrane; Embase; PsycINFO; PubMed (Medline)] were searched using combinations of the key words and their synonyms. After screening titles and abstracts and reading 135 full-text articles, 13 studies were included. All evaluated secondary prevention, and none primary prevention. Interventions included debriefing, structured psychological interventions, expressive writing interventions, encouraging skin-to-skin contact with healthy newborns immediately postpartum and holding or seeing the newborn after stillbirth. The large heterogeneity of study characteristics precluded pooling of data. The writing interventions to express feelings appeared to be effective in prevention. A psychological intervention including elements of exposure and psycho-education seemed to lead to fewer post-traumatic stress disorder symptoms in women who delivered via emergency cesarean section. No research has been done on primary prevention of traumatic childbirth. Research on secondary prevention of traumatic childbirth and post-traumatic stress disorder following delivery provides insufficient evidence that the described interventions are effective in unselected groups of women. In certain subgroups, results are inhomogeneous. Review, PT, FT, birthKC, stress maternal. Not on charts 3-25-2018.


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hypoglycemia, around the world. Available from MCHIP website or from savethechildren.org@service.maildirect.se. PT, FT hypoglycemia, infection.

De Hollanda Parisi TC, Coelho ERB, & Melleiro MM. (2008). Implantation of the kangaroo mother method in the perception of nurseswes in a university hospital. Acta Paul Enferm (Brazil) 21(4), 575-580. Qualitative study with purpose to understand nurses’ perception of KMC in the NICU by 5 nurses who were interviewed. The t3 themes were the decision making and awareness processes of the health care team, the intervening factors, and beliefs and feelings associated with KMC. Study showed importance of involvement of the collaborator at the institution during the processes of change and the need to provide adequate human and physical resources for effective implementation. PT, 3rd world, implementation.

Delavar, M., Akbarianrad, Z., Mansouri, M., & Yahyapour, M.(2014 July). Neonatal hypothermia and associated risk factors at baby friendly hospital in Babol, Iran. Annals of Medical and Health Sciences Research, 4(Suppl 2):S109-S103. doi: 10.4103/2141-9248.138022. This is NOT a KC study as the infants were wrapped and taken to a warmer right after birth and did not have skin to skin contact with their mother until they were in postpartum and then only when breastfeeding. So temperature measures are OUTSIDE of SSC/KC!!! Thermal care is an important element of Baby Friendly Hospital. The objective of this study was to determine the prevalence of neonatal hypothermia and associated risk factors in healthy full term newborns at a Baby Friendly Hospital. A cross-sectional, descriptive study was conducted on consecutively healthy full term neonates recruited during a 1 year. Temperatures were recorded immediately after birth and at the age of 1, 2 and 4 h after birth in order to estimate the prevalence of neonatal hypothermia, defined as axillary temperature less than 36.0°C. The data were collected using a special questionnaire; data of history of abortion, parity, mode of vaginal delivery, gestational age, birth weight, newborn temperatures, time of the first skin-to-skin contact, time of first breast feeding, first wrapping and first visiting by the pediatrician. Association between neonatal hypothermia and risk factors was determined using logistic regression. Axillary temperature showed 41.2%, 47.5%, 46.4% and 47.2% of the consecutive number of 532 healthy full term neonates were moderately hypothermia immediately after birth, at 1 h, 2 h and 4 h respectively. Spontaneous labor and warming room were associated with decreased risk of hypothermia. A persistently high prevalence of neonatal hypothermia was shown within the first 4 h of vaginal birth when not in skin to skin contact. Test of the associations were done, stepwise multiple logistic regressions. Odds ratios (ORs) were assessed using maximum likelihood and associated 95% confidence intervals were computed. A p< 0.05 was considered to be statistically significant. In fact, no significant association was found between time of skin to skin contact and hypothermia, even though infants displayed a consistent pattern of hypothermia at all measurements and no infant had any body contact with mother when readings were taken (pg. of results section just above Discussion Section). But then it says in the second paragraph of the Discussion section that all of the WARM CHAIN steps were practiced for all the subjects and hypothermia was still present. (So, I can’t figure out if they were or were not in KC) The findings of this study indicated that a high prevalence of neonatal hypothermia was identified among healthy full term newborn in a Baby Friendly Hospital Initiative. Therefore, it is necessary to emphasize on the development ‘warm chain’ (and KC/SSC is the 3rd element listed in the warm chain – see Chitty article and WHO articles) in preventing neonatal hypothermia in Baby Friendly Hospital. Descriptive study. FT, Birth KC, temperature, hypothermia, Baby Friendly, warm chain

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Delcasino, J. & Slough, D. (2012). Exclusive breastfeeding: “It Takes Our Village” Journal of Obstetric, Gynecologic and Neonatal Nursing, 41(Suppl 1): S39-S40. A quality improvement project report to provide the best care by exclusive breastfeeding in this 600 bed hospital with 7000+ births a year. It took their village to educate staff, families, mothers because it is the responsib ility of all to help mothers be successful and promote recommendations of the AWHONN, WHO, AAP, ACOG, USDHHS, CDCP, and Joint Commission for exclusive Breastfeeding. They formed interdisciplinary committee to make the change and address issues, like How to treat baby with low Blood Sugar but still exclusively breastfeed (answer is feed with expressed colostrum or milk and retake blood glucose afterfeeding(Tozier 2012) and keep in continuous KC (K. Christiansson studies from 1990’s). What do you do when mother is medically unable to breastfeed after birth? (Answer is check list of Joint Commission conditions permitted, get MDCNM to note and sign this, give formula or BETTER YET, help mother pump or express milk/colostrum or get donated sterilized human milk.) What about mothers who want to sleep all night and ask staff to give bottle because Pediatrician said “You need to sleep at night and a little formula never hurt.” What about Labor/delivery nurses who said: Breastfeeding is NOT my job, it’s the lactation consultant’s job?” They created educational program that started with citing the major health care organizations recommending exclusive breastfeeding, articles from literature were reviewed, benefits of and disadvantages of not BF for mother, infant and community are discussed, discussion of hospital practices that decrease success of breastfeeding and exclusive breastfeeding were recalled and “skin to skin care and roomin-in were discussed.” And they joined a collaborative to provide educational and material handouts to support breastfeeding, it is called the Perinatal Quality Collaborative of North Carolina. FT, exclusive BF, quality improvement project, implementation, birth KC. Not on Charts 1-2-2013 – See articles by Dobnalek or Castano, or Davis or Reeg on this bib too.,

SCANDINAVIAN LANGUAGE, Preterm, Review

de Leuw R (1987). The kangaroo method. Ned Tijdschr Geneeskd 131(34), 1484-1487. (DUTCH). KC was started at Academic Hospital of the Univ. of Amsterdam for a small preterm infant having intractable apneic attacks. Apneic attacks diminished due to improved breathing pattern while on KC. Descriptive, preterm, apnea, breathing patterns.


de Leeuw, R., Collin, E.M., Dunnebier, E.A., & Mirmiran, M. (1991). Physiologic effects of kangaroo care in very small preterm infants. Biology of the Neonate, 59(3), 149-155. Clinical observation study using pretest-test-posttest (each period = 1 hour) design of 9 preterms (27-29wks GA; MA=28 wks; bw 770-1465 M=1104g) given one hour of maternal or paternal KC when clinical condition allowed (after days of ventilation and 02 support by CPAP or hood for irregular breathing with apneic attacks). Infants wore hat and blanket, parents sat in upright chair. Some had CPAP or O2 by mask during KC. KMC done randomly in am and pm. Mean entry age=18.1 days, HR, RR, TcpO2 (between scapula on back), Behavioral state by 2 observers (80% reliability) using Prechtl & Parmelee scoring. Min by min scoring of regular/irregular breathing, % time of reg/irreg breathing, # of apnea >10 seconds and % total time of apnea >10 secs. power spectrum of breathing, rectal temp (B4 & after KC), bradycardia (+100 bpm). No diff between periods in HR, # of brady increased slightly during KC but not significantly (two infants had increase from 0 to 13 or 8 during KC), RR (during KC some had increased RR, some had decreased RR), % time in reg vs irreg breathing, % of apnea and total apnea time, tcpO2 (but 8 of the data points infants were still on O2 supprt), % time in state 1.2, and transitional state (crying was not seen at all in any period), and in rectal temp (rectal temp increased somewhat in all but 2 very small infants who had a decrease of 0.3C from 36.8 to 36.5 and other from 37.1 to 36.2 (0.9C change). Need to prevent hypothermia in very LBW infants. Power spectrum of breathing clearly showed 3 infants had increased regularity of respiration and others had no change in regularity of breathing. Parental questionnaires show edKC increased parental-self confidence and confidence in the baby. Some infants improved, others had no change. No clinical deterioration during KC. KMC has no lasting effect on sleep in infants. Quasi-Experiment: PreKC-KC-PostKC infants as own control, Sleep, Micropreemies who were unstable andVLBW, Paternal KC, CPAP KC, State, Breathing pattern, rectal temp, apnea >10 sec # and % time, bradycardia, crying, parent confidence, TcpO2. Check weight outcomes as Tallandini says KC treated infants gained 14.5 g/kg of birthweight per day and controls gained 10 gms/kg of birthweight/day. Stability in Breathing, Spectral analysis (Power) of breathing done. Not on RCT. Micropreemie (ELBW)

de Leon-Mendoza, S., & Mokhachane, M. (2011). “Early” or timely discharge in Kangaroo Mother Care: Evidence and experience. Current Women’s Health Reviews, 7(3), 270-277 doi:10.2174/1573430411796355135. The benefits, risks, and safety of early discharge of LBW infants weighing >2000 grams into KMC at home with frequent follow-up visits are presented. Safety and risks post-discharge are the same in both settings, but breastfeeding outcomes at 3 months and maternal-infant bonding, family involvement benefits are evident in KMC settings. A practical guide for implementation of early discharge policy is outlined. Early discharge policy is KCBib 2018
contingent upon a systematic, operational outpatient follow-up program. A low care/KMC ward/Half-way house have been used as alternatives to home discharge in areas where follow-up cannot be assured. PT, Review, 3rd world, early discharge, BF, bonding, family involvement. Not on Charts 10/22/2011.


De Macedo EC, Cruvinel F., Lukasova K, & D’Antonio ME. (2007). The mood variation in mothers of preterm infants in kangaroo mother care and conventional incubator care. J Tropical Pediatrics, 53(5), 344-346. Doi: fmm076[p]pij 10.1093/tropej/fmm076 90 mothers were divided into 3 groups: 30 moms of term newborns, 30 moms of preterms with KC; and 30 moms of preterms in incubators. The visual analogue MOOD SCALE by Guimares, 1999 was used. Preterm moms were evaluated before and after either KC and incubator visit; fullterm moms were evaluated once. NO depressed moms or malformed babies. Ancova (with hospitalization time, birthweight, and birth age as covariates) determined differences in maternal mood between groups. Term moms differed from preterm moms (p<0.05) but no differences between preterm moms who visited incubator and preterm moms who did KC. Pretest-posttest paired t-tests showed significant improvement in 13/16 items of mood variation in KC moms (in calm vs excited, strong vs feeble, muzzy vs clear-headed, well coordinated vs clumsy, lethargic vs energetic, contented vs discontented, troubled vs tranquil, quick-witted vs mentally slow, tense vs relaxed, attentive vs dreamy, incompetent vs proficient, happy vs sad, antagonistic vs amicable) (but no difference in alert ds. drowsy, interested vs bored, and withdrawn vs. gregarious); incubator moms showed improvement in only one item (being well coordinated versus clumsy). Before visit mothers did not differ in mood state, so mood state was not determined by type of care. After visit, incubator mothers reported feeling more awkward than before. A benefit of KC to mothers is increased feelings of well being, intense connectedness with the infant, and high self-confidence in ability to care for infant. Differences in KC mom’s moods were attributed to prolonged contact with baby, pleasant feelings from skin to skin contact, help of professional during baby’s placement and removal, and knowledge of on-going benefits to the baby. These elements need to be provided to moms when they visit the infant in an incubator. PT, descriptive. (ATHanasopoulou says this is an experimental RCT study, but I disagree), 3rd world, Maternal feelings, maternal mood. Not on charts yet (Reference for tool is Guimares FS. 1999. Escalas analogicas visuais na avaliacao de estados subjetivos. In: Gorenstein C, Andrade L, Zuardi A (eds). Escalas de Avaliacao Clinica em Psiquiatria e Psicofarmacologia. Sao Paulo: Lemos Editorial, pp. 29-34).

Demirtas B. (2012). Breastfeeding support received by Turkish first-time mothers. International Nursing Review. 2012 , 59(3):338-44. doi: 10.1111/j.1466-7657.2012.00977.x. Research conducted to examine nurses’ breastfeeding support (informational, practical, emotional) to first-time mothers is sparse in Turkey. 192 mothers stated that the information provided should be adequate (41%), given individually (36.3%) and taught through practice (41%). Supplementary feeding was the only statistically significant predictor of in-hospital breastfeeding problems [P<0.01, odds ratio (OR) 0.109, 95% confidence interval (CI) 0.33-0.361]. Experiencing a breastfeeding problem, not receiving practical support, and the unavailability of nurses were statistically significant predictors of supplementation respectively (P<0.01, OR 0.084, 95% CI 0.023-0.309; P<0.05, OR 0.239, 95% CI 0.071-0.809; P<0.05, OR 3.442, 95% CI 1.059-11.183, respectively). Informational, practical and emotional support offered by nurses has the potential to make a difference in reducing breastfeeding problems and in hospital supplementation. Practical support could be enhanced through effective implementation of early maternal/infant skin-to-skin contact in a busy hospital environment. PT, descriptive, birth KC, BF practice, implementation. NOT ON CHARTS 10/22/2012

Demott, K., Bick, D., Norman R., Ritchie G., Turnbull, N., Adams, C. Barry C., Bysom, S., Elliman, D., Marchant S., Mccandish, R., Mellows, H, Neale, C., Parkar M., Tait, P., & Taylor, C. (2006). Clinical guidelines and evidence review for post natal care: Routine post natal care of recently delivered women and their babies. London: National Collaborating Centre for Primary Care and Royal College of General Practitioners. 1-489. In this guideline for the United Kingdom, the Baby Friendly Initiative is considered the minimum standard of care. In the section on Infant Feeding, (Section 6, 6.1 has the rated recommendations. Recommendation 15 is “Women should be encouraged to have skin-to-skin contact with their babies as soon as possible after birth” and this is rated “A”. #16 is “It is not recommended that women are asked about their proposed method of feeding before the first skin-to-skin contact” (rated D). (page 192). Also included are signs of good attachment (mouth wide open, less areola visible underneath the chin than above the nipple, chin touching the breast, lower lip rolled down, and nose free, and no pain) and signs of successful feeding (audible and visible swallowing, sustained rhythmic suck, relaxed arms and hands, moist mouth, regular soaked/heavy diapers) and how to deal with many breastfeeding and infant feeding problems. Under section 6.2 Evidence statement for Infant Feeding, there is the question “What factors immediately after the birth contribute to successful breastfeeding? And then it lists several CORE CARE items, of which recommendation #50 is “early separation of mother and baby may disrupt pre-feeding behaviors (a level 3+ recommendation) [pre-feeding behaviors were first documented by Jansson 1995], #51 is “early skin-to-skin contact appears to have some clinical benefit especially regarding breastfeeding outcomes and infant crying and had no apparent short or long-term negative effects [Level 1+]”, and #52 is “Early skin-to-skin contact with suckling is

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associated with increased duration of breastfeeding 'Level 1+’. (pg. 200) and this is followed by a section on peer support of breastfeeding (pg. 202) and on page 209 a report of Taylor et al., 1985 appears, and on page 212-214 there is a full section #6.3.1.3 Does Skin-to-skin contact Contact to Successful Breastfeeding? And the answer is based on Anderson et al.’s 2003 Cochrane review and Carfoot’s 2005 review. also includes treatments for problems like sore nipples, insufficient milk supply, engorgement, sleep babies (pg. 248) – should feed within 3-5 hours of last feed, and use gentle stimulation, unwrap the baby, change the diaper, rock and massage to awaken the infant and if he does not awaken, then assess for hypoglycemia, sepsis and dehydration (Glover J, 1995). Supplementation of breastfeeding newborns: a flow chart for decision making. J Hum Lactation 11(2), 127-131, and has big cost analysis of breastfeeding (p. 225) sections. Guidelines, Full term, breastfeeding, Birth KC, separation, crying, separation, cost, massage

De Moura, S.M.S.R., & Araujo, M.F. (2005). Senses production upon motherhood: An experience at the kangaroo mother program [Portuguese]. Psicolog em Estudo, 10, 37-46. Mothers of preterm in a 24/7 KMC unit reported that they felt overwhelming love as soon as KC started. Their immediate sense of overwhelming love and compassion for the infant was accompanied by reduced guilt, anguish, fear, and rejection. Mothers experienced immediate access to their babies and improved maternal self-esteem. SSC has an impact on mothers’ social identity, as motherhood in Brazil is highly valued and essential in the construction of a woman’s social identity. PT, don’t know type of study and I cannot seem to get it, maternal feelings.

de Oliveira Azvedo, V.M., Xavier, C.C., & de Oliveira Gontijo, F. (2012). Safety of Kangaroo Mother Care in intubated neonates under 1500 g. Journal of Tropical Pediatrics; 58(1):38-42 DOI: 10.1093/jtropmed/frm033. Quasi-experimental, one group, pre-KC – post KC study of 43 preterms (GA=29.1 +/- 1.6 wks), BW = 1.1334 +/- 2318g) were assessed for 90 minutes (15 min before, 60 mins during KC and 15 mins after KC) for HR, SaO2, axillary temp, and mean arterial Blood Pressure of ventilated infants showed statistically significant (but not clinically significant) differences in HR (varied the most by 5 bpm (pg. 2/5), SaO2, axillary temp (maximum variation was 0.2°C, mean arterial BP showed small increase during KC and greatest difference was 4.0mmHg. FiO2 decreased most significantly, up until 30 mins of KC and thereafter it decreased less noticeably. FiO2 variation was statistically significant but not clinically (0.05%). SpO2 decreased over time but the change was only 0.7% (clinically insignificant) No change in PIP, PEEP, RR though. No infant was removed from vent KC. Because no clinically significant differences between the three periods, VS stability occurred during KC. Thus, KC is a safe method for intubated infants. PT, Quasi-exp, Pretest-post-test, HR, SaO2, axillary temp, BP, MAP, vent KC, stability micropreemie, FiO2. PUB med lists this article as Azvedo et al. 2011. So it is in this bib under Azvedo et al. too.

Department of Maternal and Infant Nursing. (2008). Massage therapy reduces hospital stay and occurrence of sepsis in very preterm neonates. Journal of Perinatology, 2008, p. 1-6. 104 newborns of GA=32 weeks & birth weight < 1500 gms randomly selected for massage or control. 52 in each group. KC was routine care for all babies. Treatment babies got 15 minutes of massage 4 times a day during a 6-hour period each day. Massage was massage of face and limbs plus passive exercises of upper and lower limbs. Infant was able to be discharged when able to maintain body temperature while dressed and take oral feedings without suction difficulties. Growth, feeding behavior, and late-onset (72hrs postbirth or more) sepsis (harmful bacteria and toxins in tissues). Infants in KC + massage left hospital seven days sooner than KC alone infants; controls had higher incidence of infection. Thus, massage increased probability of hospital discharge 1.85 times. PT, RCT, micropreemie, length of stay, infection, routine KC NOT ON CHARTS. This same is Mendes and Procionay and Procinay articles.

De Rooy, L., & Johns, A. (2010). Management of the vulnerable baby on the postnatal ward and transitional care unit. Early Human Development, 86, 281-285. This is a physiologic review encouraging safe management of vulnerable infants (late preterm/term; SGA, IUGR, infant of diabetic mom) on the postnatal ward as long as you know how to handle thermoregulation, blood glucose and feeding problems. Thermoreg problem: Blood glucose problems/hypoglycemic response to insulin is blunted, instead insulin promotes fetal growth with increase in activity of β pancreatic cells in 3rd trimester (when dramatic increase in adipose and glycogen stores occurs). Fetus adapts from continuous supply of glucose, amino acids, and others to cycle of fasting followed by feeds and diet based on fat from adipose tissue stores and milk. At birth, abrupt cessation of transplacental glucose, so BG falls and catecholamines (epinephrine, norepi) surge to restore BG levels. In term infant BG may fall to < 2mmol/l in first few postnatal hours without adverse outcomes (pg. 282). Newborn brain is protected from hypoglycemia by 1) astrocyte glycogen stores, 2) decreased cerebral glucose utilization in neonatal period (first month of life) (cerebral utilization is 4-16mmol/100g/min and is lower than at any other time in infant’s or child’s life. 3) Ketone bodies are taken up and used by the neonatal brain as an alternative cerebral fuel and the ketogenic response peaks in newborn at 24-48 hrs postbirth. Average intake of calories is approx. 7ml/feeding in 1st 24 hours so energy expenditure exceeds intake for 24 hours and neonate relies on lipolysis of stored fat and β oxidation of fatty acids to produce ketone bodies. This production of ketone bodies is enhanced with EXCLUSIVE Breastfeeding such that SGA infant has ketone body repose similar to fullterm AGA infant, and does not occur with EXCLUSIVELY FORMULA fed infants (pg. 282). KC is enormously important for the vulnerable infant and the health benefits are considerable. “Early skin to skin contact should begin straight after birth.”/Such skin to skin contact may help in the expulsion of the placenta and should take precedence over other non-essential but well established labor ward routines which may follow birth, such as washing mother and baby, or measuring and weighing the baby.” “Skin to skin contact for the vulnerable infant has the dual purpose of

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maintaining the baby's temperature, and in facilitating breastfeeding. (pg. 282). “Preterm or small babies may well prefer smaller feeds at shorter intervals, and hence allowing such infants frequent skin to skin contact with unlimited access to the breast is crucial in the establishment of breastfeeding” (pg. 283). Recommends Kc for Nearterm, Late Preterm, Infant of Diabetic Mother, SGA/LBW infants. In regards to monitoring Blood glucose it says in the well infant who is stable the first BG measurement can be taken just before the second feed (about 4-6 hrs postbirth)(pg. 284). On page 284 is a box entitled “CARING for the vulnerable BABY ON THE POSTNATAL WARD” and #1 is “Immediate skin to skin contact (or as soon as mother and baby’s condition allows), 4. Frequent breastfeeds and maintaining skin to skin contact.”. Review, Late preterm, near term, BF, colostrum, ketones for brain, energy supply, hypoglycemia and hyponatraemia, neuointensive care.

d de Santana Mda C, de Goulart BN, & Chiari BM (2010). Characterization of parturients assisted by the Speech Therapy Care Service of a school maternity. Pro Fono 22(1), 293-298. (No DOI). Retrospective descriptive study of 204 medical records of women who were participating in the second phase of the Kangaroo Mother Method in Brazil (2nd phase is continuous 24/7 KMC in step down unit of prematurity care before discharge). Mean age was 24.61 yrs, 61.27% from countryside, 50% were single moms who had been to school for 4-5 yrs (35.29%) or high school (the rest). Cesarean was prevalent birth method (48%) and 43.62% reported some prenatal care counseling. Most had low income and no remunerated job (were housewives) and no previous experience with breastfeeding (53.43%). DESCRIPTIVE of characteristics of women in Step 2 of KMC in Brazil. Implementation, cesarean, PT. Not on charts 2/1/2011

d de Sousa Freire NB, Garcia JBS, & Lamy ZC. (2008) Evaluation of analgesic effect of skin-to-skin contact compared to oral glucose in preterm neonates. Pain. 139(1), 28-33. Doi: 10.1016/j.pain.2008.02.031 Ninety-five (95) Brazilian infants of 28-36 weeks postmenstrual age randomly assigned to 3 groups: grp 1 was incubator (n=22) prone and no analgesia during heel stick; grp 2 KC n=31, held in KC for 10 minutes before and during heel stick, grp 3 glucose, n=31, prone in incubator, given 1 ml of 25% glucose 2 min before heel stick. KC group had smaller variation in HR and oxygen saturation, shorter duration of facial activity, and lower PIPP scores than infants being given sucrose. KC produced analgesic effect in preterm newborns. PT, RCT, HR, SaO2, facial action, pain, PIPP. stability. THIS IS SAME AS FREIRE REF IN THIS BIB, but article has de Sousa in front of Freire and the Pubmed citation just has Freire NB, etc.

d de Vonderweid, U., & Leonna, M. (2009). Family centered neonatal care. Early Human Development. 85(10 Suppl), S37-S38. A survey of all Italian NICUs on parental access, environmental and individualized neonatal care, breastmilk feedings, and KMC. Mothers are allowed unrestricted access in 29% NICUs, most NICUs reduce lights and noises, nesting in incubator and regular change of postures are frequently reported, and NIDCAP is uncommon as is breast milk feeding at discharge. KMC is performed in 67% of NICUs. Descriptive, developmental care practices, KMC, breast milk, implementation, PT


Dezbard S, Jahanpour F, Firouz Bakht S, Ostovar A. (2016-Feb). The Effects of Kangaroo Mother Care and Swaddling on Venipuncture Pain in Premature Neonates: A Randomized Clinical Trial. Iran Red Crescent Medical J.18(4):29649. doi: 10.5812/ircmj.29649. Hospitalized premature babies often undergo various painful procedures. Kangaroo mother care (KMC) and swaddling are two pain reduction methods. This study was undertaken to compare the effects of swaddling and KMC on pain during venous sampling in premature neonates. This study was performed as a randomized clinical trial on 90 premature neonates. The neonates were divided into three groups using a random allocation block. The three groups were group A (swaddling), group B (KMC), and group C (control). In all three groups, the heart rate and arterial oxygen saturation were measured and recorded in time intervals of 30 seconds before, during, and 30, 60, 90, and 120 seconds after blood sampling. The neonate's face was video recorded and assessed using the premature infant pain profile (PIPP) at time intervals of 30 seconds. The data was analyzed using the t-test, chi-squared test, Repeated Measure analysis of variance (ANOVA), Kruskal-Wallis, Post-hoc, and Bonferroni test. The findings revealed that pain was reduced to a great extent in the swaddling and KMC methods compared to the control group. However, there was no significant difference between KMC and swaddling (P ≥ 0.05). The results of this study indicate that there is no meaningful difference between swaddling and KMC on physiological indexes and pain in neonates. Therefore, the swaddling method may be a good substitute for KMC. PT, RCT, swaddling vs. KC vs nothing, pain, HR, SaO2, PIPP. Not on charts 7-8-16; new to biblio study

Diaz-Rosello, J.L. (1996). Caring for the mother and preterm infant: Kangaroo care. Birth. 23(2): 108-111. This is a review article with 17 references. LITERATURE REVIEW, PT


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DiMenna, L. (2006). Considerations for implementation of a neonatal kangaroo care protocol. Neonatal Network, 25(6), 405-412. Many health professionals are not aware of KC, its benefits, or how to perform it. Article reviews the literature on KC and its benefits, and then develops a list of evidence-based KC guidelines for use with all infants and their parents. They routinely and successfully provide KC for infants with CHEST TUBES and HIGH FREQUENCY OSCILLATORY VENTILATION. There is an evidence-based protocol to assist with implementation of KC. There is a good chart in which the aspect of implementation is on the left (i.e. use of head cap, upright position) and rationale with citation is on the right and the citations have been evaluated using a proprietary evaluation system. Increased knowledge of and education on KC for healthcare providers should lead to increased, routine use of KC. Has a whole list of CONTRA-INDICATIONS for KC: infants <27 wks who require high humidification, infants with abdominal wall and neural tube defects that need to be kept sterile prior to surgery, newly postoperative infants in whom stability is not yet determined, and infants with significant hemodynamic instability characterized by wide blood pressure swings and for significant bradycardia, apnea, or oxygen desaturation with handling that is associated with prolonged recovery. Summarizes that KC improves infant physiologic stability, thermal regulation, and state organization. Review, implementation, guidelines, stability, Preterm, state, temperature, ventilated KC, chest tubes, contra-indications, post surgery.

Diniz KT, Cabral Filho JE, Miranda RM, Souza Lima GM, Vasconcelos DD. 2013. Effect of the kangaroo position on the electromyographic activity of preterm children: a follow-up study. BMC Pediatr. 13(1):79(6 pages long) DOI 10.1186/1471-2431-13-79 May 16,2013. One of the components of the Kangaroo Method (KM) is the adoption of the Kangaroo Position. The skin-to-skin contact and the vertical position the child adopts when in this position may provide sensorial, vestibular and postural stimuli for the newborn. The Kangaroo Position may encourage ventilatory stimuli and a flexed posture of the limbs, suggesting the hypothesis that the Kangaroo Position may have an impact on flexor muscle tone. The effect of these stimuli on the motor features of the newborn has not been the subject of much investigation. No study has yet been conducted to determine whether the Kangaroo Position may progressively increase electromyographic activity or whether this increase persists until term-equivalent age. The aim of this study was to evaluate the effect of the Kangaroo Position on the electromyographic activity of preterm children. A follow-up study was carried out between July and November 2011 at the Instituto de Medicina Integral Prof. Fernando Figueira (IMIP), Recife-Brazil, using a sample of 30 preterm children. Surface Electromyography (SEMg) was used to investigate the muscle activity of biceps brachii. The electromyographic readings were taken immediately before (0h) and after 24h, 48h, 72h, 96h of application of the Kangaroo Position as well as at the term equivalent age in each baby. Electromyographic activity was analyzed using the Root Mean Square (RMS) and the mean values of the times were analyzed by way of analysis of variance for repeated measures and the Tukey test. Electromyographic activity of the biceps brachii varied and increased over the whole 96th period (RMS 0h = 36.5 and 96h = 52.9) (F(5.174) = 27.56; p < 0.001) and remained constant thereafter (RMS: term-equivalent age = 54.2). The correlations between the corrected age and the values for electromyographic activity did not show any statistical significance. The Kangaroo KCBib 2018
Position leads to a growing increase in the electromyographic activity of preterm children's biceps brachii after up to 9th of stimulation and this response persists until at least the 21st day after this period. PT, quasi experimental of 96 hours of KC, motor development See also Miranda RM 2014 study

Discenza, D. (2011). Nurturing touch helps mothers with postpartum depression and their infants. Neonatal Network, 30(1), 71-72. In this clinical report, mostly about massage, it says on pg 71 “Nurturing touch can begin in the NICU as soon as the infant is stabilized. A perfect way to begin—one that is beneficial to both parent and infant—is kangaroo care (sites Bergman and March of Dimes). Just place the infant (tubes and all) on the mother’s chest skin to skin. Kangaroo care provides the infant with all the physiologic benefits of bonding with the mothers. An added benefit is that the mother’s body warmth keeps her infant at the perfect temperature, so the infant has to use fewer calories to keep himself warm. The mother can enjoy this time with her infant and see how calming it is for her child” PT, clinical report, depression, Temperature, relaxing, massage

Discenza, D. (2012). Kangaroo Care: Worth the time and effort. Neonatal Network, 31(3), 189. This is the story of a mother of a preemie who was asked “When will they let you do Kangaroo Care” and she looked around the NICU for the kangaroo and then realized she was the kangaroo. And when her daughter was put into KC the first time, the daughter’s facial expression became beatific, absolutely blissful. Mom says “I felt powerful, even a bit magical. I finally felt like a mother and could do something amazing for my daughter that showed immediate effect. It was like winning the lottery.” She encourages nurse to let moms do KC because 1) it helps the baby to be in the more familiar environment, 2)KC gives parents a chance to be a parent. 3)KC promotes breastfeeding. “Nothing is a more powerful message to Mom that breastfeeding is a great idea than a baby on the chest seeking out the nipple.” 4) KC can save everyone time and lessen conflicts, 5)KC promotes a shared joy between parent and professional. The author writes “I believe it is important to build KC into the treatment plan and to have it be a standard of care in the doctor’s orders for all premature infants. … Most of all, the baby is getting all of the best possible medical and developmental care that is sure to help him survive and thrive.” PT, prenatal report, BF, dev, maternal/infant feelings.

Disher T, Benoit B, Johnston C, Campbell-Yeo M. (2016-Oct). Skin-to-skin contact for procedural pain in neonates: acceptability of novel systematic review synthesis methods and GRADEing of the evidence. J Adv Nurs.73(2):504-519. doi: 10.1111/jan.13182. The aim of this study was to assess the acceptability of methods that increase trial inclusion in meta-analyses, and the level of evidence for skin-to-skin contact for procedural pain in infants. The current Cochrane review of skin-to-skin contact for pain in newborns found it to be an effective intervention, but identified several methodological limitations. So a reanalysis of the meta-analysis was undertaken. Trial designs included randomized trials reporting a validated pain assessment tool as a primary outcome including term and pre-term infants undergoing a tissue-breaking painful procedure. The search in the original review was conducted to January 2013. Scores of validated tools were scaled to the premature infant pain profile in a fixed-effect meta-analysis. The GRADE was used to assess quality of meta-analysed evidence. New analysis vs. original found a mean difference: -3.11 in favour of skin-to-skin contact vs. -3.21 at 30 seconds; and -2.71 vs. -1.85 at 60 seconds for heel lance. Based on cut-off scores for the Neonatal Infant Pain Scale, Infants receiving skin-to-skin contact during IM injection were more likely to display low pain after injection; and during recovery. Scaling scores to a single outcome can provide additional information in meta-analyses, simplifies interpretability of pooled scores, and can improve GRADE outcomes. Sensitivity analyses of scaled scores improve confidence in their validity. Risk of bias subgroups simplified the GRADE process, and confidence intervals for heterogeneity analyses assisted in interpretation of sensitivity analyses. PT, FT, meta-analysis redone, pain


Dodd, VL. (2005). Implications of kangaroo care for growth and development in preterm infants J Obstet Gynecol Neonat Nurs 34(2), 218-232. A review article. Temperature studies revealed for infants greater than 28 weeks that temperature is stable or increases (pg. 225); heart rate data was of concern in only one of 17 studies reviewed (and that was Bohnhorst, 2001 — she did not review Bohnhorst et al., 2004); respiratory rate is not negatively affected by KC except for some tachypnea in Bohnhorst 2001 study (pg. 225); oxygenation is stable or improved except for Bohnhorst 2001 study with 8 infants; nurturing and sensitivity to infant needs occurs in KC group and is not disputed by any study; and that KC contributes to increased weight gain. Concludes that KC has nurturing advantages to both infant and parent. Review, PT, HR, RR, Wgt, maternal feelings, oxygenation, temp

Dodd, VL (unpublished dissertation). Effect of Kangaroo care on preterm infant weight gain and vagal tone. This is available from S. Ludington at Susan.ludington@case.edu. Randomized controlled trial of 31 preterm infants born at 25-31 wks GA who were randomly assigned at 32 wks postmenstrual age to traditional swaddled holding control (n=17) or to KC for one hour daily for 3 weeks (n=14). Daily weights and calorie ingested were recorded. Vagal tone was measured at 32, and 35 weeks while sleeping in bed. A one-way MANCOVA tested for KC effects after controlling for resting vagal tone at 32 weeks, calories ingested, and birth weight. The overall multivariate effect was NOT significant (p=0.055, Wilks Lambda – 0.793, F(2,25) = 3.26. Weight gain was higher in KC (F=6.49; KCBib 2018
p=0.017) and daily weight gain for KCers was 30.73 (± 1.36 grams) and for controls was 25.8 (± 1.22). Weight contributed 20% of the variance associate with treatment, at a moderate power (0.69) to detect type II error. No effect on vagal tone and author says 35 weeks may be too young to detect vagal tone differences. PT, RCT, weight, vagal tone.

Doherty T, Jackson D, Swanenvelder S, Lombard C, Engbrechten IM, Tylleskä T, Goga A, Ekström E-C, Sanders D; the PROMISE EBF study group. (2014 - Oct). Severe events in the first 6 months of life in a cohort of HIV-unexposed infants from South Africa: effects of low and breastfeeding status. Trop Med Int Health. 19(10):1162-1169. doi: 10.1111/tmi.12355. [Epub ahead of print] To report on risk factors for severe events (hospitalisation or infant death) within the first half of infancy amongst HIV-unexposed infants in South Africa. ‘Severe event’ was defined as the composite outcome of an infant hospitalisation or death between birth and 24 weeks of age. Data on hospitalisations were self-reported at the 3.6, 12, and 24 week data collection points using data from the following question ‘since birth has your child ever been hospitalised?’ Only the first hospitalisation event was considered for this analysis as repeat events were rare (three of the 57 children ever hospitalised were hospitalised twice and no child was hospitalised more than twice). (pg. 1164). This So. African study was NOT looking for REHOSPitalizations in exclusively breastfeeding preterms at home. South African data from the multisite community-based cluster-randomised trial PROMISE EBF promoting exclusive breastfeeding in three hospitals in Umlazi and Rietville in KwaZulu Natal. This analysis included 964 HIV-negative mother-infant pairs. Data on severe events and infant feeding practices were collected at 3, 6, 12 and 24 weeks. The three-month postpartum. They used a stratified extended Cox model to examine the association between the time to the severe event and covariates including birthweight, with breastfeeding status as a time-dependent covariate. Seventy infants (7%) experienced a severe event. The median age at first hospitalisation was 8 weeks, and the two main reasons for hospitalisation were cough and difficult breathing followed by diarrhoea. Stopping breastfeeding before 6 months (HR 2.4; 95% CI 1.2-5.1) and low birthweight (HR 2.4; 95% CI 1.3-4.3) were found to increase the risk of a severe event whilst maternal completion of high school education was protective (HR 0.3; 95% CI 0.1-0.7). A strengthened primary healthcare system incorporating promotion of breastfeeding and appropriate caring practices for low birthweight infants such as kangaroo mother care are critical. “There is also a need to scale up simple interventions known to improve breastfeeding, health and survival of low birthweight babies, such as kangaroo mother care (Lawn et al. 2010; March Dimes, 2012)” (pg. 1167). Given the leading reasons for hospitalisation, early administration of oral rehydration therapy and treatment of suspected pneumonia are key interventions needed to prevent hospitalisation in young infants. PT, provision of KC is critical as an appropriate care practice, rehospitalization/readmissions, exclusive BF, SUPC, Life threatening, but not SUPC postpartum KC, 3rd world So Africa

Dohmaleke, L., Heer, C., Starrels, E., Ryan, C.A., Howland, M. & Wruster, L.O. (2012). Increasing exclusive breastfeeding feeding rates at an urban academic hospital. Journal of Obstetric, Gynecologic and Neonatal Nursing. 41(Suppl 1): S39. Report of a quality improvement project to increase exclusive breastfeeding feeding rates according to Joint Commission PC05. Took 18 months and goal was to increase exclusive breastfeeding feeding by 10% or more. The accomplished the following interventions: 1) created and implemented a DONOR MILK Policy, 2) 4-hour SAMROONING IN so no separation of dyad. 3) patient questionnaire for most common reason for supplementation, 4) journal club about breastfeeding issues, 5) increased rate and duration of initial skin to skin contact and first breastfeeding session, 6) daily patient rounds of IBCLC (international board certified lactation consultants), 7) mandatory interdisciplinary BF education to all nurses, obs, and pediatricians, 8) education on alternative breastfeeding methods, 9) hired outside consultant (board certified) to moderate discussion of obstacles to exclusive breastfeeding feeding, 9) developed feeding careplans for complicated situations (i.e. cleft lip/palate, mother oncancer drugs very sick mother, etc) and 10) implementation of mother-newborn quiet time (just like Barbier, Denise’s quiet Kangaroo Care time each day in postpartum). Their outcome was an increase in exclusive breastfeeding feeding rates and they say that EDUCATION is the major aspect of their initiative. Low incidence of exclusive breastfeeding feedings is partially due to lack of BF knowledge in health care professionals. FT, BF initiation, exclusive BF, Birth KC, implementation, quality improvement project, separation, rooming in, Joint Commission policy. Not on Charts 1-2-2013


Dombrowski MAS, Anderson GC, Santori C, & Burkhammer (2001). A case study of KC (Skin-to-skin) care with a depressed woman. MCN, Am J Maternal Child Nurs, 26(4), 214-216. KC started at 2 hrs postbirth, Mom was crying and expressing sad thoughts at that time – depressive symptoms disappeared within hours. During 1 st 3 hrs of KC mom slept almost continuously. Continued KC every other day x 3 mos. and there after when she was stressed. PT, Case. Early KC, Depressed KC, Stress-relieving KC, Preterm, substance abusing mom

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Dordevic G, Jovanovic B, & Dordevic M. (2008). An early contact with the baby – benefit for the mother. Med Pregl 61(11-12), 576-579. Full term randomized controlled trial of 216 mothers who had early skin-to-skin contact with breastfeeding within one hour of birth with their healthy term infants and 216 mothers who did not have the Baby Friendly extra contact. Extra contact mothers were observed on Postpartum Day 3 and fewer moms had poor involution (involution was categorized as good (KC=62 or 28.7%; C = 54 or 25%), medium (KC=103 or 47.7%; C = 88 or 40.7%), and bad (KC= 51 or 23.6%; C = 78 or 34.3%), post-delivery anemia measured by hemoglobin ≤ 100 g/l (KC = 79 or 36.6%; C = 103 or 47.7%) or > 100g/l (KC= 137 or 63.4%; C = 113 or 52.3%) and number of erythrocytes as ≤ 3 x10^12 (KC= 76 or 35.2%; C = 106 or 49.1%), or > 3 x10^12 (KC= 140 or 64.8%; C =110 or 50.9%), less lochia (actually # of sanitary napkins as ≤ 3 (KC = 66 or 30.5%; C = 34.5 or 15.7 %); 3-4 napkins (KC= 117 or 54.2%; C = 102 or 47.2%) or >4 (KC= 33 or 15.3%; C= 80 or 37.1%), and shorter length of stay as ≤ 3 days (KC = 79 or 36.6%; C = 54 or 25%), 4-6 days (KC=94 or 43.5%; C= 99 or 45.8%), ≥7 days (KC = 43 or 19.9%; C = 63 or 29.2%). Mean length of stay was 4.5±0.71 for KC; 5.2±0.92 days for Controls).

Authors concluded that results were due to oxytocin in mother and that mothers benefit from early birth KC time with infants. RCT, FT, involution, maternal Hgb, maternal erythrocytes, lochia discharge, length of stay(0.6 or 49.1%) Not on charts 5/15/09 See Marin’s study for placental expulsion

1. Dornfeld D. & Rubim Pedro, E.N. (2015-April). The health team and the safety of the mother-baby binomial during labor and birth. Invesst Educ: Enferm (Investigacion y Educacion en enfermeria), 33(1), 44-52.doi: 10.1590/S0120-53072015000100006. Purpose was to describe the performance of the health care team regarding the safety of both mother and baby during labor and birth. This was a qualitative, descriptive, exploratory study using observation technique between March and July 2010. The subjects were: obstetricians, residents in Obstetrics, pediatricians, nurses, and nursing technicians. The data was subjected to thematic content analysis. CEP-GHC (No. 10/001).Data analysis revealed the themes: empathic support, woman's companion, skin-to-skin contact (SSC), and birth environment. The team promoted safe care through empathic support for women and appreciation and respect for the escort. The section on Skin-to-skin contact reads: “It was observed that in the institution under study, infants who are born in healthy condition are routinely placed on the mother’s abdomen. The obstetrician or obstetrics resident immediately aspires the upper airway with a suction pear and clamps and sets the umbilical cord. This procedure generally takes less than 30 seconds. Then the pediatrician aspirates the airways again, if deemed necessary, while the obstetric nurse or the nursing technician dries the NB. Wet fields are removed and the infant is placed on the mother’s lap, skin-to-skin (SSC), bundled up in a prewarmed blanket and headress. Concomitantly, identification bracelets with the full name of the mother and the sex of the newborn are fixed on both its upper extremities. Although SSC was observed at all births, the time enabled was short, between 5 and 25 minutes, with the most frequent interval being about 10 minutes. Next is an excerpt of an observation of respective times of SSC: RO – clamps and cuts the umbilical cord. PF + NT – aspire NB and dry it in mother’s lap. (...) NB was tranquil in SSC for 10 minutes [O9]. The observation of the behaviour and speech of the team members revealed that they are aware of the benefits of this practice, but prioritize individual needs and the fulfillment of institutionalized routines: ON – intercedes for NB to stay longer with its mother before being taken to the admission procedures. PF– seems anxious to take the baby. (...) NB was 25 minutes with SSC, thanks to ON and despite the slight anxiety of the PF [O4]; PF– the woman states that she is feeling a warmth between her and the infant. PF says that this is a reaction of the maternal body that helps keep the baby warm. (...) NB remains for 10 minutes in SSC, then is taken by the PF for admission care [O15]; PF – explains to NT that it is important for newborns to snuggle at their mother’s breast, because it makes it easier for them to smell the breast milk and seek the breast to suck it – (...) NB remains for 15 minutes in SSC, then is taken by the PF for admission care [O14]. In regards to the delivery room environment, the article states: The delivery room of the OC under study is typical of a surgical ward. There is no connection with the external environment, the air circulation is artificial, through the air conditioning system, and the room is lit with artificial light. Besides the lighting of the room, an auxiliary light is always directed to the perineal region of women. In only one of the observations were the room lights turned off once the baby was born. This attitude led to discontent in some team members, as reported: PF– After 5 minutes of the baby’s birth, PF asks to turn off the room lights and only the light that is directed to the perineum of the parturient remains connected. (...) Mother and NB are very quiet with little noise and little lighting of the room. (...) The ROs commented among themselves that they did not understand why the lights should be off in the room, since the NB was already born [O7].Regarding temperature in the delivery room, the protective attire of all the professionals who assist with normal childbirth requires that air conditioning is kept at a lower temperature. It was observed that while the air conditioner is shut down before the baby is born, the environment remains cold. It was also noticed that, once the NB is taken from the room, someone immediately turns the air conditioning back on. And as for the noise in the delivery room that may interfere with mother-infant interaction, the team seemed more committed, maintaining silence or keeping conversations at a low volume after the baby was born. The following excerpts from observations exemplify this behavior: Little noise, everyone talks in a low tone of voice [O20]; several talking at the same time, and guiding the proper efforts of the laboring woman. (...) When the baby is born, everyone calms down and tries to speak lower [O6]. Regarding the initial care of the newborn, we identified that it is in full accordance with WHO recommendations (World Health Organization [WHO], World Alliance for Patient Safety, WHO Patient Safety Research. Geneva: WHO; 2009) because in situations where the infant is not at risk and presents good condition at birth, it should be aspired, dried, and offered to the mother.3-7 However, we question the immediate clamping of the umbilical cord, which goes against scientific evidence. The ideal setting for this procedure would be around the third minute of life, as it benefits the NB with a greater intake of blood volume and iron reserves.9 Another important question to be posed is relative to the SSC which, despite being a routine at the OC, is enabled for just a few minutes, not long enough to realize the benefits arising from this contact,
such as promoting mother-infant interaction, thermal and cardiorespiratory stability of the NB, and the encouragement of breastfeeding. In view of the particularity of the period shortly after birth, which is considered the precursor of maternal attachment and has an influence on neonatal modeling and the intellectual/emotional development of children, it is thought that the way the SSC is implemented does not contribute to security in the care of both mother and baby. The restricted time of the SSC also prevented another benefit of this practice, the behavior of the NB of seeking the maternal breast, showing the perverse consequence of a national effort to promote a healthier, closer bond between mothers and their infants during hospitalization. In conclusion, initiatives to promote breastfeeding in the first hour of life were rarely observed in this study. In relation to SSC and the enabling environment for the reception of the newborn, efforts are still needed for these practices to be configured in secure care circumstances. The nurse played a differential role in the team for the realization of safe care, because she was predominant in supporting women and promoting CPP.

**Full term, FT, Brazil, Descriptive, qualitative study, maternal perceptions, negative outcomes, birth KC, 3rd world.**
Not on charts 7/8/2014

Doughterty D, Luther M. (2008). Birth to breast - a feeding care map for the NICU: helping the extremely low birth weight infant navigate the course. Neonatal Network 27(6): 371-377. This is a clinical article that includes a reference to KC, saying “limited frequency and duration of kangaroo care between mother and infant... is a significant factor influencing non-successful breastfeeding of the preterm infant” (pg. 371). FT, Clinical, breastfeeding, success. Not on charts yet 4/26/2012


Dribben, M. (2015- Jan. 17). Hospitals work to prevent tragedy of dropped babies. Philly.com. Available from https://articles.philly.com/2015-01-17/news/58153780_1_nurse-manager-newborn-hospital. Accessed 1/28/2015. This is a review of dropped baby and SUPC cases that have come to the attention of Susan Wallace, a Pennsylvania Patient Safety Authority employee who reviews reports from health care facilities that must regularly submit to the state reports of unfortunate events. “A year ago (2013 or 2014) she came across the report “a mother fell asleep when breastfeading her newborn. ‘Sometime later, the hospital reported, ‘the mother called the nurse, who found the baby blue and unresponsive. Resuscitation efforts were unsuccessful.’ The infant had suffocated. Wallace wondered how many newborns were accidentally harmed in hospitals when a mother, exhausted after the ordeal of childbirth, drifts off to sleep. She combed through records, going back 9.5 years and discovered only one other tragedy in which a nursing baby was smothered, but she found nearly 300 incidents in which infants were dropped, bumped, or fell. She published her findings in the peer-reviewed Pennsylvania Patient Safety Advisory. Her study is one of several recent attempts to gauge the scope of a problem that has been growing in the shadows (pg. 1). Nationally, hospitals report between 600-1,600 newborn falls each year, figures that almost certainly fall short of the true number of incidences, said Ann Slogar, nurse manager of the mother-baby unit at Metro Health Medical Center in Cleveland. Slogar said, “This is a topic no one wants to talk about” and she co-authored a 2013 article about preventing newborn falls in Nursing for Women’s Health. Hospitals don’t want to be seen as negligent and family members are usually too embarrassed to admit they dozed off and allowed a baby to slip out of their arms. In 2012 the American Nurses’ Association’s National Database of Nursing Quality Indicators adopted a precise definition of what constitutes a ‘fall’ or a ‘drop’ and the following year reports increased by 46%. Nursing experts believe this is the perverse consequence of a national effort to promote a healthier, closer bond between mothers and their infants during the first hours and days of life. “But for more than a decade, overwhelming data have shown that parents and babies benefit, both physically and emotionally, from ‘skin-to-skin’ contact, breastfeeding on demand, and ‘rooming-in’ – that is, having the child remain in the hospital room with the mother as much as possible.” (pg. 1). Alyssa Waite, nurse manager of mother-newborn unit at Lancaster General Hospital
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CURRENT PRACTICE (just like Conde review on the current attitudes, their interests, and their limits. BF, Temperature, Blood glucose, Birth KC/VEKC. Is this an RCT? Stimulated suckling and milk production. Maintenance of body temperature is needed to prevent lowered blood glucose levels.

was present between those fed 15 ml. of formula, or 15 ml of D5W, or breastmilk. Temperature at 120 minutes postbirth was higher in KC/VEKC infants, fed only breast milk, experienced a drop in blood glucose of 14 mg/dl in babies.

The is a clinical article reviewing Morrison's 2006 work on interruptions during postpartum day 1. On page 10 there are quotes from Morrison related to KC: "Multiple studies since the early 1970s have shown skin-to-skin contact starting immediately after delivery has a significant impact on not only attachment behaviors but also successful breastfeeding. When mothers do not get the chance to hold their infants in skin-to-skin or to breastfeed immediately, the higher levels of oxytocin that were stimulated by the birth will begin to decrease." FT, Birth KC, interaction, separation, swaddling, rooming-in, supine positioning, NOT on charts 1-12-2013

Duras, L. S., LaRock, S., Lund, L., Schmid, S., Swick, D., Yates, T., & Perez, A. (1997). Influence of skin-to-skin breastfeeding in the immediate recovery period on newborn thermoregulation and blood glucose values. Neonatal Intensive Care, March/April, 1997, p. 23-27. Infants started either KC or radiant warmer care 30 minutes after birth and continued for 120 minutes. Temperature at 120 minutes postbirth was higher in KC than swaddled and cot infant’s temperature. No differences in blood glucose levels were present between those fed 15 ml of formula, or 15 ml of D5W, or breastmilk. Formula and D5W fed infants increased their blood glucose level by 3mg/dl, and VEKC infants, fed only breast milk, experienced a drop in blood glucose of 1-4 mg/dl (Durand et al., 1997). KA assists with maintenance of normal body temperature and reduces energy expenditure and concomitantly stimulated suckling and milk production. Maintenance of body temperature is needed to prevent lowered blood glucose levels. Fullterm, BF, Temperature, Blood glucose, Birth KC/VEKC. Is this an RCT?

Dunbar, C.N. (2007). Quiet time. Finding peace and privacy on a busy postpartum unit. Nursing Spectrum, April 23, 2007 NY/New Jersey Edition, page 10-11. The is a clinical article reviewing Morrison’s 2006 work on interruptions during postpartum day 1. On page 10 there are quotes from Morrison related to KC: "Multiple studies since the early 1970s have shown skin-to-skin contact starting immediately after delivery has a significant impact on not only attachment behaviors but also successful breastfeeding. When mothers do not get the chance to hold their infants in skin-to-skin or to breastfeed immediately, the higher levels of oxytocin that were stimulated by the birth will begin to decrease." FT, Clinical report, breastfeeding, BirthKC.


New to bibliography study

Dumas, L, Lepage, M, Bystrova, K, Matthiesen, A-S Welles-Nystrom, B, & Widstrom, A-M. (2013-Aug). Influence of skin to skin contact and rooming in on early mother-infant interaction: A randomized controlled Trial. Clinical Nursing Research, 22(3):310-336. DOI 10.1177/1054773812468316. This is another report of the RCT results of Bystrova’s study in Russia in which one group was given Birth KC and the other was not. 151 Videos (25-45 mins) of mom-baby interaction at Day 4 before discharge were scored for AFFECTIVE quality of atemnal behaviors and maternal tone of voice. They developed their own maternal behavioral tool, yielding 7 items about QUALITY of mother’s behavior assessed on 1-5 point scale from roughest to most gentle behavior; two items are on a 3 point scale, and three items are yes or no questions to record occurrence or nonoccurrence of a behavior or Baby’s state. Separation and swaddling at birth interfered with mother-infant interaction during a breastfeeding session on Day 4. Separated and swaddled mothers demonstrated significantly more roughness in their behaviors. Great discussion on adverse effects of swaddling and putting infant in observation nursery. Also good discussion about putting swaddled infant in supine position. Separation at birth prevents mothers from developing sense of confidence (refers to Barrett CR, Leiderman PH, Grobstein R & Klaus MH 1970. Neonatal separation: The maternal side of interactional deprivation. Pediatrics 45, 197-205. There is a sensitive period for separation after birth, so results encourage immediate and uninterrupted skin to skin contact at birth and rooming-in during postpartum. FT, Birth KC, interaction, separation, swaddling, rooming-in, supine positioning, NOT on charts 1-12-2013

Durand, R., Hodges, S., LaRock, S., Lund, L., Schmid, S., Swick, D., Yates, T., & Perez, A. (1997). The effect of skin-to-skin breastfeeding in the immediate recovery period on newborn thermoregulation and blood glucose values. Neonatal Intensive Care, March/April, 1997, p. 23-27. Infants started either KC or radiant warmer care 30 minutes after birth and continued for 120 minutes. Temperature at 120 minutes postbirth was higher in KC than swaddled and cot infant’s temperature. No differences in blood glucose levels were present between those fed 15 ml of formula, or 15 ml of D5W, or breastmilk. Formula and D5W fed infants increased their blood glucose level by 3mg/dl, and VEKC infants, fed only breast milk, experienced a drop in blood glucose of 1-4 mg/dl (Durand et al., 1997). KC assists with maintenance of normal body temperature and reduces energy expenditure and concomitantly stimulated suckling and milk production. Maintenance of body temperature is needed to prevent lowered blood glucose levels. Fullterm, BF, Temperature, Blood glucose, Birth KC/VEKC. Is this an RCT?

Dzukou T, De La Pintiere A, Betremieux P, Vitta G, Roussey M, & Tietche F. (2004). Kangaroo mother care: Bibliographical review on the current attitudes, their interests, and their limits. Archives de Pédiatrie 11 (9), 1095-1100. In developing countries KMC regulates body temp and metabolic adaptation of the newborn. SAYS IT IS DIFFICULT TO RECOMMEND USE OF KMC in CURRENT PRACTICE (just like Conde-Agudelo et al, 2003 and repeated also in Venancio 2004 article). Rigorous randomized controlled trials are needed to establish full safety and know kmc’s impact on neuropsychological development and the real somatic growth

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and economic cost. Review, maternal attitude, transfer, maternal feelings, metabolic rate, temperature, growth, cost. Preterm, PT, developmental care, development, FRENCH

Dzouki, T. (2005). Response to Mazurier. Archives de Pédiatrie, 12, 473. This is a response to Mazurier and Picaud’s comments about the study published in the same journal in 2004. WE NEED TO GET THIS and TRANSLATE.

Edéll-Gustafsson U, Angelhoff C, Johnsson E, Karlsson J, Mørelius E. (2014). Hindering and buffering factors for parental sleep in neonatal care. A phenomenographic study. J Clin Nurs. 2014 Jul 8. doi: 10.1111/jocn.12654. [Epub ahead of print] To explore and describe how parents of preterm and/or sick infants in neonatal care perceive their sleep. Parents experience many stressful situations when their newborn infant is preterm and/or sick. This affects bonding. By developing more family-centred care units with single-family rooms, parents are given the opportunity to stay and care for their newborn infant(s) 24 hours a day. Lack of sleep may affect new parents’ ability to cope with the many challenges they face on a daily basis. A phenomenographic study with an inductive and exploratory design. Semi-structured interviews were conducted with twelve parents of infants in neonatal care between January-March 2012. To describe variations in perception of the phenomenon, data were analysed using phenomenography. Four descriptive categories were identified within the phenomenon sleep in parents of preterm and/or sick infants in neonatal care: impact of stress on sleep; how the environment affects sleep; keeping the family together improves sleep; and, how parents manage and prevent tiredness. Anxiety, uncertainty and powerlessness have a negative influence on sleep. This can be decreased by continuous information, guidance and practical support. Skin-to-skin care was perceived as a stress-reducing factor that improved relaxation and sleep and should be encouraged by the nurse. The parents also mentioned the importance of being together. Having a private place where they could relax and take care of themselves and their newborn infant improved sleep. It was also desirable to involve older siblings in order to decrease feelings of loneliness, sadness and isolation. Improved parental sleep in neonatal care may help the families cope with the situation and facilitate problem-solving, emotional regulation and the transition to parenthood. PT, qualitative study, maternal stress, maternal sleep, implementation, staff issues, relaxation, NICU sleep, NICU environment.

Edraki, M., Zendehzaban, S., Behestiipour, N., Hemmati, F., & Haghpanah, S. (2015-June). Comparison of the Effects of Attachment Training for Mothers on the Behavioral Responses of Premature Infants: A Randomized Clinical Trial. Iranian Journal of Neonatology, 6(2), 37-42. No doi. Premature infants are among high-risk groups in community who need to be hospitalized at intensive care units for survival and receiving basic or special care. Hospitalization at neonatal intensive care units (NICUs) unsetles the family and leads to the separation of parents from their infants. This randomized controlled trial aimed to determine the effects of maternal attachment behaviors on the behavioral responses of premature infants, hospitalized at NICUs. 64 premature infants, who were hospitalized at NICUs and were eligible for the study, were randomly allocated to study and control groups. Attachment behaviors including touching (really hugging, pg, massage and kangaroo care) were applied for the study group, while the conventional attachment method was adopted for the control group (routine KMC 24/7). Behavioral responses were evaluated two hours before and two hours after training attachment behaviors. Data were analyzed using Chi-square and student’s t-test. Results: The mean difference in the duration of deep sleep and alertness was more significant in the study group, compared to the control group. Furthermore, the duration of drowsiness was significantly less in the study group, compared to the control group. Conclusion: The implementation of attachment training at NICUs decreased the time of drowsiness and improved behavioral responses, deep sleep time and alertness. Not on charts 3-20- new to biblio study.

Edraki, M., Zendeh-Zaban, S., Behesti Pour, N., Hemati, F., & Haghpanah, S. (2016-Jan). The Effect of Maternal Attachment Behaviors Program on Physiological Indicators of Preterm Infants: A Clinical Trial. Sasdra Medical Sciences Journal, 4 (1), 1-10. Hospitalization of premature newborns in intensive care unit leads to separation of parents from their infants and chaos in family life. This randomized controlled trial aimed to determine the effect of maternal attachment behaviors program on physiological indicators of preterm infants admitted to neonatal intensive care units. The clinical trial was conducted on 64 premature infants hospitalized in neonatal intensive care unit. The subjects were randomly divided into control and intervention groups by block randomization. The mothers in the intervention group received attachment behaviors training program (touching, massage, and Kangaroo Mother Care) by individual and face-to-face training. On the other hand, the mothers in the control group received the routine care (Kangaroo Mother Care). Physiological indicators (respiratory rate, heart rate, temperature, and oxygen saturation) were measured 3 times over 3 consecutive days. Then, the data were entered into the SPSS statistical software, version 17 and were analyzed by t-test and chi-square test. The mean scores of respiratory rate and heart rate, which were measured during three consecutive days, significantly decreased in the intervention group compared to the control group (P<0.001). Additionally, the mean scores of oxygen saturation and temperature measured during three consecutive days significantly increased in the intervention group compared to the control group (P<0.001). The results showed that the attachment behaviors program in neonatal intensive care units resulted in improvement of physiological indicators in premature infants. Therefore, this program is recommended to be used for such infants hospitalized in these units. PT, RCT, attachment behaviors, routine KC, 24/7 KC, HR, RR, temp, SAO2 New to biblio study not on charts 3-20-16

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Edwards, T.M., & Spatz, D.L. (2010). An innovative model for achieving breast-feeding success in infants with complex surgical anomalies. *Journal of Perinatal & Neonatal Nursing, 24*(3), 246-253. Walters Kluwers Health/Lippincott Williams & Wilkins website because no doi reported. Description of nursing quality improvement project. Relates use of Transition to Breast Pathway from Children’s Hospital of Philadelphia and how it helped infants needing surgical repair get to breast feeding. The pathway starts with 1) initiation of pumping and maintenance of milk supply; 2) mouth care with human milk, 3) Kangaroo Care (as soon as infant is stable mom holds infant at least once daily pg. 248), 4) nonnutritive sucking at the breast, and 5) transitioning to breast feeds. 80 infants enrolled and results were: mother’s average milk supply was 603 mL/d, 71% (57/80) of infants received mouth care with human milk, 48% (38/80) mother-infant dyads did KC and had a mean # of 6 days of KC and a median of 4 days with range from 1-55 days(pg. 251), 60% (35/58) performed nonnutritive sucking at breast, and 100% (38/38) transitioned to feedings at breast. Has big section on mouth care with human milk on pg. 249, and then KC begins on 249 too, reviewing physiologic and breastfeeding benefits, and they state that they have a policy, a nursing standard, and a DVD of transferring a ventilated patient into KC. Says it could be days or weeks for surgical infant to be held due to hemodynamic instability, use of ECMO, high freq ventilation or an abdominal wall defects requiring a slow progression of abdominal contents into the abdominal cavity. So gave KC once infant was stable and could tolerate transfer, gave KC at least one hour per day. The surgical conditions she is referring to are: gastroschisis, omphalocele, congenital diaphragmatic hernia, and tracheoesophageal fistula/esophageal atresia. PT, BF, KC when stable, duration of KC 1 hr/day, quality improvement project/implementation. Congenital heart defect. Check chart status as 1/21/2011. See Spatz 2012 too and Spatz 2004

Eggertson, L. (2013). Baby friendly. Introducing kangaroo care to Canada is just one of Kathy Hamelin’s accomplishments. Canadian Nurse.Com, June 2013, 109(6), 36-37. This is the report of Nurse Kathy Hamelin and how she introduced the mothers in her NICU to kangaroo Care and how mother immediately said “It makes me fell like a mother, for the first time since he was born.” Hamelin is a certified lactation consultant too and how she promotes home care and home phototherapy for these babies. Her watchwords for care are KINDER and GENTLER. Staff, maternal feelings. Not on Charts 8/22/2013.


Ellert, M.L., Bleah D.A., & Parris S. (2004) Feasibility of using kangaroo (skin-to-skin) care with colicky infants. *Gastroenterology Nursing, 27*(1), 9-15. 75 parents agreed to participate in an internet-based study of KC’s effects on colic, but only 5 actually did participate and only 2 completed data collection (a 3-day diary of infant baseline state or arousal; a diary to complete for 2 weeks while doing KC; then stop KC and complete a post-KC diary of infant state of arousal for next 2 days. Data based on 2 data sets shows KC is promising intervention for colic and no other treatments are out there. She recommends a larger clinical trial. One infant spent 605 minutes crying and the other 1470 minutes during the two weeks of KC. Difficult to do experimental study over the internet. Fullterm, Case Study, Cry, Colic, Behavior, Stats

Ellert MLC, Lane L, & Keffer J. (2004). Ethical and legal issues of conducting nursing research via the internet. *J Professional Nursing 20*(1), 68-74. This is a report of how she conducted a qualitative study of what it was like to live with a colicky infant (successfully completed on line) and then a randomized controlled trial of KC to decrease crying time of infants (not successfully completed as only two subjects completed data collection (see Ellett, Bleah & Parris, 2004 listed immediately above. On page 69 of the Ellett,Lane, & Keffer article. Ellett relates the following details about the RCT of KC to reduce crying in colicky babies: KC was to be initiated at first sign that an episode of colic was beginning (usually at 2-3 weeks old). This article relates that a nursing colleague voiced ethical concerns about doing intervention research over the internet but the IRB approval covered all concerns and in particular one must be sure that subjects know they can withdraw at any time, that internet contact is not substitute for health professional’s advice, and that researcher is available by email and phone to answer concerns. Fullterm, ethics, not really a KC study. Not on charts yet.


Engler, A.E. (2005). Maternal stress and the white coat syndrome: a case study. *Pediatric Nursing* 31(6), 470-473. One mother was doing KC when the infant’s surgeon approached her and the “white coat” syndrome caused her fingertip temperature to increase. **GET THIS** Case study, PT, maternal stress, fingertip temperature.

Engler, A.E., Ladington-Hoe, S.M., Cusso, R.M., Adams, R., Bahnsen, M.A., Brambaugh, E.J., Coates, P., Grieb, J.K., McHargue, L.K., Ryan, D., Settle, M., & Williams, D.M. (2002). Kangaroo care: National survey of practice, knowledge, barriers, and perceptions. *MCN, Amer. J. Maternal Child Nursing* 27(3): 146-153. 537 (59%) of all NICUs in America returned surveys. Over 82% report practicing KC, but mostly only upon request of mother. Nurses are knowledgeable. Barriers are infant safety concerns and reluctance from RN, NNP, MD and families. Units that practice KC have more positive perception than units that do not practice KC. >60% report that low GA or low weight are not contraindications. Lack of consistent KC guidelines in the NICU contributes to most of the barriers to its use. **SURVEY. Barriers, practice, knowledge, perceptions, implementation, PT, lack of guidelines**

Engler, A.E. (in progress), but not printed yet in 2012. Kangaroo Care to Reduce Maternal and Infant Stress. Available from Arthur Engler, Assoc. Professor, Univ. of Connecticut at Storrs. Randomized trial of Kangaroo to reduce maternal stress.RCT, pretest-posttest of 25 (13 KC, 12 control) who gave 2 hours of KC or sat beside incubator for talk/touch but not holding for 2 hours on ONE Day only. Postnatal age was 17 days and GA was 34.2 wks. Mean BW of 1.968 gns. Maternal fingertip temp pretest KC 93.1, midway thru KC 92.13, post was 91.07 & was sig higher in KC (higher fingertip temp = less stress) than controls at the mid point. PSS: NICU scales taken before and after the 2 hours. Sights and sounds both groups went up, control grp had significant rise and KCers did not; Appearance & behavior of baby” only sig decrease in controls eventho kcers decreased too, Parental Role Alteration had no significant change in either group tho trend was for both groups to decrease stress in their scale. MAACL was sig. lower in KC group after TX. No diff in skin conductance, galvanic skin response, salivary cortisol. **PT, Maternal Stress, Fingertip temp, skin conductance, galvanic skin resistance, salivary cortisol, MAACL for dysphoria**

Engmann C, Wall S, Darmstadt G, Valsangkar B, Claeson M, on behalf of the participants of the Istanbul KMC Acceleration Meeting (2013). Consensus on Kangaroo Mother Care acceleration. Lancet. 2013 Nov 15. doi:pii: S0140-6736(13)62293-X. This commentary relates the outcomes of the Oct. 21-22, 2013 Accelerating Use of Kangaroo Care stakeholders meeting in Istanbul,. Newborn deaths account for 44% of under 5 mortality mandates that everyone accelerate therapies to reduce mortality to meet the Millennium Development Goal #4 (to reduce child mortality by 2/3). KC has been proven to reduce mortality. The group affirmed adoption of KMC as a life-saving intervention recognizing that: prematurity is major cause of newborn death and disability (accounting for >35% of neonatal mortality), KMC is a evidence-based solution to reduce preterm mortality and morbidity, KMC can avert up to 450,000 preterm death each year by 2015 if near-universal coverage with KMC is achieved. **FINISH THIS** PT, scaling up KC globally.


Entringer AP, Gomes MA, Pinto M, Caetano R, Magluta C, Lamy ZC.(2013). [Cost analysis of hospital care for newborns at risk: comparison of an Intermediate Neonatal Care Unit and a Kangaroo Unit]. Cad Saude Publica. 2013 Jun;29(6):1205-16. The aim of this study was to compare the direct costs of implementation of the Kangaroo Method and an Intermediate Neonatal Care Unit, from the perspective of the Brazilian Unified National Health System (SUS) in Rio de Janeiro, Brazil. Newborns were eligible for inclusion if they were clinically stable and were able to receive care in those two modalities. A decision tree model was developed that incorporated baseline variables and costs into a hypothetical cohort of 1,000 newborns, according to the literature and expert opinions. Daily cost was BRS343.53 for the second stage of the Kangaroo Unit and BRS394.22 for the Intermediate Neonatal Care Unit. The total cost for the hypothetical cohort was BRS5,710,281.66 for the second and third stages of the Kangaroo Unit and R$7,119,865.61 for the Intermediate Neonatal Care Unit. The Intermediate Neonatal Care Unit cost 25% more than the Kangaroo Unit. The study can contribute to decision-making in health, in addition to providing support for studies related to economic evaluation in neonatal health. **PT, descriptive, cost analysis**

Eriksson, M. et al. A meta-study of qualitative papers about parental experiences of KMC. Availabe from mats.eriksson@unbeol.s.se **Maternal Perception**

Erlandsson, K., Christensson, K., & Fagerberg, I. (2008). Fathers’ lived experiences of getting to know their baby while acting as primary caregivers immediately following birth. *Journal of Perinatal Education, 17*(2), 28-36. Qualitative study of 15 fathers who were interviewed between 8 days and 6 weeks after taking care of infant as primary caregiver during the first hour after birth when separated from post-cesarean section at 37-42 weeks mother. Immediately after cesarean section infants were given in KC to mother for 30 seconds to 40 minutes, then transferred to father for KC, wrapped in clothes or dressed in clothes on the father’s chest or in his arms or cot. Care by father was for 1-7 hours after birth. Father-child togetherness (experienced sympathy with child, experienced concern with child and KCBib 2018
mother, experienced roller coaster feelings, experienced trust and vulnerability, and experienced thoughts about life and future) and increasing responsibility while getting to know his newborn were common themes. Fullterm, qualitative, paternal KC, paternal feelings, cesarean section. NOT ON CHARTS YET CHECK IF THERE WERE THREE GROUPS AND THAT DADDY’s REALLY DID Get kc AND IF DATA ARE SEPARATED OUT FOR kc DADS.

Erlandsson, K., Christensson K., Dsila A., & Jonsson B. (2008). Do caregiving models after cesarean birth influence infants’ breathing adaptation and crying? A pilot study. Journal of Children’s and Young People’s Nursing, 2(1), 7-12. RCT of 13 fullterm infants after cesarean section who were held in KC or in cot for several hours postbirth. KC infants had larger breath volumes, larger minute ventilation and cried less than cot infants. Full term, RCT, breathing, crying, cesarean section, paternal kc. NOT ON Charts yet.

Erlandsson K., Dsila A., Fagerberg I., & Christensson K. (2007). Skin-to-skin care with the father after cesarean birth and its effect on newborn crying and prefeeding behavior. Birth, 34(2), 105-114. Randomized Controlled trial of paternal KC during first 2 hours after elective c/s (due to breech, small pelvis, previous c/s) 37-41 week gestation c/s birth with spinal analgesia in 30 moms (KC=15 immediate KC after c/s; 14 placed immediately in cot). One cot infant was transferred to NICU at 82 mins postbirth for tachycardia, one KC infant transferred at 60 mins postbirth for hypoxia – resultant med diagnoses was “prolonged pulmonary adaptation” and were reunited with moms in postpartum 1 and 4 days later (pg. 107). Measured tape-recorded separation distress crying (when there is absence of maternal body contact [Christensson, Cabrera et al., 1995]), prefeeding behaviors (rooting, mouth movements, sucking (from NBAS), and behavioral state (from NBAS, recording predominant behaviors in first minute of every 15 minute observations but two sleep states were collapsed into one so they measured sleep, drowsy, away, and crying). Immediately after delivery, cord was cut, infant wrapped in two towels, shown to mom, taken to open incubator, wiped off, suctioned pren, then returned to mom in surgery room and put on her chest still wrapped in towels, stayed on moms chest for 5-10 mins, then went to nursery with father. Father sat on chair and gave KC with 2 blankets covering infant, father interacted with awake child, consoled crying child (pg. 108). Control infants in cot in nursery, wrapped in 2 blankets and father present in same room but not able to pick up child. First recording was at 30 minutes postbirth and continued until 120 mins postbirth recording was complete, using mean values for every 5 minutes for crying and feed behaviors and every 15 minutes for state. There were 221 5-min periods for KCers and 162 5-min periods for controls. KCers cried less (p<0.001; KC Mean=13.4 sec SD=3.6; control Mean=33.4 SD=6.61 seconds). Mean crying time for 35-40 mins postbirth =30.4 sec KC & 57.8 sec control; for 55-60 mins postbirth =17.6 secs KC & 53.3 sec control; for 85-90 mins postbirth =10.8 secs KC & 22.5 cot. Crying of KCers decreased rapidly (in first 15 mins) and cot group took longer. KCers had lower level of wakefulness than cots (p<0.01), and dropped from crying to drowsy state by 60 mins postbirth (cot babies dropped to drowsy at 110 mins postbirth). Rooting patterns not different between groups. KCers showed less rooting than cots (p<0.01), lowest level of rooting was at 75 mins postbirth, cot infants showed steady medium level of sucking witl 105 mins postbirth while KCs declined in sucking at 60 mins postbirth (p<0.001), which was when drowsiness began. Because sleep is important for infant’s recovery from being born, earlier drowsiness and sleep is a positive outcome. Within 15 minutes of onset of paternal KC, crying stopped. KC facilitated coordination of prefeeding behavior. All pat KC infants rooted, put fingers/hands on father’s skin, and sucked on fathers nipple (pg 113). Infants in KC relaxed and appeared to have reduced stress KC after c/s is often limited and it cites Baby Friendly sources (Rowe-Murray, H., & Fisher, J. 2003 on KC bib). Fullterm, RCT, cesarean, paternal KC, HR, crying, drowsy, behav state, sleep, Early KC, relaxation, stress. Not on Charts.

Essa, R.M., Nemat, I.A.A. (2015). Effect of early maternal/newborn skin-to-skin contact after birth on the duration of third stage of labor and initiation of breastfeeding. J. of Nursing Education and Practice, 5(4), 98-107 (Open access). Full term (38-42wks) singleton cephalic presentation, desire to BF and anticipated NSVD, no pharmacologic pain relief were in KC (n=50) or in control (n=50). infants in quasi-experiment in Egypt. Controls were taken to radiant warmer after cord cut and stayed under radiant warmer for assessment and Vit K shot, weighing, and dressing, and measuring. Babies wrapped in blanket and handed to mother after placenta delivered and after episiotomy/perianal tears were repaired. Then mother was encouraged to BF. KC infants were placed undressed prone against mother’s bare chest between the breasts immediately after birth and before placental delivery and suturing of tears/episiotomy. All women had episiotomy and APGARs were done in KC and baby was suctioned in KC, well dried and covered with prewarmed blanket (pg. 100) and head cap. All other interventions were delayed until the end of the first 2 hours postbirth. Measured uterine contractility immediately after birth, completeness of placenta, presence of uterine atony, excessive blood loss, giving methargene (methargin), position of uterus, duration of third stage, maternal satisfaction with care, preference for care with next delivery. Baby BF by IBFAT (infant breastfeeding assessment tool), 100% of KC’s moms had uterus contracted immediately after delivery (control = 60%), 100% of KC had no excessive blood loss nor uterine atony (28% of controls had uterine atony or excessive blood loss), and 100% KC delivered a complete placenta (controls = 80% did so.) only 2% of KCers and 78% required methargin and position of uterus at or below umbilicus occurred in 96% of KCers and in only 76% of controls. More KCers were satisfied with care (92%) while controls satisfied 52% were satisfied. In KC duration of third stage less than 5 minutes occurred 96% and in controls it occurred in 4%; duration of third stage for 5 minutes was 4.0% in KCers and 50% in controls; 10-15 minutes of third stage in KCers was 0.0% and in controls it was 46%. In KCers, 94% of babies attached nipple by themselves and in controls this was 40% only. 88% of KCers ended BF by themselves, controls did this 46%; 90% of KCers had good BF as perceived by mother, controls 40% (p. 103). Time between delivery and first breastfeeding was 33.76 minutes in KCer and 107.72 in controls (pg. 103) Duration of BF was 20.06 minutes in KCers and 6.36 minutes in controls(p. 103). FT, third world, quasi

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experiment because not randomized, newborn observations, maternal satisfaction, BF duration, BF ending, PPH, blood loss, placenta delivery time, meconium, uterine atony, etc. Not on Charts, New to biblio study.

Espagne, S., Hamon, I., Thebaudorges, O., & Hascoet, J.M. (2004). Sudden infant death of neonates in the delivery room. [in French]. Archives de Pediatrie, 11(5), 438-439. Case study of one term infant born to primip mom with uncomplicated prenatal and perinatal course. Baby was found in cardiorespiratory arrest on mom’s chest in KC and infant died one week later. Sudden infant death at birth is rare. This article states that skin to skin contact is a risk factor for ALTE. SIDS is not a term used for neonatal death. FT, BirthKC, negative effects, life threatening event, mortality. See. GET FULL ARTICLE FROM FRANCE.

European Commission Directorate of Public Health and Risk Assessment, Karolinska Institutet Dept of Biosciences at Novum Unit for Preventive Nutrition, Institute for Child Health BRCCS Burlo Garofolo, & Unit for Health Services Research and International Health WHO Collaborating Centre for Maternal and Child Health. (2006) Infant and Young Child Feeding: Standard Recommendations for the European Union. (Retrieved from http://www.burlo.trieste.old site/Burlo/20English%20Division/Activities/research_develop.htm). This paper reports the state of breastfeeding in the European Union as late as June 2006, predominantly for breastfeeding. Guidelines for prenatal and early postnatal BF support that includes doing KC immediately at birth for two hours until first breastfeeding is complete (when baby stops sucking and releases nipple) are included. The standard practice guideline for Pregnancy states “2.1.3. If expectant parents do not indicate their infant feeding choice during pregnancy, health workers should ask the other how she intends to feed her baby only after she has given birth, when the baby is placed skin-to-skin on her chest. The first skin-to-skin contact between mother and newborn infant offers a golden opportunity to actively encourage breastfeeding.” (pg. 8). The guideline for Childbirth states: 3.1. “To facilitate the initiation of breastfeeding, the newborn should be dried and placed skin-to-skin on the mother’s chest and abdomen immediately after birth or as soon as possible thereafter and covered with a dry warm blanket or towel. This initial skin-to-skin contact should last as long as possible, ideally for at least two hours after birth or until after the first breastfeeding. All the routine neonatal procedures that are not life saving (e.g. washing, weighing and non-urgent medical procedures) should be postponed until after the first breastfeeding (WHO. Care in normal birth: a practical guide. WHO, Geneva, 1996; Anderson, Moore, Hepworth & Bergman, 2003; Mikkel-Kostyra, Mazur & Boltrusko, 2002). If the baby or the mother need urgent medical care, skin-to-skin contact should be offered as soon as they are stable.” 3.2. “During the initial skin-to-skin contact, the baby will find and explore (i.e. nuzzle and lick) the breast, and will eventually find the nipple and latch on for the first breastfeeding. Use a hands off technique (Renfrew MJ, Dyson L, Wallace L, D’Souza L, McCormick F, Spiby H. The effectiveness of public health intervention to promote the duration of breastfeeding. National Institute for Health and Clinical Excellence, London, 2005)” Do not force or accelerate the occurrence of the infant finding the nipple and latching on (pg. 10). Then on page 11 it has wonderful list of signs of going well and signs of difficulty for positioning, sucking, and transfer of milk. The guidelines for the first few days of life do NOT include KC even in the section about unsatisfactory breastfeeding by 12 and 24 hours post-birth. But on page 12 it says that crying is a late sign of hunger. Guidelines for preterm babies begin on page 13 and on page 14 it says “3.6. Kangaroo Mother Care (KMC) or skin-to-skin contact should be started immediately or as soon as possible after birth, depending on the infant’s medical condition and on the mother’s willingness and ability to be present in the hospital, and continued for long periods of time, at least one hour at a time or as often as possible. Extended KMC, up to full-time, is of benefit (Mikkel-Kostyra, Mazur & Boltrusko, 2002; Hurst, Valentine, Renfro, Burns & Ferlic, 1997; WHO, Kangaroo mother care: a practical guide. 2003.) ”5.11. After about 35 weeks gestational age, breastfeeding on demand can be started while continuing and facilitating rooming-in and skin-to-skin contact or KMC.” (pg. 14). First month of life guidelines and From one to six months guidelines and after six months guidelines do not include skin-to-skin at all but provide wonderful guidelines for feeding and introducing foods with great rationale for everything. On page 25 it states “Because there is no evidence for the superiority or equivalence of formula feeding when compared to breastfeeding, competent health workers will not recommend it as an alternative or a complement to breastfeeding, unless there are legitimate medical reasons for doing so.” (p. 25). On page 28 is RISKS of a Decision not to breastfeed and the Disadvantages of formula feeding with risks for child and mother and their families segregated. At the bottom of the page it is written: “Mothers who formula feed should be supported to maximize bonding opportunities (e.g. using feeding times for close skin-to-skin contact with the baby and not delegating feeding to anyone other than a parent where possible.”. Guidelines, birth KC, FT, breastfeeding, hand’s off policy, signs of good BF, disadvantages of formula feeding.

Evereklian M, Posmontier B.(2017-Mar 11). The Impact of Kangaroo Care on Premature Infant Weight Gain. J Pediatr Nurs. 34-e10-e16. doi: 10.1016/j.pedin.2017.02.006. Review of published research. Preterm births occur among 11.4% of all live infant births. Without steady weight gain, premature infants may experience lengthy hospitalizations, neurodevelopmental deficits and hospital readmissions, which can increase the financial burden on the health care system and their families. The total U.S. health-related costs linked to preterm infant deliveries are estimated at $4.33 billion. Kangaroo care is a feasible practice that can improve preterm infant weight gain. However, this intervention is utilized less often throughout the U.S. due to numerous barriers including a lack of consistent protocols, inadequate knowledge, and decreased level of confidence in demonstrating the proper kangarooing technique. An integrative review was conducted to evaluate the impact of kangaroo care on premature infant weight gain in order to educate nurses about its efficacy among preterm infants. A literature search was conducted using CINAHL, PubMed, Cochrane Reviews, ClinicalKey and Google Scholar. Large volume searches were restricted using appropriate filters and limiters. Most of the evaluated studies determined that weight gain was greater among the kangarooing premature infants.
infants. Kangaroo care is a low-tech low-cost modality that can facilitate improved preterm infant weight gain even in low-resource settings. Despite its current efficacy, kangaroo care is not widely utilized due to several barriers including an absence of standardized protocols and a lack of knowledge about its benefits. Kangaroo care can become a widespread formalized practice after nurses and parents learn about the technique and its numerous benefits for premature infants, including its association with improved weight gain.

**PT, Review, barriers to use, weight, cost, little being done**


Fahy, K, Hastie, C., Bisits, A., Marsh, C., Smith, L., & Saxton, A. (2010). Holistic physiologic care compared with active management of third stage of labor for women at low risk of postpartum haemorrhage: A cohort study. Women and Birth, 23(4), 146-152 doi: 10.1016/j.wombi.2010. 02.003. This is a retrospective chart review to compare women who received holistic psychophysiological care in the third stage of labor versus those who received ‘active management.’ The question was ‘is holistic psychophysiological care’ in the third stage of labour safe for women at low risk of postpartum haemorrhage? Although there have been four randomised trials and a Cochrane Review on the safety and effectiveness of care during the third stage labour, no previous study has focussed only on women at low risk of postpartum haemorrhage and no previous study has tested a form of physiological third stage care that is provided by skilled midwives in an appropriate setting. Retrospective cohort study involving a maternity unit at a tertiary referral hospital and a freestanding, midwifery-led birthing unit. All low risk women who gave birth at either unit in the period July 2005-August 2008 were subjects. ‘Active management’ of the third stage of labour compared with ‘holistic psychophysiological third stage care’ At the tertiary unit, 344 of 3075 low risk women (11.2%) experienced postpartum haemorrhages (PPH). At the midwifery-led unit, PPH occurred for 10 of 361 women (2.8%), OR=4.4, 95% CI [2.3, 8.4].

Treatment received analysis showed that active management (n=3016) was associated with 347 postpartum haemorrhage. ‘Active management’ of the third stage of labour compared with ‘holistic psychophysiological third stage care’ At the tertiary unit, 344 of 3075 low risk women (11.2%) experienced postpartum haemorrhages (PPH). At the midwifery-led unit, PPH occurred for 10 of 361 women (2.8%), OR=4.4, 95% CI [2.3, 8.4]. Treatment received analysis showed that active management (n=3016) was associated with 347 postpartum haemorrhage.

Fardig, J.A. (1980). A comparison of skin-to-skin contact and radiant heaters in promoting neonatal thermoregulation. Journal of Nurse-Midwifery, 25(1), 19-27. 17 Kcers got KC after initial nursing care under radiant warmer (Grp A), 17 got immediately KC (never under radiant warmer – Grp B) & 17 controls had no skin contact at all (Grp C). Skin temps taken every 3 minutes for 45 minutes; Rectal temps at 11 and 45 min postbirth. More controls had skin and rectal temps below NTZ at 21 and 45 min postbirth than either of KC groups. Kcers (Grp B) had temps that were same as those under radiant warmer (Grp A). FULL TERM, skin temp, rectal temp, Birth KC/VEKC, IS THIS RCT? KCBib 2018
Kangaroo care (KC) is an effective method to care for low birth weight (LBW) newborns, particularly in developing countries. The objective was to estimate the efficacy of KC and its impact on morbidity and mortality of LBW infants admitted to the KC unit of Albert-Royer National Children's Hospital Center (ARNCHC) in Dakar, Senegal. This was a retrospective, single-center study from July 2011 to July 2013. We collected sociodemographic, maternal, and obstetrical data, neonatal characteristics and information during KC (age and weight at inclusion, thermoregulation, feeding, growth, and overall progression). We included 135 newborns, with a female predominance (sex ratio: 0.78). One-third of the mothers (35.5%) were primiparous and only 21.1% had a socioprofessional activity and the majority had a low educational level. The mean gestational age (GA) was 33.08±2.06 weeks of amenorrhea and the mean birth weight 1485±370g. There were 20 term babies with intrauterine growth restriction (IUGR) (14.8%) and 115 (85.2%) preterm newborns, 83 (72.2%) of whom, showed IUGR. The mean duration of conventional care was 12.3 days (range: 4-27 days) and the main complications were respiratory distress (46.2%), infection (36.9%), and necrotizing enterocolitis (15.1%). At KC admission, the mean post-conceptional age was 34.2±2.46 weeks and the mean weight 1445±319g (minimum, 700g). The main complications in KC were infections (20.2%), hypoglycemia (18.5%), and gastro-esophageal reflux disease (16.4%). Only 56.3% of the babies were exclusively breastfed. The mean weight gain during the stay in the KC unit was 15.3±5.08g/kg/day and the mean weight at discharge was 1761±308g. Only three episodes of hypothermia were noted. The mean duration in the KC unit was 10.2 days (range: 3-24 days). Five babies died (3.7%); one during KC, one at home, and the three others after readmission to neonatology. Kangaroo care for LBW infants is highly effective in our context. This method should be spread to a large majority of health centers in the country.

New to Biblio study

Fayeman, P. (2017-Sept. 16). Kangaroo Care: The concept for BC’s biggest, soon to open neonatal intensive care unit. The Vancouver Sun. Health Section. Available from http://vancouversun.com/health/local-health/kangaroo-care-the-concept-for-bc-s-biggest-soon-to-be-open-neonatal-intensive-care-unit. Pgs. 1-12. This is a report of the new 70 bed single family NICU rooms with mother’s bed right up against the infant’s crib or incubator in the Teck Acute Care Center of the British Colombia Children’s and Women’s Hospital in Vancouver. Mothers will be admitted directly to the NICU with their 22 wk gestational age or older infant and take care of the infant along with the nurses who are really facilitators and teachers and consultants more than caregivers. The purpose is to no longer deprive infants of constant contact with their mothers. Even mothers with cesarean section will be admitted and the same nurse who cares for the neonate will care for the mother. Incubators in the new unit cost $70,000 each. The new rooms will allow minimally invasive treatments and surgeries such as intestinal resections, retinal laser treatments, and vascular catheter placement (pg. 7). Parents are partners in providing health care to the newborn and the nurse is a coach, teaching parents what to do (pg. 7). PT, Birth KC, NICU integrated care, single family rooms, cesarean section, stff issues, parents are providers, Neo nurse is also postpartum nurse, developmental care,

Fegran L, Helseth S, & Fagermoen MS. (2008). A comparison of mother’s and fathers’ experiences of the attachment process in a neonatal intensive care unit. Journal of Clinical Nursing, 17(6), 810-816. Descriptive qualitative study of 6 mothers and 6 fathers who had interviews upon discharge from Norwegian NICU. Hermeneutic analysis revealed two main categories of experience: 1. “taken by surprise” - moms felt powerless and period was surreal and strange. Fathers experienced the birth as a shock, but were immediately ready to be involved. 2. Building a relationship. Moms needed to regain the temporarily lost relationship with their child and fathers experienced the beginning of a new relationship. Fathers were encouraged to have KC with the child from the very beginning (pg.813 and commented that the KC experience initiated an exchange of power which made both father and child relax (pg. 814) and one dad who could not sleep went to NICU to KC in the middle of the night and it made him feel more confident, have better self esteem and better coping abilities. Doing KC made fathers feel like important contributors to baby’s care. Paternal relationship changed from an impersonal one to one characterized by “belonging” and “protecting the child.”(p.814). Mothers wanted to do KC but were afraid to touch the preterm infant at first. Despite the need to be close, 3 mothers expressed ambivalent feelings and cried the whole time they KCed, or expressed a need to do KC but did not dare to do KC, confronting mothers with the realization that they could not take on the burden of taking care of their child. Being involved in KC also confronted the mother with the burden of not being able to take care of their child. Parents of preterm infants have different starting points and these should be noted as professionals encourage parents to have early KC. PT, descriptive, attachment process, maternal feelings, paternal KC. NOT ON CHARTS YET

Feldman, K., & Whyte, R.K. (2013). Two cases of apparent suffocation of newborns during side-lying breastfeeding. Nursing for Women’s Health, 17(4), 337-341. This is a case report of two full term infants both born to non-obese primiparous KC Bib 2018
women in Canada. Baby 1 had spontaneous vaginal delivery at 40 wks, 9/10 APGARS and birth weight was 4364 gm, admitted to postpartum. Routine check at 9.5 hrs postbirth found blue, unresponsive, apneic infant lying in bed beside the mothers. Mom reported she had been breastfeeding the baby and had fallen asleep. Baby has severe hypoxic ischemic encephalopathy and died. No autopsy done. Baby #2 was cesarean birth for breech at 39 wks 8/9 APGARS and birth weight was 3230 grams. At 45 hr postbirth mom was breastfeeding in sidelying position. 50 minutes later nurse found motionless, pale, limp, unresponsive baby lying alongside mother. Circulation was established 25 mins later, hypothermia X 7 hours, mgSo4 for neuroprotection, EEG very abnormal and severe HIE and early signs of CP at 3 months. Side-lying is recommended for cesarean birth moms and for other so mom can get rest. Risk factors for ALTEs or sudden death include primiparous mother, skin-to-skin contact of the mother and newborn, mother and infant left alone and postnatal fatigue. All of these factors played a role in both of the cases described here. We believe that BF in the side-lying position is an additional risk factors for postnatal infant death.” Pg. 339. Mother’s fear of smothering baby in side lying position may be justified. “We advocate for close surveillance of mother and baby (i.e. checks at regular short intervals) during BF and skin-to-skin practices. Newborns should not be left with their fatigued mother in a side-lying position for prolonged periods of time. It seems the babies were accidentally suffocated against the mother’s breast. Interventions that may prevent such catastrophic events from occurring include mothers returning infants to their bassinets or cribs if they are feeling fatigures or nursing out of bed. Alternatively, a second person (e.g. partner, family member) should be available to take the infant from the mother after she has finished breastfeeding. Descriptive, Full Term FT, life threatening event, sudden unexpected postnatal collapse, breastfeeding, sidelying. Feldman K, & Whyte RK. (2013). Two cases of apparent suffocation of newborns during side-lying breastfeeding. Nurs Womens Health. 2013 Aug-Sep;17(4):337-41. doi: 10.1111/1751-486X.12053. The side-lying position is one of several options offered to women in the postpartum period to assist with early establishment of breastfeeding. Many new mothers are exhausted and experiencing significant pain following birth. While the side-lying position for breastfeeding can allow women to get needed rest, it can increase their risk of falling asleep while in this position and potentially smothering their babies. We report two cases of apparent suffocation in new mothers on the maternity ward when women unintentionally fell asleep while breastfeeding in the side-lying position. Interventions that may help to prevent such events are suggested. FT, life threatening SUPC, BF

Feldman, R. (2004). Mother-infant skin-to-skin contact (kangaroo care): theoretical, clinical, and empirical aspects. Infants and Young Children, 17(2), 145-162. Being held upright exposes the infant to combinations of sensory stimulation (kinesthetic, tactile, auditory, olfactory, visual, and vestibular) that promote development. NEED TO GET THIS CITATION

Preterm Development, review

Feldman, R. (2007). Maternal-infant contact and child development: Insights from the kangaroo intervention. In L’Abate, L. (Editor). Low Cost Approaches to Promote Physical and Mental Health. Theory, Research, and Practice. Springer Publishing Co.: New York, NY. pp. 323-351. This is Chapter 16 in the book and it is a review of all KC research centered around four themes: maternal touch and contact in human and animal models showing that postpartum touch is a positive experience, mechanisms mediating the effects of early physical contact on infant’s later development (including centrality of maternal proximity), specific improvements following early contact intervention for preterm infants, and the basis for emphasizing the sensitive period are presented. This is a wonderful scholarly review.

Preterm, sensitive period, Development, review, Separation, state regulation

Feldman, R. (2009). Long-term effects of skin-to-skin contact in the neonatal period: a ten-year follow-up. Paper submitted for publication. This follow up study reports that the positive effects of skin-to-skin contact on children’s cortisol responses and autonomic reactivity that are seen in the neonatal period are still present at 10 years of life. PT, Quasi-Experiment, development, 10 years, autonomic system, cortisol, stress. Not on charts 5/24/2011.

Feldman R, & Eidelman Al. (2003). Skin-to-skin contact accelerates autonomic and neurobehavioral maturation in preterm infants. Developmental Medicine and Child Neurology, 45 (4), 274-281. No doi. 35 infants got 24.31 days of KC for a total of 29.76 hours and 35 infants did not get KC. 19 males, 6 females in each group. GA was 30.28 wks, bw = 1229.95 gm and medical risk. KC is standard option in care, so no randomization of subjects, but they were matched. Vagal tone is a physiologic index of infant ability to orient to the environment and adapt to changing inputs (Porges SW, Doussard-Roosevelt JA, Portales Al, Greenspan SL. (1996). Infant regulation of the vagal ‘brake’ predicts child behavior problems: a psychobiological model of social behavior. Dev Psychobiol 29, 697-712). Vagal tone for 10 min B4 KC at 32 weeks and 10 min at 37 wks - Kcers had more rapid maturation of vagal tone and higher level of vagal tone. Behavioral state measured in 10 sec epochs x 4 hrs on 4 consecutive evenings at 32 (B4 KC) and same procedure at 37 wks using an unannounced 6 state scale – more rapid improvement in state organization (longer periods of quiet sleep, longer period of alert wakefulness and shorter periods of active sleep & better sleep cycling at 37 weeks than at 32 weeks in KC group and more mature state regulation at 37 weeks than controls). NBAS at 37 weeks showed more mature neurodevelopmental profile (especially habituation and orientation) in Kcers. State regulation is sign of maturation and is delayed in preterm. State scoring system was modeled after Brazelton and Holditch-Davis, a 6 state system without established psychometric properties. Neurodevelopmental profile was more mature for KC infants. And early skin to skin contact improves maturation of the autonomic and circadian systems in preterm infants – KC works on physiologic as well as behavioral- regulatory mechanisms of emotion regulation. More advanced state organization at term age in the KCers. PT, Matched TX

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and Controls, but not RCT, Vagal tone, Quiet & Active sleep, Alert Inactivity, NBAS for development, Sleep Cycling, state, circadian rhythms, separation, parasympathetic

Feldman R, Eidelman A, Sirotia L, & Weller A. (2002). Comparison of skin-to-skin (Kangaroo) and traditional Care: Parenting Outcomes and Preterm Infant Development. Pediatrics. 110(1 Part 1), 16-26. No doi. Quasi-Experimental study with N= 146 in two groups: 73 LBW infants who got KC in the NICU from 31-34 weeks for 2 weeks 1 hour/day with mothers (M duration of KC=24.31 days and M= 29.76 hours) and 73 matched controls at other hospital. Ten minutes of video tape of mother infant interactions were coded. At 37 weeks postmenstrual age, mother infant interaction, maternal depression, maternal perceptions measured. At 3 months infant temperament, mat-paternal sensitivity, etc. KCers had more positive interactions, and moms showed more positive affect, touch, adaptation to infant cues and infants were more alert, less gaze aversion. KC moms had less depression. At 3 months, KC moms and pops were more sensitive and provided a better HOME environment. At 6 months, KCers had higher Bayley Mental (96.39 vs. 91.81 for controls) and psychomotor (KC= 85.47; control 80.53). Also followed-up at 2 years. “Mothers who provided KC report more positive feelings towards the infant and a better sense of the parenting role. The physical bonding may reduce maternal depression and increase familiarity with the infant and his or her interactive signals. The effects of state organization may improve infant alertness during mother child interaction resulting in increased maternal involvement.” Infants had more rapid improvement in state organization than controls. PT. Matched TX and Control, used TWO Hospitals, not RCT. Development, Bayley Mental/Motor, Temperament, Mat Behavior, maternal-infant interaction, infant state was alert, Mat. depression. STATE SLEEP?? HOME KC and follow-up for 2 years.

Feldman, R., Gordon, I., Schneiderman, I., Wiseman, O. & Zagoory-Sharon, O. (2010). Natural variations in maternal and paternal care are associated with systematic changes in oxytocin following term infant contact. Psychoneuroendocrinology 35(8), 1133-1141. Doi 10.1016/j.psyneuen.2010.01.013. Animal studies have demonstrated that the neuuropeptide oxytocin (OT) plays a critical role in processes of parent-infant bonding through mechanisms of early parental care, particularly maternal grooming and contact. Yet, the involvement of OT in human parenting remains poorly understood, no data are available on the role of OT in the development of human fathering, and the links between patterns of parental care and the OT response have not been explored in humans. One hundred and twelve mothers and fathers engaged in a 15-min play-and-contact interaction with their 4-6-month-old infants and interactions were micro-coded for patterns of parental touch. Results showed that baseline levels of plasma and salivary OT in mothers and fathers were similar, OT levels in plasma and saliva were inter-related, and OT was associated with the parent-specific mode of tactile contact. Human mothers who provided high levels of affectionate contact showed an OT increase following mother-infant interaction but such increase was not observed among mothers displaying low levels of affectionate contact. Among fathers, only those exhibiting high levels of stimulatory contact showed an OT increase. These results demonstrate consistency in the neuroendocrine basis of parental interactions with those seen in other mammals. The findings underscore the need to provide opportunities for paternal care to trigger the biological basis of fatherhood and suggest that interventions that permit social engagement may be recommended in conditions of diminished maternal-infant contact, such as prematurity or postpartum depression. Not on chart. Oxytocin, Free article at Univ.


Feldman R, Rosenthal Z, & Eidelman AL (2014-Jan). Maternal-Preterm Skin-to-Skin Contact Enhances Child Physiologic Organization and Cognitive Control Across the First 10 Years of Life. Biologic Psychiatry. 75(1). 56-64. doi: 10.1016/j.biopsych.2013.08.012. Gonda Multi-Disciplinary Brain Research Center (RE, ZR), Bar-Ilan University, Ramat-Gan. Electronic address: feldman@mail.biu.ac.il. Maternal-newborn contact enhances organization of the infant’s physiological systems, including stress reactivity, autonomic functioning, and sleep patterns, and supports maturation of the prefrontal cortex and its ensuing effects on cognitive and behavioral control. Premature birth disrupts brain development and is associated with maternal separation and disturbances of contact-sensitive systems. However, it is unknown whether the provision of maternal-preterm contact can improve long-term functioning of these systems. We used the Kangaroo Care (KC) intervention and provided maternal-newborn skin-to-skin contact to 73 premature infants for 14 consecutive days compared with 73 case-matched control subjects receiving standard incubator care. Children were then followed seven times across the first decade of life and multiple physiologic, cognitive, parental mental health, and mother-child relational measures were assessed. KC increased autonomic functioning (respiratory sinus arrhythmia, RSA) and maternal attachment behavior in the postpartum period, reduced maternal anxiety, and enhanced child cognitive development and executive functions from 6 months to 10 years. By 10 years of age, children receiving KC showed attenuated stress response, improved RSA, organized sleep, and better cognitive control. RSA and maternal behavior were dynamically interacted over time, leading to improved physiology, executive functions, and mother-child reciprocity at 10 years. These findings are the first to demonstrate long-term effects of early touch-based intervention on children’s physiologic organization and behavioral control and have salient implications for the care practices of premature infants. Results demonstrate the dynamic cascades of child physiological regulation and parental provisions in shaping developmental outcome and may inform the construction of more targeted early interventions. PT, quasi-experimental, 10 year follow-up, attachment,

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interaction, respiratory sinus arrhythmia, autonomic development, sleep, cortisol, infant stress, maternal anxiety, maternal stress, maternal behaviors, cognitive development, synchrony, autonomic nervous system

Feldman, R., Singer, M., & Zagolony, O. (2010). Touch attenuates infants’ physiologic reactivity to stress. Developmental Science, 13, 271-278. Not a KC study, but mentions KC. Fifty-three mother-infant dyads were tested in two conditions: still face and still face with maternal touch to determine how gentle human touch reduces hormonal stress, vagal tone, and stress behaviors that are demonstrated during the STILL FACE paradigm. Good review of the physiologic process of how that occurs. Maternal and infant cortisol and infant vagal tone were measured at baseline (free play), during still face and upon reunion with mother. On page 776 it states “Studies assessing the effects of skin-to-skin contact on the development of premature infants demonstrated that both stress hormones (Weller et al., 2002) and autonomic reactivity (Feldman & Eidelman, 2003a, Gray Watt and Blass, 2000) were more optimal in the treated infants as compared to matched controls.” “The positive effects of skin-to-skin contact on children’s cortisol response and autonomic reactivity were found to persist across the first 10 years of life” (Feldman, 2009). Cortisol was lower in the still face + touch group during the still face procedure and also during reunion, indicating that without touch, infant-still had high levels of stress cortisol during reunion. No group differences between maternal cortisol levels—neither having touch with infant or not having touch with infant was sufficiently stressful to elicit maternal stress response (pg. 274). Infant cortisol were individually stable between the 2nd and 3rd assessments (during still face and during reunion with mother). Mother and infants’ baseline cortisol were interrelated and infant baseline cortisol correlated with mother cortisol recovery, pointing to a cross generation mechanism in the development of the stress response. Vagal tone was suppressed in still face without maternal touch condition. Touch synchrony during free play was associated with higher infant vagal tone (better parasympathetic control). Maternal touch myssynchroy (touching the infant while infant’s gaze is turned away) correlated with higher maternal and infant cortisol. The provision of maternal touch during moments of maternal unavailability reduces infant’s physiological reactivity to stress. Touch, especially KMC touch, reduces stress responses in infants. FT?Quasi-experimental, stress, maternal and infant cortisols, touch types, development, 10 years, still face Not on charts 5/24/2011.

Feldman R, Weller A, Leckman JF, Kuint J, & Eidelman AI (1999), The nature of the mother’s tie to her infant: Maternal bonding under conditions of proximity, separation, and potential loss. J Child Psychiat 40 (6), 929-939. Measured attachment in fullterm mothers, healthly preterm infant moms, and VLBW infant moms. Pg. 937 says “Intervention efforts that aim to enhance proximity and touch in VLBW infants, such as skin-to-skin contact (kangaroo care), may be crucial for these mothers in order to initiate the bonding process.” FT, PT, maternal attachment, maternal depression, separation

Feldman R, Weller A, Sirotot L, & Eidelman AI (2002). Testing a family intervention hypothesis: The contribution of mother-infant skin-to-skin contact (Kangaroo Care) to family interaction, proximity, and touch. J Family Psychology17(4), 94-107. No doi. 146 three-month old preterm were tested. 73 had received KC in the NICU. Micropatterns of proximity and touch were coded. Following KC, moms and dads were less intrusive, infants showed less negative affect, and family style was more cohesive. Maternal and prenatal affectionate touch of infant and spouse was more frequent, spouses remained in closer proximity, and infant proximity position was conducive to mutual gaze and touch during triadic play in the KC group. KC is beneficial for development of family processes. PT, Not an RCT, interactions, family development, proximity

Feldman, R., Weller A, Sirotot L, & Eidelman A. (2002). Skin-to-skin contact (Kangaroo care) promotes self-regulation in premature infants: Sleep wake cyclicity, arousal modulation, and sustained exploration. Developmental Psych. 38(2), 194-205. No doi. 73 preterm infants got KC. 73 controls. KCers got at least 1 hr of KC per day x 14 consecutive days in NICU (Mean 26.62 hrs of KC x 12.14 hrs). Tested 1-2 days B4 KC at 32 weeks and at 37 weeks GA, and at 3 and 6 mos. Corrected age. Control gp tested at 32 weeks and all other times were same. State measured in 10 sec epochs over 4 hrs before KC and at 37 weeks. KC infants spent SIG more of the 4 hr time in QS and Alert Wakefulness and less time in Active Sleep than controls. @term, KC more had mature state distribution, more organized sleep-wake cyclicity (but not B4 KC at 32 weeks). @ 3mos KC had higher threshold to negative emotionality and more efficient arousal modulation with complex stimuli. At 6 mos KC infants had longer duration and shorter latencies to shared attention and sustained exploration in toy session. Behavioral state scoring system was modeled after Brazelton and Holditch-Davis but is not an established psychometric tool. Infants were tested then at 3 months corrected age using a modified version of the Behavioral Response Paradigm in which increasingly aversive stimuli are presented to the infants. There are predetermined periods of presentation and rest for each stimulus. KC infants showed higher thresholds for negative emotionality as shown by latency to first cry being longer in KC than controls. Infants who got KC were able to tolerate more aversive environmental stimulation that infants who did not get KC, Thus, KC infant’s stress-reactivity skills were more optimal, as they were more resilient or less sensitive than controls, over 3 months after receiving KC. KC infants also had more optimal reactivity (mid range reactivity) during the aversive stimulus and were more adept at using the “off” stimuli (rest periods) for rest (no reactivity). During face-to-face interactions, KC infants showed less negative emotionality and mothers were more synchronous and less intrusive a sign of the bi-directional effects of early co-regulation on mother and child. PT, Quasi-experiment. Maternal benefit, stress, emotion regulation, 3 month face-to-face interaction, social dev. Not an RCT, State, Development, sleep cycles, Quiet Sleep, arousals, Infant emotion, stress reactivity, Used same stats as Engler et al, 2002

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Feldman, R. Zagoory-Sharon, O. Weisman, O. Schneiderman, I. Gordon I, Maoz R, Shalevi I, Elstein, RP (2012). Sensitive parenting is associated with plasma oxytocin and polymorphisms in the OXTR and CD38 Genes. Biol Psychiatry, 72(3):175-81. doi:10.1016/j.biopsych.2011.12.025. Research in mammals has demonstrated the involvement of oxytocin (OT) in social bond formation; yet, its role in human bonding remains unclear. Plasma OT has been used as a proxy for central activity and studies indicate its association with human affiliative behaviors. Molecular genetic studies also reveal a role for OT neurotransmitters in shaping the social brain. However, the links between peripheral OT, genetic markers, and their combined contribution to human parenting are unknown. Participants included 352 individuals: 272 mothers and fathers and their 4- to 6-month-old-infants and 80 nonparents. Plasma OT was assayed from adults who were genotyped for oxytocin receptor (OXTR) and CD38 risk alleles associated with social dysfunctions. CD38 is an ectoenzyme that mediates the release of brain OT. Parent-infant interactions were microcoded for parental touch and gaze synchrony and participants reported on parental care in childhood. OXTR (rs2254298 and rs1042778) and CD38 (rs3796863) risk alleles were each associated with lower plasma OT. Reduced plasma OT and both OXTR and CD38 risk alleles were related to less parental touch. The interaction of high plasma OT and low-risk CD38 alleles predicted longer durations of parent-infant gaze synchrony. Results indicate that peripheral and genetic markers of the extended OT pathway are interrelated and underpin core behaviors associated with human parenting and social engagement. These findings may have important implications for understanding neuropsychiatric disorders marked by early social dysfunctions. PT, FT, Oxytocin, attachment, biomarkers. Not on Chart 2014

Feldman-Winter, L. (2012). AAP updates its policy on breastfeeding and reaches consensus on recommended duration of exclusive breastfeeding. Journal of Human Lactation, 28(2), 116-117. DOI: 10.1177/0890334412442826. This article is a simple review of the major change to the new AAP policy on breastfeeding that say that EXCLUSIVE breastfeeding should be for 6 months to be in accord with WHO and Institute of Medicine policies. Six months reduces upper and lower respiratory tract infections including pneumonia and otitis media and reduction of infant/child obesity (Institute of Medicine, June 23, 2011. Early Childhood Obesity Prevention Policies. www.iom.edu/obesityyoungechildren.). Six months also helps child spacing. The AAP has reiterated its endorsement of the WHO/UNICEF Ten Steps to Successful Breastfeeding (including step four for birth KC). Policy/guidelines, BF, Baby Friendly Hosp. Initiative. Not on Charts 5/21/2014 during BF, promml, maternal fatigue/sedation

Feldman-Winter, L. (2013). Evidence-based interventions to support breastfeeding. Pediatric Clinics of North America, 60(1), 169-187. This is essentially a review of the 10 steps to successful breastfeeding and KC at birth is only discussed on page 173 under Step 4 “help mothers initiate breastfeeding within the first hour after birth: (1) step now interpreted as placing babies in skin to skin contact with their mothers immediately following birth for at least an hour and encouraging mothers to recognize when their babies are ready to breastfeed, offering help if needed; (2) this step now applies to all mothers regardless of feeding method.” Just before the references, it has a table of steps to be taken to support breastfeeding preconception, prenatally, intra-partially, and post-partially (including community care). Review. Breast feeding, Baby Friendly, Ten Steps, Birth KC, guidelines. Not on charts 5/21/2014

Feldman-Winter, K. (2013). The unexpected: Sudden infant death in the postnatal period. Parditit Child Health 18(7). 360. This presents a case study of a term infant with Apgars of 9 and 10 at 1 and 5 mins postbirth who was found blue sidelying with mother who had been breastfeeding infant in this position and then mother reported having fallen asleep. Baby was found at 95 hours and CPR started and circulation returned at 10 minutes, hypothermic cooling for 3 days, severe HIE, one seizures and EEG and MRI of brain abnormal, no gag reflex, fixed dilated pupils, no movements. Baby died Sudden unexpected infant death (SUID) and severe ALTE is rare in health term newborn, but occur in 5/000,000 live births within the first 12 hr and 2.6/100,000 live births in first 24 hours and high risk of death or longterm neurological disability (Beccher, Bushan Lyon 2012). Most remain unexplained (Beccher et al., 2012, Posets, Steinfeld, Poets, 2012 and Poets, Stenfeld, Poets, 2011). Risk factors are prone position of infant on mother’s check, airway obstruction. Says Canada has started registry of SIDS severe ALTE events in 2013. NOT ON CHARTS, SUPC


delineated in the World Health Organization’s ‘Ten Steps to Successful Breastfeeding.” SSC is recommended for all mothers and newborns, regardless of feeding or delivery method, immediately after birth (as soon as the mother is medically stable, awake, and able to respond to her newborn) and to continue for at least 1 hour, as defined by the World Health Organization’s (WHO’s) “Ten Steps to Successful Breastfeeding.” “SSC is also a term used to describe continued holding of the infant in the manner described above and beyond the immediate delivery period and lasting throughout infancy, whenever the mother/caregiver and infant have the opportunity,” Pg. 1. Additional recommendations by the WHO, as part of the Baby-Friendly Hospital Initiative and endorsed by the American Academy of Pediatrics (AAP) in 2009, include the following specifications for the period of time immediately after delivery; routine procedures such as assessments and Apgar scores are conducted while SSC is underway, and procedures that may be painful or require separation should be delayed until after the first hour; if breastfeeding, these procedures should occur after the first breastfeeding is completed. The AAP further delineates that the administration of vitamin K and ophthalmic prophylaxis can be delayed for at least 1 hour and up to 4 hours after delivery. The Baby-Friendly Hospital Initiative encourages continued SSC throughout the hospital stay while rooming-in. Unless there is a medical reason for separation, such as resuscitation, SSC may be provided for all newborns. In the case of cesarean deliveries, SSC may also be performed when the mother is awake and able to respond to her infant. In some settings, SSC may be initiated in the operating room following cesarean deliveries, while in other settings SSC may begin in the recovery room. SSC for healthy newborns shall be distinguished from “kangaroo care” in this clinical report, because the latter applies to preterm newborns or infants cared for in the NICU. (cites WHO 2003 Practical Guideline book). When rooming-in mothers are expected to be more involved with routine care, such as feeding, holding, and bathing. Newborns may remain with their mothers unless there is a medical reason for separation for either the mother or the infant. Procedures that can be performed at the bedside can be performed while the infant is preferably being held skin-to-skin or at least in the room with the mother. Being held skin-to-skin by the mother has been shown to decrease pain in newborns undergoing painful procedures such as blood draws (cites Gray et al., 2002 &?? ). The definition of SUPC varies slightly depending on the author and population studied. One definition offered by the British Association of Perinatal Medicine includes any term or near-term (defined as >35 weeks’ gestation in this review) infant who meets the following criteria: (1) is well at birth (normal 5-minute Apgar and deemed well enough for routine care), (2) collapses unexpectedly in a state of cardiorespiratory extremis such that resuscitation with intermittent positive-pressure ventilation is required, (3) collapses within the first 7 days of life, and (4) either dies, goes on to require intensive care, or develops encephalopathy. SUPC incidence is estimated to be 2.6 to 133 cases per 100 000 newborns. Other authors suggested that 73% of SUPC events occur in the first 2 hours of life. (cites Becher et al., 2012). Experimental models suggest that autoregulation of cerebral blood flow is more sensitive to hypoxia in the first 72 hours of life. Some have suggested continuous pulse oximetry; however, there is no evidence that this practice would improve safety, and it may be impractical. Given the occurrence of events in the first few hours of life, it is prudent to consider staffing the delivery unit to permit continuous staff observation with frequent recording of neonatal vital signs. She gives Schoch et al.,s 2014 procedure for immediate SSC next. Risk stratification and associated monitoring and care may avert SUPC, falls, and suffocation. High-risk situations may include infants who required resuscitation (ie, any positive-pressure ventilation), those with low Apgar scores, late preterm and early term (37–39 weeks’ gestation) infants, difficult delivery, mother receiving codeine or other medications that may affect the newborn (eg, general anesthesia or magnesium sulfate), sedated mother, and excessively sleepy mothers and/or newborns. Mothers may be assessed to determine their level of fatigue and sleep deprivation. In situations such as those described, increased staff vigilance with continuous monitoring, as described previously, is important to assist with SSC throughout the immediate postpartum period. Additional suggestions to improve safety include enhancements to the environment, such as stabilizing the ambient temperature; use of appropriate lighting so that the infant’s color and condition can be easily assessed, and facilitating an unobstructed view of the newborn such as recommended by Ludington-Hoe & Morgan, 2014. Additional support persons, such as doulas and family members, may augment but not replace staff monitoring. Furthermore, staff education, appropriate staffing, and awareness of genetic risks may limit sentinel events such as SUPC. These suggestions, however, have not yet been tested in prospective studies to determine
efficacy. She lists Ludington-Hoe & Morgan’s safe positioning checklist next: SSC may be continued while moving a mother from a delivery surface (either in a delivery room or operating room) to the postpartum maternal bed. Transitions of mother-infant dyads throughout this period, and from delivery settings to postpartum settings, facilitate continued bonding, thermoregulation, and increased opportunities for breastfeeding. These transitions may be accomplished safely with skilled staff members by using a standardized procedure. A newborn who is not properly secured may pose a risk for falls or unsafe positioning, leading to suffocation. She next has big section on problems with rooming-in (ie mom falling asleep, baby sleeping on bed, baby falling out of bed) quotes studies on falls in Postpartum, and suggests better observation and other things like the side car sleeper cot on postpartum and doing fall and fatigue assessments to make rooming in with SSC safer.SSC and rooming-in are supported by evidence that indicates that the implementation of these practices increases overall and exclusive breastfeeding, safer and healthier transitions, and improved maternal-infant bonding. In some cases, however, the practice of SSC and rooming-in may pose safety concerns, particularly with regard to sleep. There have been several recent case reports and case series of severe and sudden unexpected postnatal collapse in the neonatal period among otherwise healthy newborns and near fatal or fatal events related to sleep, suffocation, and falls from adult hospital beds. Although these are largely case reports, there are potential dangers of unobserved SSC immediately after birth and throughout the postpartum hospital period as well as with unobserved rooming-in for at-risk situations. Moreover, behaviors that are modeled in the hospital after birth, such as sleep position, are likely to influence sleeping practices after discharge. Hospitals and birthing centers have found it difficult to develop policies that will allow SSC and rooming-in to continue in a safe manner. This clinical report is intended for birthing centers and delivery hospitals caring for healthy newborns to assist in the establishment of appropriate SSC and safe sleep policies. In regards to continuing SSC after discharge, at home, information provided to parents at the time of hospital discharge should include anticipatory guidance about breastfeeding and sleep safety. Pediatricians, hospitals, and other clinical staff should abide by AAP recommendations/guidance on breastfeeding and safe sleep, pacifier introduction, maternal smoking, use of alcohol, sleep positioning, bed-sharing, and appropriate sleep surfaces, especially when practicing SSC. In addition, the AAP recommends the avoidance of practices that increase the risk of sudden and unexpected infant death, such as smoking, the use of alcohol, placing the infant in a nonsupine position for sleep, nonexclusive breastfeeding, and placing the infant to sleep (with or without another person) on sofas or chairs. To facilitate continued exclusive breastfeeding, the coordination of postdischarge support is recommended to enable the best opportunity to meet breastfeeding goals. Mothers may be referred to peer support groups and trained lactation specialists if breastfeeding problems occur. Community support is optimized by coordination with the medical home.

Fish, FT, PT, Guidelines, KC vs. skin-to-skin contact usage, Recommendations, SUPC vs. life threatening events, definition of SUPC, incidence of SUPC, SIDS, sleep, position BFH, rooming-in, postpartum KC, falls, RAPPT, transfer in KC and Home KC.


Ferber S.G., & Makhoul I.R. (2004). The effect of skin-to-skin contact (kangaroo care) shortly after birth on the neurobehavioral responses of the term newborn: a randomized, controlled trial. *Pediatrics, 113*(4), 858-865. No doi. 47 healthy mom-infant dyads (22 KC) began KC 15-20 mins after delivery for 60 min, 25 controls got no KC, standard wrapped care after being taken out of delivery room to be weighed and dressed and then returned to mom (ko only, control group babies went to nursery for 2 hours). At 4 hours postbirth they observed infant for every two minutes over one hour. KC group slept longer, were mostly in quiet sleep state, had less time in transitional, fussy, crying, and alert states (using 6 state Brazelton scoring), showed more flexor movements and postures, less extensor movements. KC influences state organization and motor system modulation shortly after delivery, this kind of care should be offered shortly after birth. KC reduces infant stress (pg. 861). Fullterm, RCT, development, sleep, quiet sleep, crying, alert state, flexed posture and flexed movements, motor development, stress. Burth kC

Ferber S.G., & Makhoul I.R. (2008). Neurobehavioural assessment of skin-to-skin effects on reaction to pain in preterm infants: a randomized controlled within-subject trial *Acta Paediatric.* 2008; 97(2):171-176. doi: 10.1111/j.1651-2227.2007.00607. Neurobehavioural assessment of skin-to-skin effects on reaction to pain in preterm infants: a randomized controlled within-subject trial (all subjects got heel stick with KC, KC alone without a blood stick, blood stick in incubator, and time alone in incubator without blood stick). 30 preterm infants had baseline (10 minutes), intervention (blood test or no blood test heel stick for 2 minutes), posttest (10 minutes) and follow-up (20 minutes in a crib starting 1 hour after treatment) measurement of NICCAP naturalistic observation of infant neurobehaviour in all four conditions. During blood stick with KC, a decrease in motor disorganization and extension movements was found, as were an increase in both positive and negative attention signs. Significant neurobehavioral changes were sustained into follow-up one hour later with KC but not without KC. PT, RCT, Pain, residual effects, decreased stressful neurobehavioral signs of pain (Specific NICCAP movements are associated with acute pain in preterm infants in the NICU Pediatrics 2004). Not on Charts Yet. Stress, pain

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Ferrarello, D., Carmichael T. (2016-June). Sudden Unexpected Postnatal Collapse of the Newborn. *Nursing for Women's Health, 20*(3):268-275. doi: 10.1016/j.nwh.2016.03.005. Sudden unexpected postnatal collapse is a rare but devastating neonatal event. A well-appearing, full-term newborn with Agar scores of eight or more suddenly crashes, often with full respiratory and cardiac arrest. Up to half of newborns with sudden unexpected postnatal collapse die, with many survivors suffering serious neurological damage. The first 2 hours of life are the hours of greatest risk, coinciding with the time frame when nurses encourage breastfeeding and uninterrupted skin-to-skin contact between women and newborns. Nursing assessments and measures to promote neonates’ optimal transition to extrauterine life through skin-to-skin contact and early breastfeeding while decreasing the risk of this catastrophic event are described. She discusses the RAPP scoring system by Ludington-Hoe & Morgan, 2014. Nursing surveillance to promote optimal transition in a safe environment is essential, and birth facilities should allocate staffing resources accordingly. FT, Review, SUPER, clinical review. Not on charts 7-8-16; new to bibli study.


Ferreira M, Vaz T, Apricio G, Duarte J (2015-May). OC20 - Skin-to-skin contact in the first hour of life. *Nurs Child Young People, 28*(4):69-70. doi: 10.7748/nycp.28.4.69.s51 Child protection and managing risk. Skin-to-skin contact in the first hour of life has benefits for the mother and the newborn, as well as a major role in establishing breastfeeding. Determine the prevalence of skin-to-skin contact and breastfeeding within the first hour of life. A systematic review of literature followed by a quantitative and simple descriptive cross-sectional study, according to a non-probability analyzing of 382 clinic records of postpartum mothers. Evidence that early skin-to-skin contact immediately after birth is a potential sensory stimulus, which covers the newborn warming, tactile and active stimulation, respiratory rates and level of blood glucose, reduces baby crying and promotes breastfeeding. In the sample, about 92.6% of the mothers put the baby to the breast in the first hour of life, but only 26.6% made skin-to-skin contact with the baby. Despite the scientific evidence of the benefits of skin-to-skin contact immediately after birth, this practice is still not widely used as, according to the study results, and is only applied to one in every four newborns. FT, Systematic Review, Birth KC, BF within one hour of birth, little being done. Not on charts 5.29.16 New to bibli.

Feucht UD, Van Rooyen E, Shosana R, Bergh AM. (2015-Nov). Taking kangaroo mother care forward in South Africa: The role of district clinical specialist teams. *SAfr Med J. 2015 Nov;20(10):149-52. doi: 10.7196/SAMJ.2015.20(10).10149. The global agenda for improved neonatal care includes the scale-up of kangaroo mother care (KMC) services. The establishment of district clinical specialist teams (DCSTs) in South Africa (SA) provides an excellent opportunity to enhance neonatal care at district level and ensure translation of policies, including the requirement for KMC implementation, into everyday clinical practice. Tshwane District in Gauteng Province, SA, has been experiencing an increasing strain on obstetric and neonatal services at central, tertiary and regional hospitals in recent years as a result of growing population numbers and rapid up-referral of patients, with limited down-referral of low-risk patients to district-level services. We describe a successful multidisciplinary quality improvement initiative under the leadership of the Tshwane DCST, in conjunction with experienced local KMC implementers, aimed at expanding the district's KMC services. The project subsequently served as a platform for improvement of other areas of neonatal care by means of a systematic approach. PT, Quality Improvement Project, implementation, community KC NEW for BIBLIO STUDY

Fidler H.L. (2010). Report brief on a maternal massage therapy intervention and neurodevelopmental outcomes at 2 years corrected age. *Advances in Neonatal Care, 10*(2), 98-99. This is review of the Mendes & Procianoy, 2008 and the Procianoy et al., 2009 results of an RCT of VLBW infants, all of whom got 24/7 KC in Brazil and then one group got Kc + massage. In the Mendes report, massage + KC group got discharged 7 days earlier and had fewer infections. In this report, the KC+ massage group did better in neurodevelopment (significantly higher MDI and higher, but not significantly so, PDI up to 2 years postbirth). Massage was by mothers, 4 times/day beginning at 48 hours of life until discharge from NICU and massage was on external aspects of limbs and specific facial regions and kinesthetic stimulation (passive exercise of limbs). *Micropreemie, VLBW, RCT, massage, development.

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This is a review article of the 3 most popular forms of stimulation for preterm infants: non-nutritive sucking with pacifiers, Kangaroo care, and massage therapy. The review of KC is on page 6-7 and relates its origins in Bogota with infants at 30 wks pma, and the results of studies on physiology, temperature, more stable oxygenation, more quiet sleep, lower rate of serious illness, fewer infections, shorter hospital stay, facilitation of breastfeeding, greater mean daily weight gain, lower hospital costs, higher breastfeeding rate at discharge and 1.5 months post discharge, pain reducing effects. “These studies suggest not only the safety of skin-to-skin kangaroo care, but also the immediate positive effects on physiology and the longer term effects on sleep states, activity level, infections, illness, hospital stay, facilitating effects on breastfeeding, and pain reduction.” (pg. 7) “Nonnutritive sucking and kangaroo care appear to have been widely adopted, as documented in a recent survey we conducted of 90 US hospitals (Table called Survey of Stimulation Infants Receive at United States Hospitals (N=90) in which it reports the percentage of NICUS providing containment 87.6%, blankets on incubators 100%, waterbeds 22.2%, breathing blue bear 5.6%, music 74% as NICU environmental interventions and then as NICU interventions it reports Kangaroo care =97.8%, preterm infant cosleeping (65.6%), nonnutritive sucking during tube feeding 96.7%, breastfeeding 100%, rocking 82.2%, preterm infant massage 38.6%, minimal touch policy 83.0%, mean frequency of parent visits per day = 3.0, NICU pain interventions were healing touch (no hands on)=18.9%, sucking on pacifier during heelsticks 78.7%, sucrose during heelsticks 22.5%, massage during heelsticks 6.7%, neonatologists’ attitudes about the three forms of stimulation were positive in 80%, neutral in 16.5% and negative in 3.5%. In that survey, 98% of NICUs were using kangaroo care, 97% were using nonnutritive sucking during tube feeding, and 79% were using nonnutritive sucking during heelsticks. Massage therapy was employed in 39% of units. Kangaroo care may have been successfully implemented because parents are the therapists. Nonnutritive sucking was cost effective because of the ease of using a pacifier.,” Massage therapy may require parents to be therapists, not unlike kangaroo care, and parents may benefit much as the elderly volunteers in the previously described (massage) study did.”(pg. 9) “Three of the most popular types of stimulation in the NICU (nonnutritive sucking, kangaroo care, and massage therapy) have been researched increasingly over the past few decades. Results suggest that preterm neonates benefit not only from the soothing, calming properties of these forms of stimulation, but they conserve energy, can be pacified during painful procedures, and can demonstrate growth gains following stimulation. These forms of stimulation may have a common underlying mechanism that involves enhancement of vagal activity, associated slowing of the infant’s physiology and an increase in the release of food absorption hormones. Further research is needed to establish underlying mechanisms, particularly because such practices rarely are established in NICUS until the underlying mechanisms are understood. In the interim, the data are sufficiently compelling to educate parents about the efficacy of these forms of stimulation.” (pg. 9) PT, Review, gastrin, cholecystokinin and somatostatin, practice survey, pain, parents as therapists, massage, Not on Charts.

Field, T., & Diego, M. (2008). Vagal activity, early growth, and emotional development. Infant Behavior and Development, 31(3), 361-373. Not a KC study per se. This is a review of the importance of vagal activity for development. On page 362-363 it says “Vagal stimuli may promote growth and development in infants, and stimulation like kangaroo care and massage therapy may be non-invasive methods for increasing baseline vagal activity in infants. For example, a recent study on kangaroo care accelerated the maturation of vagal activity (Feldman & Eidelman, 2003). In this study, mother-infant skin-to-skin (kangaroo care) effects on autonomic functioning, state regulation, and neurobehavior status were examined in preterm infants who received kangaroo care over a period of 24 days. Baseline vagal activity was calculated from ten minutes of heart rate before the kangaroo care started and again at 37 weeks gestational age. Infants receiving the kangaroo care showed more rapid maturation of vagal activity between 32 and 37 weeks gestational age, as well as more rapid state organization including longer periods of quiet sleep and alert awakenings and shorter periods of active sleep. Performance on the habituation and orientation items of the Brazelton Neonatal Behavioral Assessment Scale also suggested a more mature neurodevelopmental profile.” Review, PT, Sleep, vagus, autonomic Nervous system, development Not on CHARTS, 3/22/2012

Field, T., Hernandez-Reif, M., Feijo, L., & Freedman, J. (2006). Prenatal, perinatal, and neonatal supplemental stimulation: A survey of neonatal nurseries. Infant Behavior & Development, 29(1), 24-31. 82 US NICU neonatal staff members in 25 NICUs around the southern US states responded to questionnaire. 1) skin-to-skin following birth in the delivery room (83%), containment (swaddling and surrounded by blanket rolls occurred in 86% of NICUs), music is in 72% of NICUs, rocking in 85%, KC (98% of NICU), nonnutritive sucking during tube feedings in 96% NICUs, and breastfeeding in 100% NICUs. Pregnancy massage (19%), labor massage (30%), Doula (30%), NICU waterbeds (23%), preterm infant massage (38%). These are physicians’ perceptions, not staff nursing and I, SML, think that they are inaccurate as 100% of NICU infants do not get breastfed!!! PT, FT, Survey, KC, BF, rocking, NNS, swaddling, massage, Birth KC, VEK, alternative therapies

Filho reference is officially LAMY FILHO, so go there

Finigan, V., & Davies, S. (2004). “Just wanted to love, hold him forever.” Women’s lived experience of skin-to-skin contact with their baby immediately after birth. Evidence Based Midwifery, 2(2), 59-65. Phenomenologic qualitative study of women in the UK and they comment on the “gaze” they needed to establish with the baby and the natural instinct of wanting to touch and bring their babies to the breast. On page 63, bottom right hand side, it reports one mother who had just delivered by cesarean section and had her baby put right up against her chest in KC reference page 471, top right. It mentions how Mary had a caesarean on page 63 - bottom KC Bib 2018
right hand side. She was the only one that had a CS in that study. She lifted her own baby from her abdomen & put him straight to her chest and said, “Oh, I am his mother and I can feel it. He is my baby.”

FT, Qualitative, Birth KC, maternal feelings,

Finigan, V. Long T. (2014- June). Skin-to-skin contact: multicultural perspectives on birth fluids and birth ‘dirt’. International Nursing Reviews, 61(2):270-277. doi: 10.1111/inr.12100. To explore the experiences of women from three population groups of immediate skin-to-skin contact (SSC) with their newborn babies, A mixed methods approach was adopted in a phenomenological study to elicit the experiences of English, Pakistani and Bangladeshi women. Audiotaped interviews, semi-structured interviews and photographs and video recordings. Concept mapping was integral to the study. This paper reports: novel findings that women contextualized and accepted secretions and bodily fluids from birth. This contradicts the beliefs of midwives that Asian women find bodily secretions abhorrent and culturally unacceptable. All participants reported positive experiences of SSC despite varying degrees of soiling from birth fluids. The study was conducted in a single setting, and participants may not have been representative of others in their cultural groups. Third-party translation may have added an unsought layer of interpretation. The imposition of cultural expectations by peers in the recruitment process excluded some potential participants. Stereotypical assumptions about cultural background often characterize professional responses. When this stereotyping was put aside, women of all three cultures, whether breastfeeding or bottle-feeding, were able to enjoy SSC with their babies. The findings suggest that changes will be needed in professional practice to be more open to women's expressed preferences, in local policy to ensure that choices are made clear and are available, and in national strategic direction to ensure widespread adoption of positive practices for opportunities to increase breastfeeding, promote parent-child bonding and support patient choice to be realized. FT, qualitative study, birth KC, implementation, professional's beliefs.


Fischer, C.B., Sontheimer, D., & Linderkamp, O. (1998). Cardiorespiratory stability of premature boys and girls during Kangaroo Care. Early Human Development, 52(2), 145-153. Pretest(2 hrs)-KC (2 hrs with cap and covered across back with cotton blanket)-posttest (2 hrs) design in which stability of HR, RR, and SaO2 values was measured by a method developed by the team-anmethod of counting the boxes on the graph paper of how high the values were. KC had no effect on any stability indicator: boys had significantly less stability in all three measures than girls. PT, Quasi-exp, HR, RR, SaO2, KMC only, stability, ELBW, VLBW, micropreemies

Flacking, R., Ewald, U., Nyyqvist, K.H., & Starrin, B. (2006). Trustful bonds: A key to ‘becoming a mother’ and to reciprocal breastfeeding. Stories of mothers of very preterm infants in a neonatal unit. Social Science and Medicine, 62, 70-80. 25 mothers whose preterm infants had been cared for in 7 NICUs in Sweden were interviewed to assess the process of becoming a mother of a preterm infant and the role that breastfeeding played in becoming a mother. Three themes emerged: 1) loss of the infant and the emotions of putting ‘life on hold’ 2) separation from infant was a sign of being unimportant as a person and as a mother, separation made mothers distrustful and feeling shame/distrust rather than trust in care. 3) there are critical aspects of becoming more than a physical mother. Kangaroo Care was a critical aspect for becoming a mother and NICU moms had to wait for weeks to hold their infant skin-to-skin. KC meant to mothers that the infant had vitality and strength and would survive because he could be held skin-to-skin. KC also meant a step toward normality “Kangaroo holding itself was something that was approaching the normal.” And KC made them feel important because they could see the baby was in a healing state when held in KC. (pg. 74-75 for the 3 meanings of KC) PT, qualitative study, maternal feelings, separation. Not on charts 5/2/2011.

Flacking, R., Ewald, U., & Wallin, U. (2011). Positive effect of kangaroo mother care on long-term breastfeeding in very preterm infants. Journal Obstetric, Gynecologic, and Neonatal Nurses, 40(3), 190-197. DOI: 10.1111/j.1552-6906.2011.01226.x. Descriptive longitudinal study of 103 very preterm infants (<32 wks GA) and 197 preterm (32-36 wks GA) infants from NICUs in 4 counties in Sweden. KMC contact hours/day during all hospital days from parental-self report were used and BF data obtained by phone contact. Very PT dyads that were breastfed at 1,2,5, 6 months had spent more time in KMC per day than those not BF at those times. Trend toward significance occurred at 3 and 4 months. In the Preterm dyads, no statistically significant differences were found in amount of daily KMC between those BF and those not BF. KMC during hospital stays is important for breastfeeding durations in very preterm infants. KMC has an empowering effect on the process of BF, especially in smallest and most vulnerable infants. Says BF can start when infant is stable. PT, BF duration, micro-preemie, descriptive study.247 KMC? GET THIS. Not on charts 5/2/2011.

closeness between the preterm infant and parent in the neonatal intensive care unit. Physical and emotional closeness influence each other and at time parents may be physically close but emotionally detached and vice versa. Physical closeness refers to being spatially close and emotional closeness to parental feelings of being emotionally connected to the infant (experiencing feelings of love, warmth and affection). Through consideration of the literature in this area, we outline some of the reasons why physical closeness and emotional closeness are crucial to the physical, emotional and social well-being of both the infant and the parent. These include positive effects on infant brain development, parent psychological well-being and on the parent-infant relationship. Preterm’s brain is immature and at risk of abnormal development. Brain dev and later development are influenced by quality of care, including physical and emotional closeness of parent and parent empowerment. Maternal=infant interaction or lack of it mediate variations in offspring phenotype, including emotional and cognitive development with long-term consequences. Environment factors influence gene expression through epigenetic mechanisms to provide the plasticity necessary to respond to environmental variations (Meany MJ, Seif M. 2005. Maternal care as model for experience-dependent chromatin plasticity? Trends in Neuroscience, 28, 456-463)


Carr Dir Psychol Sci, 15, 84-88). In preterm infants, cortisol is higher in infant cared for by depressed mothers than non-depressed moms (Bugental DB, Beaulieu D, Schwartz A. 2008. Hormonal sensitivity of preterm vs fullterm infants to the effects of maternal depression. Infant Behavior Dev. 31(1), 51-63) and this does not occur in TERM infants. Close physical contact between preterm and parent decreases infant cortisol level and pain responses (Moreluis E, Nelson N. Gustafsson PA. 2007. Salivary cortisol response in mother infant dyads at high psychosocial risk. Child Care Health Dev. 33(2), 128-136 – this article says a diaper change raises infant cortisol by 170% if in first three months of life and doesn’t change after 3 months age) and skin to skin contact synchronizes cortisol variation between preterm and mother (See Moreluis et al., 2005 in Pediatrics and Neu article too). KC and interventions supporting parent involvement have potential to enhance neurological and neurobehavioral outcomes of preterm infants (Als Duffy, 2004 Pediatrics; Milgrom J on early sensitivity training for parents of preterms: impact on developing brain, Ped Res 2010, 67, 330-335; and Scher’s article in 2009). One mechanism by which parental closeness improves infant dev is by improving infant sleep (Scher et al. 2009; Feldman et al. 2002), parent involvement reduces pain and moderates use of pain medication (Pillas Riddell RR 2011 cochrane review) and another mechanism is that massage or moderate pressure increases hormones such as brain growth promoting factor (Field, T., Diego M, Hernandez-Reif, M. 2010. Preterm infant massage therapy research: a review. Infant Behav Devel.13, 115-124) and oxytocin, potentially having positive effects on BRAIN FUNCTION and development. Another mechanism is the presence of parent gives infant learning experiences he might not otherwise get such as interactive communication – exposure to parent talk inNICU was stronger predictor of preterm infant vocalization than talk from other adults (Caskey M et al., 2011).


Preterm infants show sensory awareness, express emotions, and have shared feelings (Lagercrantz,H., Changeux,JP. 2009. The emergence of human consciousness: from fetal to neonatal life. Ped Res, 65, 255-260). Moms of preterms are less likely to form secure attachment and have less positive interaction behaviors by than full term moms and preterm moms have more negative attachment behaviors in VLBW infants (citation 37). The article continues with a brief review of benefits of single family rooms and then talks about visiting patterns: that mothers usually visit daily and for a mean of three hours (Franck LS, Spencer C. 2003. Parent visiting and participation in infant caregiving activities in a neonatal unit. Birth 30, 31-35.) but fathers visit less (Latva R. et al., 2007. Visit by the family to the NICU, Acta Paediatrica, 96, 215-220). The influence of the neonatal unit environment and culture on physical and emotional closeness is also discussed. Conclusions: Culturally sensitive care practices, procedures and the physical environment need to be considered to facilitate parent-infant closeness, such as through early and prolonged skin-to-skin contact, family-centred care, increased visiting hours, family rooms and optimization of the space on the units. Further research is required to

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explore factors that facilitate both physical and emotional closeness to ensure that parent-infant closeness is a priority within neonatal care.  

PT, separation, closeness, bonding/attachment, brain dev, relationship, epigenetics, salivary cortisol, stress, massage

Flacking R, Thomson G, Axelin A. (2016). Pathways to emotional closeness in neonatal units - a cross-national qualitative study. BMC Pregnancy Childbirth. 2016 Jul 19;16(1):170. doi: 10.1186/s12884-016-0955-3. Research shows evidence for the importance of physical and emotional closeness for the infant, the parent and the infant-parent dyad. Less is known about how, when and why parents experience emotional closeness to their infants in a neonatal unit (NU), which was the aim of this study. A qualitative study using a salutogenic approach to focus on positive health and wellbeing was undertaken in three NUs: one in Sweden, England and Finland. An ‘emotional closeness’ form was devised, which asked parents to describe moments/situations when, how and why they had felt emotionally close to their infant. Data for 23 parents of preterm infants were analyzed using thematic networks analysis. A global theme of ‘pathways for emotional closeness’ emerged from the data set. This concept related to how emotional, physical, cognitive and social influences led to feelings of emotional closeness between parents and their infants. The review of literature states “physical closeness may facilitate emotional closeness and vice versa” (p. 170). A recent meta-analysis showed that mothers of preterm infants, during the first six months post-birth, demonstrated less positive interaction behaviors with their infants than term mothers did (cites Koreja R, Laiva R, Lehtonen L. 2012. The effects of preterm birth on mother-infant interaction and attachment during the infant’s first two years. Acta OB Gyn Scand 9(2), 164-173. Then the review talks about KC “Furthermore, emerging evidence suggests that care practices that support parent-infant physical and emotional closeness, i.e. Kangaroo care, decreases the prevalence of maternal depression similar to levels reported in mothers of full term infants and “Kangaroo care, decreases the prevalance of maternal depression similar to levels reported in mothers of full term infants (and cites Melnyk, BM and her 2006 Pediatrics article on COPE and de AlancarAE et al.’s 2009 study in J. Trop Pediatrics). Studies undertaken with fathers and their preterm infant have also identified that early contact can reduce stress and anxiety (cites Cong X and Ludington-hoe, 2015 in Early Human Development and facilitates the attainment of the paternal role” (cites Blomqvist YT, 2012 in J. Adv Nursing).pg. 171.

Goulet et al. describe how physical and emotional closeness through vocalisations, visual contact, touch and other sensori-motor interactions are crucial to the establishment of the parent-infant relationship (cites Goulet C, Bell, L., St-Cyr D, Paul D., Lang A. 1998. A conceptual analysis of parent infant attachment.J. Adv. Nurs. 28(5) 1071-1081). Data collected in Sweden, England, and Finland and the Swedish hospital put mothers in a room next door to the NICU room of their baby and as soon as baby did not need oxygen support, he and parents went into private room for 24/7 KC; the English and Finnish hospitals were open bay rooms and it does not say on page 171 how much KC was done. The five underpinning organising themes that explained parents’ feelings of emotional closeness are: 1) Embodied recognition through the power of physical closeness – 3 things were mentioned: face –to-face and eye-to-eye contact, touching and smelling the baby (I place a soothing hand on his back and he settles down and goes back to sleep. My boy knows who his mummy is.” Pg. 173; and Kangaroo care: (“Many parents reflected on the impact of holding their infant and/or having their infant ‘kangaroo’ (i.e skin-to-skin). There were two major influences of holding/kangaroo care on emotional closeness. First, parents were able to provide comfort and security which was displayed in the infant when she settled down. ‘Also had kangaroo time with the little one, he slept the whole time and afterward was lifted in the exact same position back in his incubator. I was later told that he was settled all afternoon.’ Second, holding/kangarooing was an activity that induced feelings of love and attachment, For many parents, holding the infant and for being skin-to-skin was the first time they felt the infant was theirs. A father wrote “The time I felt emotional closeness towards the girl was when I got them in kangaroo Care.” by being physically close the parent-infant bond was strengthened: ‘my feeling towards him got really strong ton the second day when I got him into kangaroo care. The closeness has strengthened the bond between us. We are in kangaroo care for 3-6 hours per day.’” (pg. 173). 2) Reassurance of, and contributing to, infant wellness – essentially having parents provide care; 3) Understanding the present and the past: 4) Feeling engaged in the day to day and 5) Spending time and bonding as a family – letting mother, father, siblings and new baby be alone in their own room together like a family. In the discussion the authors also write “Numerous studies have shown the importance of physical closeness on parental well-being (citing Flacking R 2012 Acta Paediatrics Closeness article, Feely N, Sherrard K, Waltzer E, Bossvert I. 2013. The father at the bedside: patterns of involvement in the NICU. J Perinatal and Neonatal Nursing 27(1): 72-80) and in the last decade research has focused on and demonstrated positive effects of skin-to-skin contact (i.e. kangaroo care) on parent-infant outcomes (Nyquist et al. 2010 Towards Universal article; Nyquist et al.,2010, State of the art citation). Feeley and colleagues (same citation as above) described the importance of contact such as touch for fathers to be able to feel the joy of parenting. This supports our findings in which parents described seeing the infant, having eye contact, touching and holding as significant experiences for feeling emotionally close,” p.g 175). These findings generate important insights into why, how and when parents feel emotionally close. Parent-infant separation in the NICU is common. This knowledge contributes to an increased awareness of how to support parents of premature infants to form positive and loving relationships with their infants. Health care staff should create a climate where parents’ emotions and their emotional journey are individually supported. They recommend Person Centered Communication (PCC) (scheduled nurse parent dialogues, semi-structured reflection sheets for parents to fill out, and other elements of PCC as a source of support , citation for PCC is McCormack B, McCance T. Person-centered nursing theory;: models and methods, Oxford: Blackwell Publishing, 2010). PT, NICU, Qualitative, closeness/bonding, attachment, interactions, separation, parents as primary providers, parent NICU stress, person-centered communication, parent support Not on charts 8-8-16. New to biblio study

months of infant’s corrected outcome in term newborns. TcPO2, TcPCO2
hypothermia in <1000 gramers

doubled temp increased by 0.3

Perinatology, guidelines.

education is needed to foster development of more positive beliefs and incr

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Barriers to KC are infant stress, privacy, timing of parental visit, and getting staff help. Ventilated, CPAP, artery caths, percutaneous venous caths, and chest tubes (p. 18). Benefits are enhanced thermoregulation. Units have policies for KC and only 26% have policy for conventional holding; 73% offer parents KC with extubated infants, 45% offer KC after extubation. National survey of policy and practice of conventional holding, life threatening, mortality, autopsy confirmation, Risk indicators, prognostication, NO SUPPORT OF KC statement. Sleep with mom, during FEEDINGS.


Fortin, N.C. (2012). Exploring new frontiers: providing skin-to-skin contact for mothers and newborns during cesarean birth. Journal of Obstetric, Gynecologic and Neonatal Nursing, 41(Suppl 1): S42. This is a quality improvement project to raise maternal satisfaction with delivery experience when having cesarean birth. BIRTH KC is begun immediately after cesarean birth. Informal surveys of patient satisfaction since implementation have been positive and more formal evaluation of newborn thermoregulation in the Operating room and a survey of patient satisfaction is underway. Nurses who are empowered to question tradition can advocate for their patients. FT, cesarean section, CS, Birth KC, patient satisfaction, temp/thermoregulation, implementation, quality improvement project. Not on Charts 1-2-2013


Franck LS, Bernal H, & Gale G. (2002). Infant holding policies and practices in neonatal units. Neonatal Network, 21(2), 13-20. National survey of policy and practice of conventional and KC holding, 215/400 responses from Level 3 and Level 2 nurseries. 40% of units have policies for KC and only 26% have policy for conventional holding; 73% offer parents KC with extubated infants, 45% offer KC with intubated ones, paternal KC permitted in 68%, sibling KC in 2%, grandparent KC in 6% of units. Many units permit KC with ventilated, CPAP, artery caths, percutaneous venous caths, and chest tubes (p. 18). Benefits are enhanced attachment and closeness. Readiness for KC determined by SaO2, HR, RR, not wt, GA, 25-33% of respondents identified staff RN and MD as not supportive of KC. Barriers to KC are infant stress, privacy, timing of parental visit, and getting staff help. Descriptive Survey, FT, implementation, barriers, attachment, surrogate KC, policies, lack of guidelines Not on Charts Yet.

KCBib 2018
Franck, L.S., Oulton, K. & Bruce, E. (2012). Parental involvement in neonatal pain management: an empirical and conceptual update. Journal of Nursing Scholarship, 44(1), 45-54. NOT A KC article but it addresses maternal use in managing infant pain and provides 7 steps of maternal progress in doing this. Conceptual article saying that mothers want to know of painful procedures, be fully involved, and taught how to use specific therapies such as frequent diaper change, pacifiers, sucrose water, calm environment and want health personnel to be more skilled in starting lines and IVs to reduce infant pain. . Provides a new theory of the levels of parental involvement in managing NICU infant pain and clearly states that parents see their role as a VITAL ROLE in which they want full involvement” (pg. 48) and to help with infant pain as much as possible, want to be informed of painful procedure before it occurs and then help baby through painful procedure and even use specific treatments like change diaper frequently, give sucrose, pacifier, proper rest opportunities, more skill in health workers for putting lines in, create calm surroundings etc (pg 49 chart). They don’t want to be told that they should wait outside. Page 48 relates the stages of parental involvement: 1. None (views infant comfort as nurse or doctor’s role only, 2. Be Informed, 3. Be present, 4. Provide comfort by touch, voice, specific comforting techniques, 5 Informant for NICU staff (tells staff what works for baby), 6. Active decision maker, 7. Advocate for infant – primary responsibility in partnership with clinical team. Theory, pain, maternal/paternal parent involvement.

Fransson, A-L., Karlsson, H. & Nilsson, K. (2005). Temperature variation in newborn babies: Importance of physical contact with the mother. Archives of Diseases of Childhood Fetal Neonatal Edition, 90(6), F500-F504. Descriptive study of abdominal, foot, and rectal temperatures over the first two days of life in 27 healthy fullterm newborns when held in close contact with their mother (babies wore diaper, cotton vest and romper (pg F500) and when in cot were covered by blanket) versus when in a cot beside the mother. 48 hours of recording beginning 4-8 hours post-birth, so this is Early KC. There is no mention of KC as a condition, but the conclusion says “During periods of skin to care, peripheral and abdominal skin temperature increased, indicating a heat gain” (pg. F503) but the article does not describe any skin to skin period, and since when is dressed in vest, diaper, and romper called skin to skin care? Foot temps rose quickly, all temps were higher when baby was with mom than when in cot. In KC mean difference between rectal and abdominal temp was 0.2C vs 0.7 in cot babies; difference between rectal and foot in KC was 1.5C vs. 7.5C in cot babies — temp difference between rectal and foot of 7-8 degrees C indicates a HEAT LOSS close to the maximum heat loss for which a neonate can compensate. Difference between rectal and foot temp in KC showed positive heat balance, no heat loss. Article emphasizes importance of close physical contact with mothers for temp regulation during the first few postnatal days. Fullterm, descriptive, abdominal Temp, foot temp, rectal temp, swaddled KC?, Early KC.


Freire NB, Garcia JB, & Lamy ZC. (2008). Evaluation of analgesic effect of skin-to-skin contact compared to oral glucose in preterm neonates. Pain 139 (1): 28-33. doi: 10.1016/j.pain.2008.02.031 RCT of 95 preterms 28-36 weeks randomly assigned to 3 groups: incubator (n=33) prone in incubator during heel stick and got no analgesia; KC group (n= 31) 10 minutes of KC before and during heel stick; glucose group (n=31) prone in incubator and got 1 ml of 25% glucose 2 minutes before heel lancing. KC group had smaller variation in heart rate, smaller variation in oxygen saturation, shorter duration of facial activity (brow bulge, eye squeeze, nasolabial furrowing), and lower PIPP score. KC produced analgesic effect in preterm newborns during heel lancing,. Pain, Preterm, HR, stability, SaO2, PIPP, facial signs. Full citation under de Sousa Freier earlier in this bib.

Friedman, F., Adrouche-Amranli L, Holzman IR. (2015-May). Breastfeeding and delivery room neonatal collapse. J Human Lactation. 31(2):230-2. doi: 10.1177/0738459014558597. Sudden unexpected neonatal collapse in the delivery room is a rare occurrence in healthy term infants. Upper airway obstruction may occur from improper positioning of the newborn even while breastfeeding. Such occlusion may have dire consequences if not recognized immediately. We report 2 healthy term neonates who suffered respiratory arrest while in the mother's arms and attempting breastfeeding. In each case, rapid response by the delivery room nurse averted tragedy. Metabolic and infectious evaluations were unremarkable. Both babies have been well on subsequent examinations. We conclude that proper education of mothers and safe positioning of neonates is critical during the initiation of breastfeeding. 2 cases of SUPC: one at 60 mins of life, other at 90 mins postbirth, both were breastfeeding. The case found at 60 minutes found infant cyanotic, not breathing, limp in mother’s arms under her breast. The case found at 90 minutes post-birth was found pressed against mom’s chest, under breast, limp, cyanotic, and no resp effort while mom talked on cell phone. Early recognition helped both infants survived. First was in MOTHERS ARMS. not KC, Mothers need to be educated about safe position of the neonates (pg. 230 and 233); CELL PHONE DISTRACTION. FT, Life threatening events, SUPC. New to bibliometric study.

reports have emerged of obstetric violence, use of unsafe practices, and failure to employ evidence-based practices (EBP). Recent attention has refocused global efforts towards provision of quality care that is both patient-centered and evidence-based. Scaling up of local interventions should rely on strong evidence of effectiveness. To perform a secondary analysis to evaluate the impact of a simulation and team-training program (PRONTO) on the performance of EBP in normal births. A pair-matched cluster randomized controlled trial of the intervention was designed to measure the impact of the program (PRONTO intervention) on a sample of 24 hospitals (12 hospitals received the PRONTO training and 12 served as controls) in the states of Chiapas, Guerrero, and Mexico. We estimated the impact of receiving the intervention on the probability of birth practices performance in a sample of 641 observed births of which 318 occurred in the treated hospitals and 323 occurred in control hospitals. Data was collected at 4 time points (baseline, 4th, 8th and 12th months after the training). Women were blinded to treatment allocation but observers and providers were not. Estimates were obtained by fitting difference-in-differences logistic regression models considering confounding variables. The trial is registered at clinicaltrials.gov: NCT01477554. Significant changes were found following the intervention. At 4 months post-intervention an increase of 20 percentage points (p.p.) for complete Active Management of Third Stage of Labor (AMTSL) (p = 0.044), and 16 p.p. increase for Skin-to-Skin Contact (p = 0.067) (but increased practice of immediate birth KC was not sustained by 8 and 12 months post-interventions); at 12 months a 25 p.p. increase of the 1st step of AMTSL (p = 0.026) and a 42 p.p. increase of Delayed Cord Clamping (p = 0.004); at 4 months a 30 p.p. increase and at 8 months a 22 p.p. decrease for Uterine Sweeping.

The intervention has an impact on adopting EBP at birth, contributing to an increased quality of care. Long lasting impacts on these practices are possible if there were to be a widespread adoption of the training techniques including simulation, team-training and facilitated discussions regarding routine care. FT, a quasi-experiment because subjects did not have same chance of being in the intervention hospital or the control hospital, PPH, DCC, Birth KC. Not on charts 3-26-2017

Funk, DL, Tilney PVR, Mitchell S., & Walker, H. (2012). Unplanned kangaroo transport of a preterm infant. Air Medical Journal, 31(6), 264-266. A gravid 3 para 2, 28 wk gestationa woman in labor had the flight team come to her in a rural area in Albany, New York, but she delivered just as the flight team arrived a 3:17 a.m. Mother was taken by ambulance to hospital and preterm infant was put on the flight nurse’s chest beneath her flight suit and a jacket because the incubator on the plane was inappropriately sized. She walked onto the plane in KC, plane was heated to 66 degrees F (outside was 32 degrees F) and “infant remained hemodynamically stable with no noted distress” (pg. 265). Flight took 18 minutes and flight nurse walked into hospital where infant was taken by NICU staff. Infant’s temp on arrival was 96.8, blood glucose was 58 mg/dl, GA was 32 weeks, weight was 1900 g. Baby admitted to NICU without incident and had uncomplicated hospitalization. Hypothermia is big problem with unplanned out of hospital deliveries, even though vapor barriers (plastic bag) and transwarmer mattresses are used. KMC can also be used “Since these studies (referring to Conde-Agudelo et al., 2011 and 2000 Cochrane reviews) were completed, KMC has been adopted and is rapidly becoming the standard of care in many areas. “It was considered to be a successful transport and the infant had no complications associated with this method of care…” (pg. 266). FT, Case study, transport, temperature, blood glucose, hemodynamics, HR, stability, surrogate KC.

Furlan C.E., Scochi C.G.,& Futado, M.C. (2003). Perception of parents in experiencing the kangaroo mother method. Review Latin-American Enfermagem, 11 (4), 444-452. 10 parents completed interview within 60 days after preterm infant discharge from charity hospital inside Brazil. Four themes were: KC should be flexible, KC improves mother-child and family relationship, KC helps complete infant’s growth & development, and KC helps mother develop caregiving skills. Preterm, qualitative descriptive study, Parental report of KC’s meaning to them, attachment, development, caregiving skills, weight, maternal feelings


Furman, L., Minich N., & Hack, M. (2002). Correlates of lactation in mothers of very low birth weight infants. Pediatrics. 109(4), 695-696. Significant correlates of lactation beyond 40 wks Conceptional age included beginning milk expression before 6 hs post-delivery, expressing milk 25 times per day, and Kangaroo Care. Increased maternal support specifically directed toward behavioral factors, including early and more frequent milk expression and kangaroo care, may improve the rates of successful lactation among mothers of VLBW infants who choose to breastfeed. KC is associated with increased milk production. Regression analysis. BF, PT, milk product

Gale, G, Franck, L., & Lund, C. (1993). Skin-to-skin (kangaroo) holding of the intubated premature infant. Neonatal Network. 12(6), 49-57. 25 intubated (>10 breaths/min) infants of any weight or gestation with axillary temp 36-37.2 given adlib KC. Axillary temp measured after 10 mins of KC. Did standing transfer. Transfer was most stressful. No infant dropped temp and it more commonly rose and had to have hat removed. Infants <1.2 kilos needed 15-20 minutes of adaptation to get good SaO2s, some became wriggly, less KCBiB 2018
comfortable, and desaturated after 20-30 minutes. Bigger infants tolerated KC better and >30 week PCA did better in KC than <30 weeks. Infants slept for 10-15 min and then awoke in response to parent’s voice. One accident occurred. Parent statements reflected stronger infant identification and knowledge of infant greater confidence in infant need for them and ability to meet needs. Parent liked to watch infant’s SaO2 improve during KC. No negative reactions from parents. PT, descriptive study of temp only, VENT KC, SaO2, Sleep, transfer, auxillary temp, parent response, maternal confidence, confidence staff responses, desats


Review.? Crying? Sleep? Developmental Care, PT

Galpeau, R., Dumas, L., Lepage, M. (2017-Mar). Perception of Not Having Enough Milk and Actual Milk Production of First-Time Breastfeeding Mothers: Is There a Difference? Breastfeed Med. 2017 Mar 22. doi: 10.1089/bfm.2016.0183. [Epub ahead of print] This study aimed to determine the relationship between perceived insufficient milk supply (PIMS) and actual insufficient milk supply (AIMS) and the relative contributions of physiological and psychosocial variables on both PIMS and AIMS of first-time breastfeeding mothers. Data were collected among 123 breastfeeding mothers at a Canadian, French-speaking maternal care hospital. Birth events, breastfeeding practices, infant and maternal capacities, and PIMS and AIMS were collected at 48 hours after birth, postnatal weeks 2 and 6. No significant relationship was found between PIMS and AIMS. Maternal breastfeeding self-efficacy and number of feeds were related to PIMS at week 2, and skin-to-skin contact at birth and number of feeds were related to AIMS as measured by 24-hour milk production at week 2. Maternal breastfeeding self-efficacy impacts PIMS. Interventions should be directed to increase maternal confidence in breastfeeding, which in turn influences breastfeeding duration. PT, Correlational study, BF, BF self-efficacy, milk supply. Not on charts 3-27-2017 GET this to determine nature of relationships

Gallagher, K. (2000). Continuous skin-to-skin contact in the NICU: Kangaroo or “Possum” care? J Perinatology, 5, 318-319. In SML’s opinion this is a silly article saying KC should be called possum care because KC did not originate in Australia. How do people get this stuff published? Commentary, PT.

Galligan, M. (2006). Proposed guidelines for skin-to-skin treatment of neonatal hypothermia. MCN, American Journal of Maternal/Child Nursing, (sept/oct) 31(5), 296-306. Clinical review of existing literature to document the evidence behind using KC to rewarm hypothermic full-term newborns during the first 3 days postpartum. Hypothermia is defined as mild: 36.0-36.4; moderate as 32.0-35.9; severe as less than 32.0, normal rectal or axillary temp is between 36.5 and 37.5 according to WHO 1997; AAP and ACOG 1997. In first 20 hours of life 17% of all temps are hypothermic range (Takayama et al., 2000); and 51.8% of 200 term infants studied over first 72 hours post birth had one or more hypothermic episodes and episodes peaked between 15 hr and 2nd day of life postbirth (Li et al., 2004). Christenson et al., 1998, Fransson et al., 2005 and Karlsson 1996 are reviewed. The guidelines are: no symptoms of distress, normal HR and RR, and having mild hypothermia, have mom empty bladder and be willing, medicate mom for pain, room temp should be at least 25C, mom wears hospital gown, no bra, and sits at any angle at which she is comfortable, put hat on infant’s head, allow as much of infant skin as possible in contact, use receiving blanket in fourths, monitor infant temp with axillary probe 15 minutes after start of KC; if temp is same or improved, check at 30 mins and then 1 hour post KC beginning. If infant axillary temp at any time is 36.0 or less or if temp is dropping after 30 minutes of KC or rectal temp less than 30 or infant not normothermic after 1 hour of KC or infant has signs of distress, stop KC. Fathers are an acceptable alternative, and KC may be beneficial for adoptive parents. She has an evidence-based scoring system that is unusual: A1 = at least one randomized controlled trial involving this population; A2 = at least one RCT involving related populations, B = well designed RCT, or empirical data from published research reports, or widely accepted scientific principles; C = expert opinions or consensus among clinicians. Guidelines, Full term, review, hypothermia rewarming, evidence-based practice rating system, paternal KC, temp

Ganatra HA, Stoll BJ, & Zaidi AKM (2010) International perspective on early-onset neonatal sepsis. Clinics in Perinatology 37, 501-523. Review of early onset sepsis and on page 510-511 it says that KC can decrease EONS in full term and preterm infants. Says KC remains to be assessed in community settings, but Conde-Agudelo’s Cochrane review of 2003 shows significant reduction in infection in LBW in hospitals. Says that “increase in body temp and weight gain and reduced stress in conjunction with increased BF might be responsible for the lower rates of infection in neonates receiving KC” (pg. 511) and KC is listed in Box 2 (pg. 509). As a postnatal care intervention to prevent EONS and its associated mortality. Review, infection, mortality, stress, temp, weight gain, PT, FT.

Gangal, P. (Ed.) (2007). Breast Crawl: Initiation of breastfeeding by breast crawl. For Unicef India, UNICEF Maharashtra, 19, Harish Enterprises, Parsee Panchayat Road, Andheri (E), Mumbai, India 400069, unicef.org/India. Email is rmar@unicef.org. Telephone is +91-22-28269727. If you create a quiet, calm, unobtrusive environment, the breast crawl will happen and infants will latch on and suckle on their own. Chapter one has the 10 steps to Successful BF, then a copy of the script for the Breast crawl video, frequently asked questions about breast crawl, scientific overview, India’s vision of this early skin-to-skin experience, and appendices. The Scientific Overview is very well done. And the 10 steps lists step 4 as “help mothers initiate BF within half hour of birth” and does not mention KC as original #4 did. (pg. 10). A birth KC procedure is outlined on page 12 starting “soon after delivery and after the baby has cried and KCBib 2018
started breathing well” (pg. 12) and involves drying baby (BUT NOT THE HANDS), putting baby cheek-to-cheek with mother (for a holy prayer whispered in baby’s ear), and then placed between maternal breasts and baby and mother are covered with a cloth. One step mentions “The baby’s risk of infection is reduced because safe germs (bacteria) from the mother start to colonize her skin and intestines, and prevent harmful germs from growing” (pg. 12). Says baby starts salivating when baby realizes food is near, and odor of substance from nipple that is similar to amniotic fluid smell drives baby to nipple (pg. 12). One step includes putting baby cheek-to-cheek with mother so she can see baby and reports that some mothers start to cry, get extremely emotional, and some even lick their babies (like cows do) (pg. 16) when given cheek-to-cheek experience. Indian doctors learned about breast crawl from Klaus and Fanaroff’s 2005 Care of the High Risk Neonate text which said the breast crawl was originally described in 1987 by Widstrom, Ransjo-Arvidsson, Christensson, Matthiesen, Winberg and Uvnas-Moberg. Page 15-16 identifies several advantages of this NON-Separation approach: keeps baby warm, leads to faster and effective achievement of feeding skills by the baby, baby starts getting colostrum as first feed (colostrum is high in antibodies), baby starts getting colonized by safe germs from the mother (pg. 15), helps uterine contractions, faster expulsion of placenta, reduces maternal blood loss, prevents infant anemia (pg. 16), leads to better sugar levels if first few hours post-birth, earlier passage of meconium and thus decreased intensity of normal newborn jaundice, early and long term breastfeeding success, better maternal-infant bonding, may boost development of baby’s nervous system, permits expression of natural instinctive mammalian process (16). Page 17 states “Frequency of feeding and skin to skin contact is the key to breastfeeding success.” They mention that they have let preterm and Low Birth weight infants crawl to breast if the infant does not have respiratory distress or need transfer to NICU (pg. 17). For cesarean they place baby cheek to check first and then near a breast (pg. 17) and assist with first breastfeeding while in operating room. Most babies complete the crawl within 30-60 minutes postbirth. 

Fullterm, Birth KC, infection, breast crawl, non-separation, breastfeeding, preterm reference too, attachment, 3 rd world, cesarean, microbiome

Gao H, Xu G, Gao H, Dong R, Fu H, Wang D, Zhang H, Zhang H (2015-July). Effect of repeated Kangaroo Mother Care on repeated procedural pain in preterm infants: A randomized controlled trial. Int J Nurs Stud. 2015 Jul;52(7):1157-65. doi: 10.1016/j.ijnurstu.2015.04.006. Preterm infants’ repeated exposure to painful procedures may lead to negative consequences. Thus, non-pharmacological pain management is essential due to medication side effects. Kangaroo Mother Care, which aims at offering human care to neonates, has been established for the treatment of a single painful procedure, but the effectiveness of Kangaroo Mother Care across repeated painful procedures is unknown. Purpose was to test the effectiveness of repeated Kangaroo Mother Care on repeated heel-stick pain in preterm neonates. A randomized controlled trial was conducted. The setting was a Level III Neonatal Intensive Care Unit at a large teaching hospital in northeast China. Preterm infants (gestational age less than 37 weeks) (n=80) were recruited and randomly assigned using a random table format to either an incubator group (n=40) or Kangaroo Mother Care group (n=40). Pain assessments were carried out during four routine heel stick procedures. For the first heel stick, preterm infants in each group received no intervention (routinely stayed in incubator). During the next three heel sticks, the infants in Kangaroo Mother Care group received heel sticks during Kangaroo Mother Care, while infants in the incubator group received heel sticks in incubator. The procedure of each heel stick included 3 phases: baseline, blood collection and recovery. Crying, grimacing and rate in response to pain were evaluated at each phase across four heel sticks by three trained independent observers who were blinded to the purpose of the study. Data were analyzed by analysis of variance (ANOVA), with repeated measures at different evaluation phases of heel stick. 75 preterm infants completed the protocol. Between-group comparison revealed that preterm infants’ heart rate was significantly lower, and the duration of crying and facial grimacing were both significantly shorter in the Kangaroo Mother Care group (n=38) than the incubator group (n=37). No significant within-group difference was found in heart rate between the baseline phase and recovery phase through repeated heel sticks for Kangaroo Mother Care group. In contrast, the incubator group experienced significant within group differences in heart rate between baseline and recovery through repeated heel sticks. The effect of repeated Kangaroo Mother Care analgesia remains stable in preterm infants over repeated painful procedures. Given the many invasive procedures that are part of clinical care in preterm infants and most mothers preferred to provide comfort for their infants during painful procedures, Kangaroo Mother Care may be a safe analgesic alternative in preterm infants in whom it is feasible. PT, RCT, Repeated pain, cry, HR, facial grimace (agitation), maternal comforting.


Preterm, maternal stress, late KC, Family friendly. Not on charts 12/10/2011

KCBib 2018
Gardner MR & Deatrick JA. (2006). Understanding interventions and outcomes in mothers of infants. Issues in Comprehensive Pediatric Nursing 29 (1): 25-44. Review of literature of interventions designed to improve effective mothering outcomes. On page 27 the chart of intervention strategies to promote mothering processes lists Feldman et al., 2002, 2003 and Tessier et al., 1998 as the KC references reviewed on maternal-infant contact. On page 34 is a one paragraph review of the findings of the three studies identified above. The authors conclude that home visiting, KC, education, counseling, and group intervention all promote effective mothering during the first years of an infant’s life. Nurses should use these interventions to promote effective mothering during the first year of life. Integrative Review, maternal behaviors (Grading criteria for the review were Level I=systematic review or meta-analysis of randomized trials, Level II = randomized controlled trials, Level III=Quasi experimental method, Level IV = Case-control/cohort study, Level V= Systematic review of descriptive or qualitative studies, Level VI = Descriptive or qualitative study or case study, Weakest = Level VII = Expert opinion/report, FT, PT

Gardner, S. (1979). The mother as incubator – After delivery. Journal Obstetric, Gynecologic and Neonatal Nursing, May/June 1979, 174-176. Infants delivered and dried, and given routine care, eye instillation, ID bands, and weighing and footprinting - then 10 given to mom for KC and covered with warm blanket. 9 were wrapped in one cotton and one plastic blanket, held briefly by parent and put under radiant warmer. Rectal temps taken 2 and 15 minutes after birth. KC infants had less drop in temp (1.1degree C) from 2-15 minutes than control (1.5 degrees C). FULLTERM, Birth KC/VEKC, rectal temp, swaddled care

Garzon, A.S., & Shonkoff, J.P., Committee on Psychosocial Aspects of Child and Family Health, Committee on Early Childhood, Adoption, and Dependent Care; Section on Developmental and Behavioral Pediatrics. (2012). Early childhood adversity, toxic stress, and the role of the pediatrician: translating developmental science into lifelong health. Pediatrics 129(1):e224-e231. Advances in a wide range of biological, behavioral, and social sciences are expanding our understanding of how early environmental influences (the ecology) and genetic predispositions (the biologic program) affect learning capacities, adaptive behaviors, lifelong physical and mental health, and adult productivity. A supporting technical report from the American Academy of Pediatrics (AAP) presents an integrated ecobiodevelopmental framework to assist in translating these dramatic advances in developmental science into improved health across the life span. Pediatricians are now armed with new information about the adverse effects of toxic stress on brain development, as well as a deeper understanding of the early life origins of many adult diseases. As trusted authorities in child health and development, pediatric providers must now complement the early identification of developmental concerns with a greater focus on those interventions and community investments that reduce external threats to healthy brain growth. To this end, AAP endorses a developmental approach to care—one that mobilizes the scientific expertise of both pediatric and clinical researchers, the family-centered care of the pediatric medical home, and the public influence of AAP and its state chapters to catalyze fundamental change in early childhood policy and services. AAP is committed to leveraging science to inform the development of innovative strategies to reduce the precipitants of toxic stress in young children and to mitigate their negative effects on the course of development and health across the life span. See also Shonkoff & Garner, 2012 Not on Charts 11/6/2012


Gartner LM, Morton J, Lawrence RA, Naylor AJ, O’Hare D, Schanler RJ, et al., (2005). Breastfeeding and the use of human milk. Pediatrics 115(2), 496-506. THIS IS THE SAME AS AAP above, and I am not sure which is the correct citation as I have seen the same manuscript reported both ways. So look at AAP 2005 for the annotation. Guideline, policy, fullterm, preterm, breastfeeding. This is also the same as Gartner & Eidelman, 2005


Guthwala G, Singh B, & Balhara B. (2008). KMC facilitates mother baby attachment in low birth weight infants. Indian J. Pediatrics, 75(1), 43-48. Randomized trial of 110(103 finished) infants KMCs=50 (gestational age of 35 weeks in both groups) who got at least 6 hours/day starting at 1.72 days of age until discharge (wearing head cap and diaper only) and at home or infants who got incubator care or open cot care(n=50). All KMC was for at least one hour at a time. First month KMC duration was 10.21 hrs, in second month 10.03 hours, and in 3rd month 8.97 hours. Length of stay sig shorter for KMCers (3.56 vs.6.80 days) At 3 month follow up, mother were interviewed and attachment score (authors own 5 questions) was significantly higher in KMCers (24.46 vs. 18.22). In KMC group mother was more often primary caregiver, were more involved in care of baby, spent more time beyond usual caretaking with baby, went out without baby less often, and derived greater pleasure from baby than controls. Did not report how measured home KC, may have been by

KCBib 2018
recall at interview. KMC facilitates mother baby attachment. PT, RCT, home kc, length of stay, attachment, maternal feelings, 1 hour sessions of KMC, length of KC at home 3 months of KC LATE PRETERM.

Gathwala, G., Singh, B., & Singh, J. (2010). Effect of Kangaroo Mother Care on physical growth, breastfeeding, and its acceptability. Tropical Doctor, 40, 199-202. A RCT of 110 (KMC group got kc for at least 6 hrs/day, including after they moved from NICU and went home; control group got incubator care). Weight, length and occipitofrontal circumference were measured weekly X 3 months. Acceptability of KC by mothers and staff was measured on Day 7 of KMC by Likert scale questionnaire. Breastfeeding rates were measured at end of 3 months. Mean GA was 35.48 ±1.20 wks in KC group and 35.04±1.09 wks in control. KMC was initiated at mean age of 1.72±0.45 days and the duration of KC was 9.74±1.48 hr/day. Mean birth weight was 1.69 kg in the KMC group compared to 1.60±0.12 kg in controls. Mean length gain in cm/wk was 1.03±0.5 in KMC group compared to 0.74±0.05 in controls. Mean occipitofrontal circumference change was -0.94±0.04 KC vs. 0.47±0.03 controls (p<.0), and at 3 months 88% of KC were EXCLUSIVELY breastfeeding and 72% of controls were (p<.05). Maternal acceptance was good. KC improves physical growth, breastfeeding rates, and was well accepted by mothers and nurses. PT, Late PT, RCT, 3rd world. Duration, Home KC for 3 months, BF, weight, length, occipitofrontal circumference, maternal acceptance, staff acceptance Not on Charts as of 11/2010.

Gatti H., Castel, C. Andrini, P. et al., (2004). Cardiorespiratory arrest in full term newborn infants: six case reports. Archives of Pediatrics, 11: 432-435. 6 Term infants born to primip moms were placed prone skin-to-skin against their mothers’ chests. All were found in cardiorespiratory arrest within 2 hours of birth. 5/6 subsequently died. This article is in related literature on the Life Threatening Chart. It is not here because it is not a KC study. ?? I need to get this article myself and determine if it is or is not a KC study. PT, birth KC, life threatening event. Not on charts 9.1.2013

Gavhane S, Eklare D, Mohammad H. (2016, Dec) Long Term Outcomes of Kangaroo Mother Care in Very Low Birth Weight Infants. J Clin Diagn Res. 10(12):SC13-SC15. doi: 10.7860/JCDR/2016/23855.9006. Kangaroo Mother Care (KMC) has been gaining acceptance as an effective alternative to incubator based Conventional Medical Care (CMC) in preterm or Low Birth Weight (LBW) infants especially in resource scarce developing counties. To report and analyse the long-term effects of KMC for relatively stable Very Low Birth Weight (VLBW) infants on nutritional indicators and feeding conditions at 6-12 months of corrected age. This randomized controlled trial was done at a Level III Neonatal Intensive Care Unit (NICU) of a teaching institution in southern India. One hundred and forty neonates with birth weight <1500gm were enrolled. Inborn singleton, VLBW (birth weight <1500gm) infants, tolerating spoon feeds of 150mL/kg/day and haemodynamically stable (not on oxygen or respiratory support, no apnea for 72 hours, not on any intravenous fluids) were eligible. Infants with major malformation were excluded. Babies were randomized to KMC group or CMC group. At 6 to 12 months corrected age, the assessment included the measurement of growth parameters in terms of malnutrition, wasting, stunting and having small head. Feeding information was collected in relation to duration of exclusive or partial breastfeeding (months of chronological age and of corrected age), the age (chronological age and corrected age) at which weaning diet was started and the type of weaning diet. Comparisons between study groups for primary outcomes and secondary outcomes were performed with Odds Ratio (OR) calculator using Medcalc online statistical software. A total of 91 infants were followed at 6 months of correct age. There was no difference between two groups in the incidence of malnutrition, wasting, stunting and having small head (47.7% vs 31.9%, p<0.13), (34.1% vs 31.9%, p=0.83), (22.7% vs 12.8%, p=0.22) and (18.2% vs 31.9%, p=0.14). Although KMC group babies had better head growth and lesser weight and length compared to the CMC group, it was not statistically significant. The breast feeding and weaning rates at 6 months post birth were similar in both the groups. KMC group does not differ significantly with CMC group in terms of long term growth and feeding pattern at 6 to 12 months of corrected age. Not on chart 23-10-2017.


Gazzolo D, Masetti P, & Meli M. (2000). Kangaroo care improves post-extubation cardiorespiratory parameters in infants after open heart surgery. Acta Paediatrica, 89(6), 728-729. doi: 5 male infants (X age=5 months) who had repeatedly failed extubation attempts earlier after cardiac surgery were observed every two minutes throughout three two-hour KC periods (each with a preKC measurement 2 hrs before KC). All 3 KC sessions occurred within first 12 hours of extubation (KC was diaper only, covered with blanket) in Modena, Italy. SaO2 and tcpO2 sig. increased and TcPCO2, HR, and CVP sig. decreased during the 3 different KC periods. “Despite restricted study pop, findings suggest prolonged periods of KC during postop care might have impact on quality, therapy, and length of stay of postop pedi pts, with possible influences on management and costs” p. 729. Descriptive. HR, RR, SaO2, TcPO2, TcPCO2, CVP, pH, Na, Ca, K, BP, Fullterm, length of stay, costs, congenital heart disease

KCBib 2018
Most of the newborn deaths in developing countries occur at home. Up to two-thirds of these deaths would have been prevented if mothers and newborns had received known and effective interventions. The objective of this study is to determine newborn-care practices and health-seeking behavior in rural Eastern Ethiopia.

A community-based cross-sectional study was conducted in Adadle district, Ethiopian Somali Regional State. A multi-stage random sampling technique was applied. Women of reproductive age group (15-49 years) living in Adadle District were eligible to participate in the study. Data were entered, cleaned and analyzed using Statistical Package for Social Sciences version 19 for windows.

A total of 829 women between the ages of 15 and 49 years were involved in the study. Of which, 698 women had a live birth, 23% reported that their babies were placed in skin-to-skin contact with their mothers’ belly/chest before the placenta was delivered, 79% of newborns were bathed within 24 h of delivery. From this figure, 71% of the babies were bathed within the first 12 h after delivery and 44% reported their baby was ill during the first week of life. The study had shown suboptimal newborn care practice in the study area, which put the newborns into significant health risk.

Strong public education and capacity building to frontline health workers can be recommended. PT, FT, evaluative study, 3rd World, essential care, birth KC. Community implementation. Not on chart 5/1/2017.


George, S., Phillips, K., Mallory, S., Holmqvistova, I., Hare, R., Allen, S., Higgins, M., Shapiro, S.E. (2015-Mar/Apr). A pragmatic descriptive study of rewarming the newborn after the first bath. J Obstetric, Gynecologic and Neonatal Nursing, 44(2), 203-209. Doi: 10.1111/1552-6909.12556. This was a descriptive study to evaluate two methods of rewarming newborns after the first bath: radiant rewarming and skin-to-skin maternal newborn contact. The appropriate age for giving the first bath is unknown (Garcia BN et al., 2009). Influence of bathing or washing on skin barrier function in newborns during the first four weeks of life. Skin Pharmacology and Physiology, 22, 248-257. In utero, fetus makes heat and temperature of amniotic fluid maintains fetal thermoregulation. But with bathing, there is increased risk of cold stress and cold stress leads to increased oxygen and glucose demands that lead to hypoglycemia, hypoxemia, and death (pg. 203). Cold stress also leads to decreased production of SURFACTANT which increases the work of the lungs even more (cites Verklan and Walden, 2004 chapter on thermoregulation in Verklan MT and Walden M Core Curriculum for Neonatal Intensive Care Nursing 3rd edition). Thus, newborns lose heat 4 times faster than adults (Hackman, PS, 2001). Recognizing and understanding the cold stressed term infant. Neonatal Network, 20(8), 35–41. Newborns do have compensatory mechanisms, flexed position, basal metabolism increases but is limited (cites Knobel R & Holditch Davis, D. 2007). A nonrandomized clinical trial in which mothers chose the rewarming method, with 200 participants in the skin-to-skin rewarming group (experimental condition), and 200 in the radiant rewarming group (control) at Emory Health Care in Atlanta, GA with their healthy, term infants after vaginal delivery. But 96 of the first 100 mothers wanted to do KC rewarming, so the study was stopped at 100 infants with 96 in KC group and 4 in control (radiant warmer) group, making comparisons difficult because 4 subjects in control group is not enough to insure normal distribution nor run inferential (determining differences) statistics. 66% of mothers were Black All infants had bath in mother’s room, with water warm to the touch and cleaned by washcloth and then dried and placed under radiant warmer or on mom’s chest under a warmed blanket. Newborn temperatures were taken immediately prior to the bath (T1) which occurred in patient’s room, NOT UNDER A RADIANT WARMER and at 4-12 hours postbirth, and 30 minutes (T2) and 60 minutes (T3) after the bath. Highest temp was before the bath (M=36.9, SD = 0.3), and then temps dropped to nadir at 30 minutes after bath (M=36.4, SD = 0.3) and recovered at 60 mins after bath (M=36.7, SD=0.4) but 60 mins after bath infant mean temps were statistically significantly lower that before the bath (p<0.001). Ambient room temp at 30 mins after bath was 24.6 Descriptive statistics and t tests were used to determine differences between groups and between time points. Logistic regression was employed to assess risk factors for newborns with axillary temperatures less than 36.4°C 30 minutes after the bath. Because 96 of the first 100 mothers chose skin-to-skin rewarming, they concluded the study early and analyzed the data of 100 mothers. Of the 96 mothers who chose skin-to-skin, 91 infants were successfully rewarmed and five required rescue rewarming (axillary temp <36.0 at 30 minutes or < 36.4 at 60 minutes after bath) under the radiant warmer. Each case was carefully reviewed to determine cause of failure to rewarmed: the causes were the newborn was not in optimal skin to skin contact (his positioning had been compromised) or the warm blanket cover’s position was compromised (pg. 207) because 3 mothers fell asleep and others did not follow the protocol. In one fully rewarmed KC baby, when
mother got sleepy father continued to do the KC for rewarming. For the 4 infants who needed to go to radiant warmer at 30 minutes post-bath, 2 had recovered to 37.0 by 60 mins post-bath and no negative outcomes for any infants were found (pg. 207). Birthweight was significant predictor of 30 min post-bath temperature. At 30 mins post-bath, the 48 infants with axillary temmp <36.4 had mean weight of 3109 gms and the 52 who had temps above 36.4 had mean weight of 3307 gms. Infants with birthweight x < 3150 had a greater than 50% chance of having a 30 min post-bath temp <36.4 (pg. 207). Careful review of newborns requiring rescuing showed inadequate skin-to-skin contact or removal of the protective covering. In this sample, African American mothers were significantly younger, had smaller newborns, and their newborns had lower temperatures than non-African American newborns. Given a choice, mothers overwhelmingly preferred skin-to-skin rewarming (pg. 205). “The findings demonstrate that skin to skin rewarming is a safe alternative, with certain stipulations. First, newborns must be in proper contact with the mother (or father) to ensure maximum skin-to-skin surface area, and they must be properly covered once optimal skin to skin contact is assured. Second, nurses must check at 15-minute intervals to ensure proper position is maintained. Finally, nurses must check the newborn’s temp at 30 minutes and 60 minutes after the bath to ensure adequate rewarming is occurring.” Pg. 208. “21 of the 96 newborns in KC breastfed during the study period. This was unanticipated but a very positive advantage of skin to skin rewarming. Recent studies have indicated that breastfeeding increases the temp of the breast from which the newborn is suckling, which, in turns, helps maintain the newborn’s body temperature (Kimura C & Matsuoka M, 2007).” Human Lactation 23(1), 60-62.) (pg. 208). Newborns can safely rewarm skin-to-skin if staff pay special attention to how they are positioning the newborn in close skin to skin contact at all times over the whole front of the body and with a warm blanket for insulation across the back) and recheck mother and newborn frequently, i.e. every 15 minutes. The unexpected finding of racial differences in maternal and newborn characteristics will require further investigation. Article says nothing about activity, but Table 1 on page 207 reports that 21/96 (21%) skin to skin babies were actively breastfeeding (75/96 were not BF) from 30-60 mins post-bath while the 4 under the radiant warmer were not active. This study has a few weaknesses in that the review of literature did not review any previous studies of how effective radiant warmers are nor studies of effectiveness of KC to rewarmed infants, and though they took a baby’s temp immediately before the bath, they did not take it immediately after the bath, just 30 minutes later, so you really don’t know how efficiently KC rewarmed. Also, infants were not bather under a radiant warmer and giving the bath between 4 and 12 hours postbirth is poor control because temperature physiology differs in the first six hours postbirth from that occurring 6-12 hours post-birth. And one father did the SSC, but the data for this father was not segregated and was included in the aggregate data findings. FT, descriptive comparison, bath, rewarming, temperature, paternal KC, breastfeeding, activity. Maternal feelings.


Gentilucci, M., & Dalla Volta, R. (2008). Spoken language and arm gestures are controlled by the same motor systems. Quarterly Journal of Experimental Psychology (Hove), 61(6), 944-957. This is a review article of the mechanisms of speech and arm movements and discusses how maternal touch of the infant and skin-to-skin contact helps accelerate development of motor areas. Review, physiology, Speech motor development, full term. Not on Charts 3/26/2012.

Geva, R. & Feldman, R. (2008). A neurobiological model for the effects of early brainstem functioning on the development of behavior and emotion regulation in infants: implications for prenatal and perinatal risk. J Child Psychology and Psychiatry, 49(10), 1031-1041. Vertical Integration Theory (pg. 1033, simply put that functioning of brainstem predicts later development in the limbic and cortical cores of development (there are three brain levels: brainstem, limbic, and cortical) and review that states that the infant brainstem needs maternal skin contact in post-birth period for its own development and infant physiological regulation (pg. 1037). They propose 3 integrated levels of observations for the study of early risk:(a) brainstem-related physiological regulation of cyclic processes and sensory integration e.g. vagal regulation, circadian rhythms; (b) emotion and attention regulation capacities that draw on the integration of brainstem and limbic systems; and (c) higher-level outcomes that draw on intactness of brainstem and limbic networks, including socio-emotional self-regulation, inhibitory control, and cognitive processing. They underscore the importance of assessing sub-cortical and brainstem systems and the longitudinal effects of transient brainstem dysfunction on physiologic homeostasis, motivation, arousal-modulated attention, stress reactivity, and mother-infant co-regulation. Has content on cholecystokinin, too. Theory, Review, stress, physiologic stability, development, limbic brain. Not on Charts as of 9/10/09. FT, PT

Gewirtz JL, Hollenbeck AR, Sebris SL, & Manniello RL. (1989). Maternal-infant behavior at 2 days and at 28 days postpartum following maternal-infant contact in the recovery room. Presentation at the Annual Meeting of the American Psychological Society, June 10-12, 1989 in Arlington, VA. Retrieved through ERIC. NEED URL. 62 white, married, middle class mother/infant (full term, APGARS of 9 or more at 5 minutes; 52/62 had epidurals,) dyads were assigned to one of two groups: KC (naked ventral-ventral with
blanket covering both) in the recovery room or holding swaddled infant in her arms in recovery room. While middle class mothers were chosen to add to the literature of Klaus et al. 1972 who sampled low income Black mothers in Cleveland. Each group received either 15 (KC = 16; swaddled = 17) or 60 minutes (KC = 15; swaddled = 14) of the treatment starting in the recovery room within one hour of birth (at least 20 minutes after birth) and then were observed at 2 and 28 days postpartum. 11 maternal (smiling, looking, talking, rocking, touching with palms, etc) and 11 infant behaviors (grimace, smile, resist, en face, eyes open, non-vocal sound, vocalizing, fuss/cry, mouthing, motor acts, feed) were observed every 10 seconds during and between feedings (one hour before scheduled feed) and scored. At 2 and 28 days postpartum the Brazelton Maternal behaviors were relatively stable from 2–28 days; infant behaviors were less stable but indicated developmental changes: more eyes open, more en-face, less fuss/crying at 28 days compared to 2 days. Longer contact (60 mins vs. 15 mins) overpowered the mode of contact (higher frequencies of maternal behavior in 60 min than 15 min group; and the same for 7 infant behaviors). There was no difference between KC and swaddled groups; only longer time made a difference. A unique bonding experience occurs in the recovery room and the expression of maternal and infant behaviors is more dependent upon the state of the infant (whether feeding or between feeds) than whether KC or swaddled holding occurred. Behaviors must be examined only in the CONTEXT of FEEDING/NOT FEEDING. 

Fullterm, quasieperimental, maternal behaviors, swaddling, self regulation, state NOT ON CHARTS YET.

Greydanus DE, Merrick J. (2014-July). Newborn care: what we can learn from the kangaroo mother. Front Public Health. 2:96. doi: 10.3389/fpubh.2014.00096. This is a commentary with so many strange words that it will take hours to find them for their explanations. But this two page paper reveals the origin of the word “kangaroo” (It is Australian) and relates that the joey crawls over his mothers fur in 3 minutes, enters the pouch with four teats, each offering a different composition of breast milk, grows there for 198 days and then leaves pouch for short period until 235 days (weight is 4.5 kg) he leaves the pouch more, but nipples for another 4 months until one year old and continues to pause suckle for some time thereafter. The kangaroo figured out how to best bond and feed her baby millions of years ago, but it has taken homo sapiens much longer to learn. There are three elements of KC 1) continuous skin-to-skin contact to maintain baby’s core temperature, 2) encouragement of breastfeeding, and 3) colonization of the baby with the other’s commensal microorganisms to protect the immunologically immature baby from nosocomial infection (cites Lawn et al. 2010 in Int. J. Epidemiology). KC is considered an adiaphorous method by some because it has failed to find reduction in mortality and other benefits found in kangaroos (cites Conde-Agudelo et al., 2003) but says other studies enumerated by his wife have found benefits (see Rutgers, 2015). All scientists point out importance of touch for normal health because touch allows as well as promotes normal development in animals and humans. “Thus one can a priori speculate that the kangaroo skin to skin method will provide important touching sensation between mother and baby that is critical for vital cellular and molecular mechanisms leading to improved medial and psychological health in the vulnerable newborn. Such touching is also beneficial for the mother to relieve her anxiety, act as a nepenthe, and increase bonding with her beloved, yet precarious, premature, abecedarian, and premature catechumen.” Pg. 2. Touch remains essential to normal human health. PT, Commentary, review, BF, temp, infection, microbiome, bonding


Ghavane, S., Murki, S., Subramanian, S., Gaddam, P., Kandruja, H., & Thumallal, S. (2012). Kangaroo Mother Care in Kangaroo ward for improving the growth and breastfeeding outcomes when reaching term gestational age in very low birth weight infants. Acta Paediatrtrica, 101(12):e545-549. Doi: 10.1111/apa.12023. Randomized controlled trial of 140 VLBW (~<1500 gm birthweight) PT infants getting 24/7 KMC in KMC ward vs conventional care on term age BF and average weight gain (g/kg/day) from the time of randomization to term gestational age. Results: Mean birth weight, age in days and weight at randomization were similar in both the groups. At term gestational age, average weight gain (g/kg/day) post randomization (23.3±8.7 g vs. 22.6±4.9 g, p=0.67) and breastfeeding rate (85.9% vs. 87.0%) were comparable. No difference in weight gain (g/kg/day) from randomization to hospital discharge between groups (18.0±2 g KC vs. 15.6±4 g controls, p=0.12). Mortality, morbidities like sepsis, hypothermia, apnoea, hypoglycaemia and duration of hospitalization were equally distributed between groups. On average, 11.5 days of intermediate care were saved in the kangaroo group. KMC in the Kangaroo ward is as effective as conventional care in the neonatal unit without any increase in morbidity or mortality in stable VLBW infants. PT, RCT, 3rd world 24/7 KMC, apnea, BF, blood glucose/hypoglycemia, hypothermia, infection, length of stay, micropreemie, morbidity, mortality, weight

Gianni ML, Bezae E, Sannino P, Stori E, Plevani L. Roggero P, Agosti M, Mosca F. (2016-Nov). Facilitators and barriers of breastfeeding late preterm infants according to mothers’ experiences. BMC Pediatr. 16(1):179. Late preterm infants account for the majority of preterm births. They are at an increased risk of neonatal mortality and morbidity and are less likely to initiate breastfeeding and to be exclusively breastfed at discharge compared to infants born at term. The aim of this study was to identify the facilitators and barriers to breastfeeding during hospital stays according to the experiences of mothers of late preterm infants. We conducted a cross-sectional questionnaire survey, Mothers who intended to breastfeed and had given birth to a newborn admitted to level I and II care, with a gestational age of 34 0/7 to 36 6/7 weeks, were enrolled. Sociodemographic data, neonatal variables, mode of feeding and feeding status at discharge were also collected. A total of 92 mothers who had given birth to 121 infants were enrolled. At discharge, KC Bib 2018
any human milk was fed to 94 % of infants, with exclusively human milk being fed in 43 % of cases; exclusively formula was fed to 6 % of infants. In the multivariate analysis, having expressed breast milk was independently associated with an increased risk of being fed with either any human milk or formula only (OR = 2.73, 95 % CI 1.05-7.1, p = 0.039), whereas being encouraged to practice kangaroo mother care tended to have a protective effect (OR = 0.46, 95 % CI 0.2-1.06, p = 0.07). Based on the present findings, health care professionals should strive to fully implement breastfeeding support for mothers of late preterm infants who intend to breastfeed, in particular optimizing breast milk expression and promoting kangaroo mother care. Further studies are needed to gain further insight into the complex interplay of the factors that modulate breastfeeding outcome in late preterm infants. PT, descriptive, BF, parental involvement. New to biblio study

Gianni, M., Sanino, P., Bezzze, E., & Mosca, F. (2016-August). Does parental involvement affect the development of feeding skills in preterm infants? A prospective study. Early Human Development 103: 123-128. Doi 10.1016/j.eahumdev.2016.08.006 Feeding difficulties frequently occur in preterm infants, contributing to delayed growth and hospital discharge. Purpose was to evaluate the effect of Kangaroo mother care implementation and parental involvement in infants’ feeding on the timing of achievement of full oral feeding in preterm infants, a prospective, observational, single-center study was conducted. 81 infants born at a gestational age < 32 weeks, consecutively admitted to a tertiary NICU from June 2014-May 2015 were recruited. Full oral feedings occurred at a mean postmenstrual age of 35.5 +/- 2.1 weeks. Low birth weight, BDP, and GI surgery were associated with higher postmenstrual age when full oral feedings were achieved. The earlier parents fed the infant and the earlier parents started KMC, the lower the postmenstrual age at achievement of full oral feedings PT, descriptive, correlational study, oral feedings, parental involvement. New to biblio study 9/14/2016

Gibbins S., Hoath SB, Coughlin M, Gibbins A., & Franck L. (2008). The universe of developmental care. A new conceptual model for application in the neonatal care unit. Adv Neonatal Care 8(3), 141-147. This is a theoretical article proposing a new conceptual model for developmental care. The infant’s skin is the “shared surface” with his/her environment and as a result of the skin being a shared surface, changes occur in each of the “care planets” (or dimensions of care, arenas of care) which are monitoring/assessment, feeding, positioning, infection control, safety, comfort, thermoregulation, skin care, respiratory care, family, staff, and environment. KC is listed as a component of the “comfort care planet” because of its pain reduction outcomes, but not in thermoregulation, infection control, or feeding areas, which is where it also belongs. Theory, preterm, developmental care, pain

Girish M., Mujawar N, Gottmare P, Paul N, Pania S, Pandey P. (2012 April). Impact and feasibility of breast crawl in a tertiary care hospital. Journal of Perinatology. 33(4):288-91. doi: 10.1038/jp.2012.109. To determine the impact of breast crawl on breast feeding and its feasibility and acceptability in a busy labor room. A prospective, single blinded, randomized controlled clinical trial. Impact of breast crawl was studied in one group and the outcome was compared with the other group where breast crawl was not performed. Feasibility and acceptability was determined by analysis of questionnaire given to obstetricians and nurses. Descriptive statistics and g(2)-analysis was applied to evaluate the questionnaire and to compare the outcome in the two groups. Breast crawl had a significant positive impact on the onset of lactation (P=0.0005) as well as extent of neonatal weight loss on day 3 (0.032). Our study adds to the body of evidence that breast crawl results in positive short-term breast feeding outcome but acceptability of breast crawl as a routine in a busy labor room remains a major issue. RCT, FT, BirthKC, BF initiation, weight loss, APGAR SSTUDY Not on Charts 7/30/2013 GET THIS ASAP

Gitiu R, Modi N, Gianakoulopoulos X, Bond C, Glover V., & Stevenson J. (2002). Acute effects of maternal skin-to-skin contact and massage on saliva cortisol in preterm babies. J Reprod Infant Psychol 20(2), 83-88. No doi. An RCT showing that a single session of 20 minutes of KC reduced salivary cortisol acutely. The other groups were massage and control condition. Authors suggest that repeated KC session may produce sustained reduction in salivary cortisol. PT, CT, BirthKC, BF initiation, weight loss, APGAR SSTUDY Not on charts. This is not on pub med, pub med stops with 2005 pubs for Gitiu R and it is not under Modi, N (N for Neena)

Gizzio, S., Di Gangi, S., Saccardi, C., Patrelli, T.S., Paccagnella, G., Sansone, L., Barbura, F., D’Antona, D. & Nardelli, G.B. (2011). Epidural analgesia during labor: Impact on delivery outcome, neonatal well-being, and early breastfeeding. Breastfeeding Medicine, 7(4), 262-268. All newborns received skin-to-skin contact right after birth in this two group (64 primips who got epidural in labor; 64 primips who got no analgesia) study. All had NSVD. No significant differences between groups in maternal age, GA, type of delivery, neonatal birthweight and length, APGARS, type of crying, neonatal reactivity, and time between birth and exposure to breast, and length of active labor. Length of labor for epidural group 363.58 mins and in no analgesia group it was 292.30 mins (p=0.001). Length of ACTIVE labor showed no difference. Number of women having a short Length of first breastfeeding was also significantly different (< 30 mins in 62.2% of epidural group and <30 minute in 29.3% of no analgesia group; p=0.001). Conclusion was that Epidural has little effect on trend of labor and duration of first breastfeed and none on neonatal outcomes. Dr. Morrison suggests a shorter first breastfeeding may not be a positive outcome, nor might be a longer breastfeeding. Until we know how the length of breastfeeding was measured (i.e. were bouts of non-nutritive sucking at the breast included or excluded?) we will not be able to answer this. Also, Dr. Morrison says the epidural babies may have been a bit sleepier, thus falling asleep sooner and resulting in more breastfeeding of short duration than in the non-epidural group –

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short feeding may have nothing to do with BF but may be related to epidural. Also, Dr. Morrison says that oxytocin is released early in a feeding and only when the oxytocin begins to drop off is prolactin released, indicating that a short feeding may NOT be beneficial because prolactin is needed for new milk production. Prolecting receptors are laid down when progesterone is down and when oxytocin drops, so stopping the feed early may not allow sufficient drops to produce prolecting receptors. We will watch for these data when the full manuscript is available). FT, BF, epidural, crying, reactivity, time from birth to first exposure to breast, KC is routine care. Not on charts

Glasser S, Lerner-Geva L, Levitski O, & Reichman B. (2009). Parent support activities in neonatal intensive care units: a national survey in Israel. Herzfeld 14(4): 238-242, 276-277. Descriptive study of social workers responses to questionnaire about services, programs, and facilities in 23 Israeli NICUS to support parents during and after hospitalization of preterm infants because parents experience stress. 20 units employ the KMC: three units used AI’s Developmental Care. Most strategies (many are listed) are practiced in few units so national guidelines need to be developed with would integrate families, staff and economic constraints. PT, Descriptive, policies/guidelines needed, Maternal stress, KMC, Not on CHARTS As of 8/12/09.


Gloppestad, K. (1995). Initial separation time between fathers and their premature infants: A comparison between two periods of time. Vard I Norden, 15(2): 10-17. When KC was introduced, waiting time was significantly reduced by 66.8%. FATHERS, visiting times, separation, PT

Gloppestad, K. (1996). Parents’ Skin-to-Skin Holding of small premature infants: Differences between fathers and mothers. Vard Nord Utevek Forsk, 16(1): 22-27. The time from birth til fathers held their preemie in KC was significantly later compared to mothers- about 120% difference of the median in time. FATHERS, PT, separation

Gloppestad, K. (1998). Experiences of maternal love and paternal love when preterm infants were held skin-to-skin and wrapped in blankets: Differences between the two types of holding. Vard I Norden, 18(1): 23-30. 103 mothers and 82 fathers held infants in both KC and swaddled and rated their love significantly higher when holding KC than when holding wrapped infants. No differences between fathers and mothers love ratings during KC. KMC and FATHERS. Attachment, PT


Gnilger, M., Raiser, E., Karall, D., Reiter, G., Kiechl-Schlechtriem, U. (2013). Early sudden unexpected death in infancy (ESUDI) three case reports and review of the literature. Acta Paediatrica 102(5), 235-238. Doi: 10.1111/apa.12165 Descriptive report and Review – three cases of sudden infant collapse:the first the second, the third then they provide a review of literature giving RISK factors and establishing PREVENTION STRATEGIES. They say they are the first to provide a review of the literature (sml: but they are missing several sudden infant collapse reports that SML has on her ALTE chart). Conclusions: Close observation during the first two hour of life is essential and can be life-saving especially during skin-to-skin contact.


Kangaroo Care (KC) cannot provide analgesia for moderate or severe pain in neonate. KC needs to be considered in a graduated multidisciplinary algorithm for neonatal pain management: identify stress and pain triggers (noise, crowded environment, frequent medical handling, frequent painful procedures, lack of soothing touch) and remove or mitigate them. Mildly painful triggers or procedures may benefit from nonpharmacologic intervention. More painful procedures may benefit from combination of nonpharmacologic therapies and pharmacological interventions…” (pg. 321).

Goldsmith, J.P. (2013). Hospitals should balance skin-to-skin contact with safe sleep practices. American Academy of Pediatrics News. Nov. 2013 pg. 22. Available from www.aapnews.org. This is a report of the Committee on Medical Liability and Risk Management. The advantages of early skin to skin contact are important, but health professionals should be aware of the potential dangers. Mothers often are fatigued or may be sedated.


Gomez - Papi, A., Baiges Nogues, M.T., Batiste Fernandez, M.T., Marca Gutierrez, M.M., Nieto Jurado, A., & Closa Monasterolo, R. (1998). Metodo canguro en sala de partos en recien nacidos a termino (Spanish). An Esp Pediatr 1998 June;48(6):631-633. English is: Kangaroo method in delivery room for fullterm babies. 533 normal fullterms were given KC as soon as dried and for next two hours (mean was 49+/23 minutes). Temperature of infant was related to duration of KC: 96% had axillary temp >36, 98.5% of infants stayed awake with KC, and KC infants who breastfed during KC stayed longer in KC. If infant had more than 50 min. of KC he had 8 times more probability of breastfeeding spontaneously. Moms tolerated it well though 21% were tired. Almost all infants (98.5%) stayed awake. They “recommend KC in the delivery room as a safe and well tolerated method for mothers and newborn infants which contributes to their well-being. In order to improve breastfeeding and the newborn’s temperature, we recommend that the infant remains more than 50 minutes in Kangaroo Care.” pg. 631. FULLTERM, DELIVERY ROOM, Birth KC. Descriptive study, Axillary temp, Awake state, BF. Maternal fatigue with KC, state. BF better with 50 mins KC. NOT on charts yet.

Gontijo, T.L., Meireles, A.L., Malta, D.C., Proietti, F.A., & Xavier, C.C. (2010). Evaluation of implementation of humanized care to low weight newborns – the Kangaroo Method. Jornal de Pediatria (Rio J), 86(1), 33-39. 176/293 hospitals trained in KMC were evaluated by questionnaire (sent to 293) first and then visits to 29 units. Three dimensions of implementation were addressed: structure, process, and results. First stage of KMC (care in NICU) was implemented in 84.9% of hospital, but only 47.3% implemented all three stages according to Brazilian norm. Stage 1 is identification of early labor, with the infant <2500 grams who goes to NICU and mother must be oriented to KMC’s importance. Stage 2: Infants in stable clinical condition is moved to the KMC nursery, where he or she will be accompanied by the mother and will actually assum the Kangaroo position for as long as it is possible, being stimulated to remain 24 hours/day in that position, functioning as an adaptation period for mother and child to be discharged from hospital. Stage 3 consists of ambulatory attendance until the infant reaches 2500 grams, being moved, afterwards, to attendance in primary healthcare units. This is early discharge with infant in KMC at home. PT, Evaluative survey, implementation. 3 stages of KMC, 3rd world

Gontijo, T.L., Xavier, C.C., Freitas, M.J. (2012). Evaluation of the implementation of Kangaroo Care by health administrators, professionals, and mothers of newborn infants. Cad Saude Publica, 28(5), 935-944. This was a qualitative evaluation study aimed at both shedding light on the challenges and facilitating implementation of Kangaroo Care in Ministry of Health-accredited maternity care facilities in Brazil, from the standpoint of healthcare professionals and administrators and mothers of low birth weight newborns. Semi-structured on-site interviews were conducted at the maternity centers. The study used structural narrative analysis. Key identified points were the method’s importance in neonatal care and institutional support for its sustainability. As for the findings, the theoretical concept of institutional analysis was essential for achieving more in-depth reflection. Despite some resistance, the method is being implemented effectively in maternity care facilities; however, the study shows the need for periodic training and more resource allocation to enable improvement in the service’s infrastructure, thereby resulting in more effective humanization of care.

Preterm, barriers, Qualitative, implementation, 3rd world

- Gonya, J, Nelin, L.D., (2013-Feb). Factors associated with maternal visitation and participation in skin-to-skin care in an all referral level 11c NICU. Acta Paediatrica 102(2), e53-e56. Doi: 10.1111/apa.12064. To identify variables associated with maternal visitation and participation in skin-to-skin care (SSC) with their extremely premature (~27 weeks) neonate. In an all referral level IIc at Nationwide Children’s Hospital in Columbus, OH, 32 extremely premature neonates and their mothers were studied. Standardized instruments were the Parental Stressor Scale: NICU and KC

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the Parent-Staff Communication Rating Scale. Unstandardized Tools included a self-report demographics sheet and a self-report parent SSC log. Parents visited 78% of their infant’s hospitalization time, conducted skin to skin contact on average two times per week over 9 weeks, and skin to skin sessions declined in the final weeks of hospitalization. Using regression analysis, two factors were identified that were significantly associated with the amount of time that mothers visit and participate in SSC: the amount and type of stress that mothers experience and their perceived level of communication with medical staff. Future interventions for increasing SSC should involve education about the NICU environment and neonatal behavior along with methods for enhancing communication between mothers and healthcare providers. PT, Regression analysis study, duration of KC, visitations, and reasons for low level of KC, Little being done, maternal stress, maternal perceptions.

Gonya, J., Ray, W., Wolfgang R.R., & Brock, G. (2017-Mar). Investigating skin-to-skin care patterns with extremely preterm infants in the NICU and their effect on early cognitive and communication performance: a retrospective cohort study. BMJ Open 7(3):e012985. Doi:10.1136/bmjopen-2016-012985. The purpose was to identify parental skin-to-skin (SSC) patterns with extremely preterm infants during NICU hospitalization and investigate how SSC patterns impact infant early cognitive and communication performance Secondary objective was to Explain how medical and SSC factors interact to explain outcomes in infant early cognitive and communication performance. Design Retrospective cohort study. Setting Level-IV all-referral neonatal intensive care unit specializing in the care of extremely preterm infants Participants All extremely preterm infants admitted to the unit during 2010-2011 and who completed 6- and 12-month developmental assessments in the follow-up clinic (n=97). Outcome Measures Bayley Scales of Infant Development, Third Edition (Bayley-III) – Cognitive and Communication Subscales Analysis Logistic regression, t-test, chi-squared test, and Fisher’s exact test followed with network analysis using novel visual analytic software. Results • Mothers participate in the majority of hours of skin-to-skin care with extremely preterm infants. • SSC hours (both total amount and frequency) decline sharply at 30 weeks corrected age, regardless of when extremely preterm infants are admitted. • Extremely preterm infants who had higher birthweights, received antenatal steroids, and did not have IVH were least likely to participate in significant amounts of SSC. • If fathers participated in even small amounts of SSC, infants received more weeks of SSC. • If extremely preterm infants received more total hours of SSC at higher weekly frequency with engagement from both mothers and fathers, they were twice as likely to score >80 on the cognitive and communication scales of the Bayley-III. • Medical and SSC factors played a parallel, non-synergistic role in contributing to early cognitive and communication performance as assessed through the Bayley-III. Conclusion Early and frequent skin-to-skin care with extremely preterm infants is associated with early cognitive and communication performance. Interventions aimed at increasing skin-to-skin care should include supports for fathers and emphasize the longer term developmental benefits of the practice. PT, development, maternal KC, duration of KC, micropreemie NOT on Charts 8-8-2016. New to Biblio study

Gordon, I., Zagoory-Sharon, O., Leckman, J.F., & Feldman, R. (2010). Oxytocin and the Development of Parenting in Humans. Biological Psychiatry. 68,377-382. Doi:10.1016/j.biopsych.2010.02.005. NOT A KC study per se, but mentions KC. This is a descriptive study of 160 cohabitating mothers and fathers and measurements of peripheral oxytocin in both at 2 months and 6 months postbirth and correlated to affectionate behaviors in moms and stimulating parental behaviors, tactile stimulation and object presentation in fathers. Moms and fathers had synchronized levels of oxytocin from 2-6 months (as they do in cortisol, vasopressin, epinephrine, adrenocorticotropic hormone, growth hormones, and prolactin (pg. 380) and peripheral oxytocin correlates well with CENTRAL oxytocin (pg. 380). Positive interactions increase brain oxytocin, and oxytocin can increase to help mediate the effects of stress in the first few months of life (p.380). Central oxytocin is main determinant of maternal behaviors. KC has been shown to increase peripheral oxytocin (Carter CS, 1998. Neuroendocrine perspectives on social attachment and love. Psychoneuroendocrinology 23, 779-818). Descriptive FT, oxytocin, attachment, stress.

Gottesman, N. (2009). Kangaroo Care. In Parents magazine. The manuscript says “Skin-to-skin contact is good for all babies, but its especially helpful for infants born prematurely. That’s why most neonatal intensive care units encourage what’s called “Kangaroo Care,” where a mom places her preemie on her bare chest, holding him tummy-to-tummy, much like a mama kangaroo. “This kind of contact relaxes a preterm infant and can help him grow,” says Susan Ludington, Ph.D., a professor of pediatric nursing at Case Western Reserve University in Cleveland, what has extensively studied kangaroo care. The practice began in South America in the late 1970s as a way to care for preemies in poor areas with limited neonatal care. Studies there showed that it helped reduce infant mortality rates. Kangaroo care subsequently became popular worldwide. “We know that this kind of skin-to-skin contact can encourage sleep and weight gain and can reduce infections and breathing problems in pre-term infants,” Dr. Ludington says.” PT, FT, review, recommendation, mortality, infections, respiratory patterns, weight, relaxation.

Gouchon, S., Gregori, D., Picotto, A., Patrucco, G., Nangeroni, M, & Di Giulio, P. (2010). Skin-to-skin contact after cesarean delivery: An experimental study. Nursing Research, 59(2), 78-84. A RCT (called experimental non-inferiority adaptive trial) of 17 days randomly assigned to 2 hours of SSC beginning when elective cesarean mom was returned to postpartum room (51±10 mins post delivery) vs routine care (17 mins, dressed infant in bassinet or in mom’s bed for the two hours). All infants were bathed and dried and then KC babies were dressed in diaper and head cap, wrapped in warm cloth, held by relative or placed in warmer until mom returned to her postpartum room about an hour (M=51 mins) after infant was delivered. This was EARLY KC, not Birth KC and not Very Early KC. KCBib 2018
When mom came to room, infant was placed in SSC (diapered only, covered by cloth, sheet, or blanket, prone on chest for 2 hours at most). Control group was bathed, dried, dressed, held by family member or placed in warmer until mom returned to room when mom could place baby in her bed, in a crib next to bed, or on the neonatal unit. Temporal artery temperatures taken every 30 minutes, at 30, 60, 90, and 120 minutes of KC. SSC infants were not at risk of hypothermia at all and temps were the same between groups at all times (30 min temp in SSC was 36.1°C±0.4°C), No differences in temp upon arrival from OR, after being bathed, after mom returned to her room, and not at any observation time. SSC infants latched on sooner and more were BF at discharge. Maternal satisfaction with KC was high. FT, RCT, C/S, Early KC at Birth, Temp, BF, Latch, Maternal Satisfaction. 

Duration = up to 2 hours

Goudarzvand L, Dabirian A, Nourian M, Jafarimaneh H, Ranjbaran M. (2017-NOV). Comparison of conventional phototherapy and phototherapy along with Kangaroo mother care on cutaneous bilirubin of neonates with physiological jaundice. J Matern Fetal Neonatal Med. 2017 Nov 27:1-5. doi: 10.1080/14767058.2017.1404567. [Epub ahead of print]. One of the adjuvant and desirable therapies is skin contact between mother and baby or Kangaroo mother care (KMC) that is a cheap, accessible, relaxing, noninvasive and easy method. This study aimed to compare the effect of conventional phototherapy method and phototherapy along with KMC on cutaneous bilirubin in neonates with physiological jaundice. In this randomized clinical trial, all infants with physiological jaundice who referred for phototherapy to Mofid Hospital of Shahid Beheshti University of Medical Sciences, Tehran, Iran were selected by convenience sampling based on inclusion criteria and were randomly assigned into two groups of conventional phototherapy (n = 35) and phototherapy along with KMC (n = 35). The results showed that there was a significant difference in the average volume of skin bilirubin before treatment with cutaneous bilirubin every 24 h after treatment (p < .001). This significant difference was present in both intervention and control groups. Although the average volume of skin bilirubin every 24 h after treatment was lower in the intervention group than the control group, this difference was not statistically significant (p = .256). Mean duration of hospitalization of infants in the intervention group was significantly lower than the control group (2.09 versus 3.03 d, p < .001). Although KMC along with phototherapy has a favorable effect on the reduction of cutaneous bilirubin in newborns with physiological jaundice, there are not significant differences in routine care. This may need to do KMC for a longer time (more than 1 h) which must be surveyed in the future studies. KMC was effective in reduction of the duration of hospitalization in jaundiced infants. FT RCT, BILIRUBINEMIA, 3rd world, LOS, bilirubin volume.

Grassley JS & Jones J (2014-Dec). Implementing Skin-to-Skin Contact in the Operating Room Following Cesarean Birth. Worldviews Evol Based Nurs. 11(6):414-416. doi: 10.1111/wen.12057. Immediate skin-to-skin contact (SSC) after birth benefits the health of mothers and newborns by increasing breastfeeding rates, stabilizing the newborn's temperature, and encouraging bonding (Moore, Anderson, Bergman, & Dowswell, 2012). Although immediate SSC after a vaginal birth was common practice at our hospital, it was rare in the operating room (OR) following a cesarean birth. To address this practice problem, we conducted a project to evaluate the feasibility of implementing SSC in the OR. This column shares the best evidence-based strategies and innovative ideas on how to facilitate the implementing of EBP principles and processes by clinicians as well as nursing and interprofessional students. Guidelines for submission are available at http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1731-6787. Review, FT, cesarean section, birth KC implementation

Gray L, Watt L, & Blass E. (2000). Skin-to-skin contact is analgesic in healthy newborns. Pediatrics, 105(1):e14-e24. RCT of 30 newborns held in KC or left in crib for heel stick for PKU. Crying and grimace reduced by 82% & 65% from control levels. HR was also lower in SSC infants than in controls; HR increase was 8-10 bpm with KC heelstick vs 36-38 bpm without KC. Acceleration of HR was reduced. Moms given 15 minutes to relax and were then tested. Says effect of KC is not opioid mediated but instead, in combination with taste and suckle of BF appears to form a pain blockade. KC meets the American Academy of Pediatric’s recommendation to use nonpharmacologic and environmental interventions to reduce or eliminate newborn stress or pain during circumcision (AAP, Circumcision Policy Statement. [NE89550], Elk Grove, Ill: AAP. Fullterm, HR, RCT, pain, cry, grimace, maternal relaxation, HR stability. Cortisol level significantly decreased 20 minutes after KC began. Cortisol? Not on cortisol chart. Check cortisol data because I had not written cortisol as an outcome measure but Nolan & Lawrence, 2009 on page 440 of their article say that Gray Watt Blass had this outcome. Needs to go on RCT list for pain. Circumcision policy.

Gray L, Miller LW, Philip BL, & Blass EM. (2002). Breastfeeding is analgesic in healthy newborns. Pediatr 109 (4), 590-593. No doc. RCT of 15 infants who were breastfeeding in KC position during heelstick. 15 swaddled in bassinet during heel stick, 198 minutes after previous feed. And schedule for heel stick with next feed. As soon as infant had a good latch with jaw movements, the two minute baseline began and then the infant had a stick. All behaviors scored from videotape. Taste, suckling and KC were the elements that reduced crying by 91% and grimacing by 84% from control infant levels and HR was substantially lower in the KC group than control: KC HR rose 6 bpm and control HR rose 29 bpm. In KC, infants cried 4% or 8.77 seconds and grimaced for 8%, 17.25 seconds during lance compared with 43% (72.07 seconds) crying and 50% (80.31 seconds) grimacing in controls. 11/15 Kcers did not cry or grimace at all during heel lance, and these effects extended well in recovery phase (1/15 Kcers cried during recovery, for a total of 10 seconds and

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controls cried for 28 seconds). **FullTerm, BF, pain, Breastfeeding in the KC position.CRYING, HR, Grimacing, RESIDUAL EFFECTS, RCT.**

Gray's Anatomy, Television show on ABC, Thursday, Nov. 5, 2009. (2009). A fellow takes a resident into the NICU and saw a mother holding her swaddled infant and the mother said to the fellow “My baby loves to be held.” The resident replied, “You should hold your baby skin-to-skin because that is even better for your baby. Right between your breasts.” Next scene is mother with baby in KC and the fellow says to the resident, “This is kangarooing. The baby will be better Kangarooing than in swaddled holding.” The mother then contributes: “Oh, yes, my baby really likes this. Her heart rate is much better now.” Fellow and resident walk out.


Green & Weisoly 2011 FT, report of single death and two near deaths in USA of healthy infants while bedsharing after BF and KC??? This is a citation in the B.T. Thach (2014-April) article entitled Deaths and near deaths of healthy newborn infants while bed sharing on maternity wards *Journal of Perinatology* 34, 275-279 (April 2014) [doi:10.1038/jp.2013.184]


Gregson, S., Meadows, J., Teakle, P., & Blacker, J. (2016-Jan). Skin-to-skin contact after elective caesarean section: Investigating the effect on breastfeeding rates. British Journal of Midwifery 24(1), 18-25. No doi. To determine whether kangaroo care (skin-to-skin contact) between mother and baby in the operating theatre can affect breastfeeding in newborns outcomes following an elective caesarean section. A randomised controlled trial recruited 366 women (182 in study group, 187 in control) having an elective caesarean section at term (≥37 completed weeks of pregnancy) who chose to breastfeed their baby at birth. Babies in the study group *had immediate skin-to-skin contact in the operating theatre*. The control group had standard care (skin-to-skin following the operation). Results: There was a 5% increase in breastfeeding rates at 48 hours (88% vs 83%) and 7% at 6 weeks (53% vs 46%); however, these differences were *not statistically significant* (P = 0.25 and 0.44). There was a *significant correlation between the length of time for which skin-to-skin was performed and continuing to breastfeed at 48 hours (P = 0.04).* Skin-to-skin contact in the operating theatre following an elective caesarean section is a simple intervention associated with a trend towards an increase in breastfeeding rates at 48 hours and 6 weeks. There is a correlation between length of time for which skin-to-skin is performed during the first 24 hours and the continuation of breastfeeding at 48 hours (P = 0.04). **FT, RCT, Birth KC, BF, cesarean (elective), need to biblio study**

Greyydamo DE, & Merrick J. (2014). Newborn care: what we can learn from the kangaroo mother. *Frontiers in Public Health, 2*, Article 96, 1-2. doi: 10.3389/fpubh.2014.00096. eCollection 2014. This review starts with an anthropologic treatise on the kangaroo mother, saying that the premature Joey crawls for 3 minutes to get into her pouch where he suckles on four different teats, each one providing different chemical composition for his growth. He leaves the pouch for the first time on day 198 of life at an average weight of 4.5 pounds and he returns to the pouch for suckling for another 4 months or until he is a year old. The koala has the same model of feeding and bonding to its young. Though kangagar Rey Sanabria developed KC for prematures and in 1991 received the World Health Organization’s Sasakawa Health Prize for Kangaroo Care. There are 3 main elements of KC: continuous skin to skin contact is thermal care to maintain the premature’s core temperature, 2) there is encouragement of exclusive breastfeeding and its benefits. 3) there is stereothorax induced colonization of the preemie with the mother’s commensal microorganisms to protect the immunologically immature baby from nosocomial infections (and he cites Lown et al., 2010 in International J. of Epidemiology for this). “Its acceptance over the years by various professional groups of dubety consider it to be an adiaphorous method as some studies may fail to find reduction in mortality or other benefits already known for millions of years in marsupials.” Pg 1. The importance of touch for normal health in humans and non-humans is profound. The skin is composed of epidermis (stratum corneum, stratum lucidum [palms, soles], stratum granulosum, stratum spinosum, stratum basale/germinativum, and the dermis (stratum papillae and stratum reticulare (Proksch E, Brandner J, Jensen JM. 2008. The skin: an indispensable barrier. Experimental Dermatology, 17(12), 1063-1072 doi: 10.1111/j.1600-0625.2008.00786.x). “The dance between the skin and central nervous system has profoundly felicitous effects on the medical and psychological health of the human being from birth to death. Thus, one can a priori speculate that kangaroo skin to skin method will provide important touching senation
between mother and baby that is critical for vital cellular and molecular mechanisms leading to improved medical and psychological health in the vulnerable newborn (pg. 2 and cites Greydanus in Pediatric Psychodermatology). Such touching is also beneficial for the mother to relieve her anxiety, act as a nemepthne, and increase bonding with her beloved yet precarious, premature, abecedarian, and premature catechumen. Touch is part of the foudroyant qualities of life and necessary for development (Ardiel ET, Rankin C. 2010. The importance of touch in development. Paediatric Child Health, 15(3), 153-156. Review, PT, hx of KC, Infection

Greydanus DE & Merrick J. (2014 in press). From Lilith to Shiprah and Puah – and beyond: what have we learned from caring for the newborn in the past 300 millennia? In Greydanus DE, Feinberg A, Merrick J (Eds). Caring for the Newborn. New York: Nova Science. As we have acquired amazing technology, lessons from simple touch still need to be learned and are the harbinger of optimal care for the newborn. Includes a review of Kangaroo Care and its benefits, and advocates that we humans do what other species have learned and practiced for millennia: NON-SEPARATION of mother and newborn and SKIN TO SKIN CARE. Review, non-separation, close contact.

Griffin-Walls, L., & Lewis, J. (2012). Babies, bonding and breastfeeding in the post-anesthesia care unit: innovative family centered care in a community hospital. Journal Obstetric, Gynecologic and Neonatal Nursing, 41(Suppl): S52. This is a report of an evaluation of a Full Term Infant quality improvement project to increase bonding and breastfeeding after cesarean section. Goal was to provide immediate skin to skin contact and all for early breastfeeding for mother and their healthy infants after operative deliveries. Roles and responsibilities of Labor/delivery nurses changed. Multidisciplinary team was formed to change policies and procedures. Education was about the importance of skin to skin contact and early breastfeeding. Evaluation revealed the keeping mom and baby together after cesarean birth increased patient satisfaction, enhanced quality of care, allowed skin to skin contact, promoted early breastfeeding, and supported thermal regulation of the newborn. FT, CS, Temp, quality improvement project, implementation. Not on charts 1-1-2013.

Groleau D, & Cabral NE. (2009). Reconfiguring insufficient breastmilk as a sociosomatic problem: mothers of premature babies using the kangaroo method in Brazil. Maternal-Child Nutrition, 5(1-January), 10-24. Qualitative study of mothers of preterm infants who used KMC in the hospital and were all breastfeeding upon infant discharge, but once home they soon abandoned breastfeeding because of insufficient breastmilk. Interviews in homes of mothers revealed that sources of stress (lack of outpatient clinical support, conflicting local norms of care and feeding preterm infants) generated anxiety, and anxiety coupled with economic constraints and discontinuity in models of health care led mothers to lose confidence in their breastfeeding capacity. Insufficient breast milk is a result of sociosomatic process. Preterm, qualitative, breastfeeding, maternal anxiety.

Gromada, K. (2010). Paternal Kangaroo Care after cesarean section. This appeared in Amy Spangler’s “baby googoo” web site and here is the story. Karen Gromada (IBCLC) had twins sons. In 2010 when one of those twins became a daddy, he conducted Kangaroo Care right after the cesarean section and continued until his wife could take over. All went very well. Then Karen had a good friend whose daughter had a cesarean at Cincinnati Good Samaritan Hospital also had the father KC right after cesarean birth until Mother could do it and it went well and mom and daddy were ecstatic. Case Study from the person, informal, Cesarean KC, paternal KC.


Grossman K, Thane K.& Grossman KE. (1981). Maternal tactual contact of the newborn after various postpartum conditions of mother-infant contact. Developmental Psychology, 17, 158-169. 54 mixed parity middle income West German fullterm infants. Grp 1: 12 controls – mom saw infant and may have touched briefly, then baby dressed and moved to mothers bedside in bassinet; saw infants 5 times each day for about 30 minutes at feeding times. Grp 2: early contact infants - may have received 30 min of KC in delivery room (male infant placed in maternal arms on delivery bed with heater overhead, n = 12), then routine feeding every 4-5 hours same as control. Grp 3 (n=17) extended contact, had infants beside their beds for 4 hours in am and 1 hour in pm and could change their diapers. Grp 4 (n=13) possible KC same as group 2 and rooming-in same as grp 3. AT 2,5,8 days: Summed score for tender touches, duration and frequency increased for extra contact group. Fullterm, Quasi exp as assigned sequentially (successively) in grp 1 then grp 2 etc. maternal behavior May not be KC—does not specify if mom wore gown. Check with Gene if this is KC or not – did she clarify for the Cochrane?


Grylack L.J and Williams AD (1996). Alles in first 3 days of life is listed in related literature on the Life Threatening chart but it did not specify skin to skin contact at all, so it is not here, but does say that the incidence of aUPC is 133/100,000.
Gubler T, Krähenmann F, Roos M, Zimmermann R, Ochenstein-Köble N. (2013). Determinants of successful breastfeeding initiation in healthy term singletons: a Swiss university hospital observational study. *Journal of Perinatal Medicine*, 41(3):331-339. doi: 10.1515/jpm-2012-0102. A retrospective study of 1893 mothers delivering healthy term singletons at a Swiss university hospital from 1/2008 to 3/2009 determined the associations between multiple breastfeeding and early postpartum parameters. Multiparity was associated with nursing exclusively at the breast at discharge (P<0.001), less use of maltodextrin supplement (P<0.05), bottle/cup (both P<0.001), but more pacifier use (P<0.05). Among obese mothers, nursing exclusively at the breast at discharge was less frequent, and use of all feeding aids more frequent, than among normal-weight women (both P<0.001).

Neuraxial anesthesia was associated with use of maltodextrin and bottle (both P<0.05) compared to no anesthesia. Delayed first skin-to-skin contact and rooming-in for <24 h/day were each associated with maltodextrin and cup (P<0.05). Nursing exclusively at the breast at discharge was less frequent (P<0.001), and bottle use more frequent (P<0.05), in women with sore nipples than in those without. Conclusions: Obesity is a potent inhibitor of breastfeeding initiation. Delivery without anesthesia by a multiparas normal-weight mother, followed by immediate skin-to-skin contact, rooming-in for 24 h/day, and dedicated nipple care, provides the best conditions for successful early postpartum breastfeeding without the need for feeding aids or nutritional supplements.

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Guimaraes GP, & Monticelli, M. (2007). The role of the nurse in KMC implementation. *Review Gaucha Enferm*. 28(1), 11-20. A clinical report of the implementation of KMC in the NICU of a public hospital. Nurses realized there was a problem when some mothers did not want to do KMC, then went to the literature, and conducted systematic reflection to solve the problem. Rather than move mothers to do KMC, they decided that the neonatal team needed to change its ideas of what the maternal-infant bond is and realize that often mothers' reactions are different from those expected by health professionals. Some moms don't want to do KMC. Preterm, implementation, bonding, barrier to KMC, maternal feelings (don't want to do KMC).

Gupta M, Jora R, & Bhatia R. (2007). Kangaroo Mother Care (KMC) in LBW infants—a western Rajasthan experience. *Indian Journal of Pediatrics*, 74(8), 747-749. Descriptive study of 50 LBW (Birth weight <2 kilograms, M=1.487±0.175 kg; M age= 28.2 range 28-32 weeks) were given KMC (under father’s shirt with head cap) 4-6 hours/day in 3-4 sessions once thermally stable, no o2 support, and tolerating enteral feeds (mean age when KC started = 4±1.78 days, and until discharge at >3 kg. 34 weeks pma, and mother ready to go home. 8 weeks postdischarge they followed up infants to see if KC was being done at home & if baby was gaining weight. No mother refused to participate. Weighting done once per day on electronic scale. Mean birthweight was 1.487 gm and age when KC started was 4.0 (+/-1.738 days). Mean weight gain during KMC was 29±3.52 grams, mean discharge age = 23.6 ±3.52 days, mean duration of hospital stay was 15.5±11.3 days. AT 8 weeks postdischarge, 20/50 moms had continued KC in their homes, average weight gain was 1.135± 0.121 kg, the number of infants exclusively breastfeeding was 16/50. Moms reported that KC helped increase milk production (pg. 48). No discomfort in moms about doing KC. At home, fathers, grandmothers, and sister-in-law did KC with good weight gain and thermal results. Also, no evidence of infection once on KC. Main problems prior to KC were respiratory distress and icterus (pg. 48) Greater weight gain, shorter stay with KC. KMC is effective & safe in stable preterms. Because of its simplicity, KMC may have place in home care.

Preterm, implementation descriptives study, weight gain, length of stay, 3rd world, infection, community-based, breastfeeding, milk production, paternal KC, surrogate KC, home KC.

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Hadeed, A. J., Ludington, S. M., & Siegel, C. (1995). Skin-to-skin contact (SSC) between mother and infant reduces idiopathic apnea of prematurity. *Pediatric Research*, 37(4), Part 2, p. 280A, #1233. Pilot RCT of 3 hours of incubator prior to 3 hours of KC (n = 1) and then back for 3 hours in incubator; control group (n = ) remained in incubator all the time. Within the KC group apnea frequency dropped by 79-83%: KC group had fewer apneas than control group. **GET THIS** Preterm, apnea


Hakala M, Kaakinen P, Kääriäinen M, Bloigu R, Hannula L, Elo S. (2017-Mar) The realization of BFHI Step 4 in Finland - Initial breastfeeding and skin-to-skin contact according to mothers and midwives. *Midwifery*, 50:27-35. doi: 10.1016/j.midw.2017.03.010. Breastfeeding and skin-to-skin contact are the best start for infant life. Breastfeeding ensures the best trajectory for development and growth while preventing many diseases later in life. It is recommended that initial breastfeeding occur during the first hour and that generally exclusive breastfeeding is adopted during the first six months. The aim of this descriptive evaluative study was to describe how initial breastfeeding and skin-to-skin contact (Step 4 of the BFHI) was implemented in Finnish maternity hospitals as well as to explain the factors connected to it. The information can be used to develop maternity care during the immediate postpartum period. Cross-sectional design was used. The data were collected from mothers who had given birth as well as their midwives via questionnaire during the spring of 2014 during one week at eight maternity hospitals in Finland. The response rate was 59% for the new mothers (n=111), while it was 57% for the midwives (n=272). The data were analysed statistically and the open-ended questions in the questionnaire using content specifications. On the basis of the results, initial breastfeeding succeeded well after vaginal birth. Initial breastfeeding began on average, at 41 minutes of age and lasted for 51 minutes. Of mothers, 87% regarded it as a very positive experience. Initial breastfeeding was delayed mainly because of caesarean section and for reasons related to an infant's condition. Many background factors such as midwives' age, mothers' parity and the mode of childbirth were statistically significant in respect to the success of initial breastfeeding. More attention should be placed on the initial breastfeeding of infants born by caesarean section and primiparous mothers. **FT, descriptive evaluative study, Birth KC, BFHI, BF success, c/s. Not on charts 4-28-2017**

Hake-Brooks, S.J., & Anderson, G.C. (2008). Randomized controlled trial: Kangaroo care and breastfeeding in mother-preterm infant dyads 0-18 months. *Neonatal Network*, 27(3), 151-159. 66 moms and preterms 32-36 wks GA, 1300-3000 gm BW, 5 minute APGAR ≥ 6 were randomized into KC (n=36) and controls (n=30) with data collected at Rainbow Babies and Children’s Hospital (3rd level, University hospital in Cleveland) and in Kadlec Med Ctr (2nd level, community based hospital in Richland, WA). KC began on day of birth as soon after birth as possible – at RBC this was not within the first 12 hours of birth, but at Kadlec it was within 1 hour of birth. KC dyads (n=36; mean KC = 4.47 hrs/day) BF longer (5.08 months vs. 2.05 months, and more exclusively (100% breastmilk, IBS level 1&2) at discharge & 6 months postdischarge than controls (n=30, defined as wrapped in blankets whenever they were held). Clinically significant differences (but not statistically significant differences) occurred in exclusive BF at each measurement. Follow up was by phone at 6 wks & 3 months and in clinic at 6, 12, 18 months . IBS = Index of Breastfeeding Status by Labbok & Keasovc, 1990). **RCT, PT, BF, BF exclusivity. VEKC/BirthKC**


Hales D, Kennell J, Klaus M, Mata L, Sosa R & Urrutia J. (1975). The effect of early skin-to-skin contact on maternal behavior at twelve hours, *Ped Res*, 9(4), p. 259. 9 primp moms given infant for 45 min of KC after leaving delivery room and then to nursery til 12 hrs old vs 10 primp moms who were separated from babies after delivery for first 12 hrs. At 12 hrs, babies brought to moms and observed for behaviors for 15 second every minute x 15 mins. KC moms had sig increased attachment behaviors(fondling, kissing, en facing, gazing at, holding baby close) but no caretaking behaviors. **FT, Does not specify randomization,Quasi-Experiment. Maternal attachment behaviors, episiotomy**

Hales D, Kennell J, & Sosa R. (1976). How early is early contact? Defining the limits of the maternal sensitive period. *Pediatric Res.*, 10, 259. Randomized study of 3 grps in Guatemala. Grp 1 (n=20) got 45 min of KC in recovery room under heat lamp and then to nursery until 12 hours old – called early contact group; grp 2 (n=20) got 45 min of KC starting at 12 hours postbirth (called delayed contact), grp 3 (n=20) first saw swaddled baby at 12 hrs postbirth. At 36 hours: Sig. More affectionate behaviors (en face, looking at baby, talking, fondling, kissing, smiling) than delayed or control moms. No difference between groups in proximity maintaining behavior(keeping baby in bed, holding it close) or in care taking (wiping mouth, burping) of infant. **RCT, Fullterm. Maternal behaviors. (Same as 3rd study reported by Sosa et al., 1976), episiotomy**

KCBib 2018
Hall, R.W. (2012). Anesthesia and analgesia in the NICU. Clinics in Perinatology, 39(1), 239-254. Review article of pain treatments. Pain in the NICU is common, undertreated and has adverse events. Most common. Most common non-pharmacologic treatments are non nutritive sucking with or without sucrose, kangaroo care, swaddling, and massage. Py 241 says "KC, which was first used in developing countries to decrease neonatal mortality, has also been shown to relieve neonatal pain. KC decreases the pain associated with single procedures, such as heel lance, but the magnitude of the effect is unknown (cites Warnock et al., 2010 for this). PT review – a pain review but not a KC review so not on Review chart, Pain. Also says that SUCROSE is controversial due to adverse long-term outcomes and cites: Holst L, Grunau RE. 2010. Considerations for using sucrose to reduce procedural pain in preterm infants. Pediatrics 125(5), 1042-1047.

Hall, S.L., Cross, N., Selix, NW, Patterson, C., Segre, L., Chuffo-Siewert, R., Geller, PA & Martin, ML. (2015). Recommendations for enhancing psychosocial support of NICU parents through staff education and support. J Perinatol 35 (S1): S29-S36; doi:10.1038/jp.2015.147 Also annotated under National Perinatal Association, Workgroup for Psychosocial Support of NICU Parents. (2015-Dec 1), Interdisciplinary Recommendations for Psychosocial Support of NICU Parents. J Perinatol, 35 (S1), S29-S36. This is a compilation of many recommendations for the integration of parents as full caregiving partners with the medical establishment for the care of their infants in the NICU. Many recommendations are giving, such as staff education and supportive attitude; never calling a parent a visit, having them participate in medical rounds and nursing report, giving them full access to and ability to contribute to written and electronic medical records, have peer educators available to them, and how to help the infant’s end of life. On page S30 it has a section A and reads: “A. Recommendations for supporting parents’ roles as caregivers of their babies in the NICU: 1. Parents should be incorporated as full participatory, essential, healing partners within the NICU caregiving team. As partners within the medical team, parents should: a. Assume the parental role through provision of hands-on care to their baby including early, frequent and prolonged skin-to-skin contact as is medically appropriate, with coaching, guidance and support from the NICU staff; b. Participate in both medical rounds and nursing shift change reports; c. Honor both HIPPAA and safety concerns while in the NICU; and d. Have full access and input to both written and electronic medical records. 2. Parents and family members should be supported to engage in developmentally appropriate care in order to become competent caregivers and advocates for the neuroprotection of their babies. Components of parent support should include guidance on how to: a. Provide comfort and security through consistency of their presence for their baby whenever possible; b. Understand the behavioral communication of their baby so as to best interpret and respond to the baby’s needs; c. Create and sustain a healing environment with respect to sensory exposures and experiences; d. Provide supportive positioning and handling for their baby, including supportive oral feeding experiences, skin-to-skin contact (kangaroo care) and infant touch; PT, Guidelines, recommendations, family integration, parents-as-providers, end of life, developmental care, reducing NICU STRESS

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or healthy, big or small.”(pg. 81). PT, bradyx, Review so transfusion specialists are aware of KMC. Infection, stress,.. Blood transfusions Every one should experience KC.


Hamilton KE & Redshaw ME. (2009). Developmental Care in the UK: a developing initiative. Acta Paediatr 98(11), 1738-1743. Longitudinal study of two observational studies of use of developmental care from 2005 to 2007. In 2008, rates of KC increased from 50-80%, but aggregate scores indicating 8 basic indices of developmental care did not change. Variable approaches still exist, with limited improvements over time; the UK culture is ambivalent towards developmental care. Descriptive, preterm, developmental care use, implementation, KC not supported (See Vasquez & Berg, 2012 where KC was not supported at San Francisco General Hospital). Not on charts as of 8/12/09


Handlin, L., Jonas, W., Petersson, M., Eideback, M., Ransjo-Arvidson, A.B., Nissen, E. & Uvnas-Moberg, K. (2009). Effects of sucking and skin-to-skin contact on maternal ACTH and cortisol levels during the second day postpartum - influence of epidural analgesia and oxytocin in the perinatal period. Breastfeeding Medicine 4(4), 207-220. 63 primiparae were in four groups (could not randomize to groups due to medical situation) (gp 1 =14 got oxytocin intramuscularly postpartum; gp 2 = 9 got oxytocin infusion; gp 3=14 got epidural analgesia + oxytocin infusion; gp 4=6 who got epidural analgesia alone; gp 5= 20 moms who did not get epidural nor oxytocin. 24-48 hours after birth this experiment was begun and KC was given and infants were placed skin to skin and allowed to initiate suckling and were encouraged to stay there for 60 minutes irrespective of duration of suckling. During Breastfeeding session, ACTH and cortisol levels dropped. Significant negative relationship between ACTH and oxytocin. No relationship between oxytocin and cortisol.Duration of KC before sucking was negatively related to lower cortisol (as KC increased, cortisol decreased). Duration of KC was NOT related to ACTH. Cortisol levels differed significantly between moms who got epidural with and without oxytocin. BF is associated with decreased ACTH and cortisol and KC contributes to this effect. Mechanisms regulating ACTH and cortisol are partially diassociated because one was related and the other not. Medical interventions in connection with birth influence the activity of the hypothalamic-pituitary-adrenal axis 2 days after birth. Quasi-experimental (not an RCT), FT, Late KC, post-partum day II, BF, cortisol, stress, ACTH, epidural, oxytocin

Handlin, L., Jonas, W., Ransjo-Arvidson, A.B., Petersson, M., Uvnas-Moberg, K. & Nissen, E. (2012). Influence of common birth interventions on maternal blood pressure patterns during breastfeeding two days after birth. Breastfeeding Medicine, 7:93-99. Examined influences of medical interventions during labor on Blood Pressure during breastfeeding at two days postbirth. 66 NSVD, BP measured at -5, 10,30 and 60 minutes during a morning BF at two days PostPartum. There were five treatment groups: 1) control, no meds n=21, 2) epidural with oxytocin stimulation, n=14; 3) epidural without oxytocin, n=7; 4) oxytocin stimulation only, n=9; 5) moms got 10 unit of oxytocin IM, n=15. Significantly lower diastolic in epidural non-oxytocin group compared with controls, oxytocin IV group and epidural + oxytocin group, (all comparisons significant). Both systolic and diastolic BP fell significantly during BF in control, oxytocin IM, and epidural + oxytocin groups; the falls in diastolic BP were lower in the oxytocin IV (p<0.05). Duration of KC contact before BF correlated positively with decrease in systolic BP in oxytocin IM group only. Conclusion: administration of epidural during labor lowers baseline diastolic BP and abolishes the fall in BP in response to BF at two days postbirth. FT, Postpartum day 2 KC (late KC), BP, epidural, oxytocin

Hane AA, Myers MM, Hofer MA, Ludwig RJ, Halperin MS, Austin J, Glickstein SB, Welch MG. (2015-April). Family nurture intervention improves the quality of maternal caregiving in the neonatal intensive care unit: evidence from a randomized controlled trial. J Dev Behav Pediatr. 2015 Apr;36(3):188-96. doi: 10.1097/DBP.0000000000000048. This study assessed the impact of Family Nurture Intervention (FNI), which includes kangaroo care, on the quality of maternal caregiving behavior (MCB) while in the neonatal intensive care unit (NICU). FNI is a randomized controlled trial conducted in a high-acuity NICU to facilitate an emotional connection between mothers and their premature infants. FNI begins shortly after birth, continues until discharge, and involves mother/infant calming sessions that include scent cloth exchange, vocal soothing and emotion expression, eye contact, skin-to-skin and clothed holding, and family-based support sessions.Maternal caregiving behavior was coded during a single holding and feeding session (~30 min) in the NICU before discharge at approximately 36 weeks gestational age (GA). Sixty-five mothers and their premature infants (34 male; 31 female; 26-34 wk GA) were included in these analyses (FNI, n = 35; standard care [SC], n = 30). Relative to mothers in the SC condition, those in the FNI group showed significantly higher quality MCB, which remained significant when controlling for birth order, twin status, maternal depression, and maternal anxiety. This is the first study to demonstrate that in-unit MCB can be enhanced by a hospital-based intervention. FNI provides a new rationale for integrating nurture-based interventions into standard NICU care, PT, RCT, maternal behaviors. Not on Charts 9/17/2015

Hamm, M., Malan A, Kronson M, Bergman N., & Huskisson J. (1999). Kangaroo Mother Care. South African Medical J. 89(1): 37-39 and page 3 and page 241 for comments. Reports on use of KC at Groote Schuur Hospital and reports of three studies, one of which was KCBib 2018
 IMPLEMENTATION, Between Breast KC, allowed to BF in KC, Length of Stay, GET THIS


Hardy, W. (2011). Integration of Kangaroo Care into routine caregiving in the NICU. What is stopping you? Advance in Neonatal Care, 11(2), 119-121. DOI:10.1097/ANC.Ob013e31821209b04 This is a review that starts with “it has been found that its (KC) benefits outweigh the risks and include so much more than just thermoregulation (pg. 119). The review is based on reading Nyqvist et al. 2010 State of the Art article, Ludington’s KC is Developmental Care chapter in the 2nd edition of Developmental Care text, and the WHO 2003 Practical Guide book. The advantages of KC are thermoregulation, physiologic stability, breastfeeding, growth, reduced infection, maternal-infant bonding, reduced biobehavioral response to pain, better sleep and state management (pages 119-120). The disadvantages of KC are infant instability – predominantly with transfer, inadequate or unavailable protocols, and professional and parental education are needed. She concludes the article with “KC should be provided daily as long as infant remains stable and duration should be at least one hour. For more analysis and information related to the evidence and implementation of KC, please take the time to refer to the chapter titled” Kangaroo Care is Developmental Care” in the latest edition of the NANN publication: Developmental Care of Newborns and Infants: Handbook for Health Professionals (2nd ed)”(pg. 120-121). PT, review, temp, stability, BF, wgt gain, infection, pain, duration, apnea, cortisol, stress, implementation, barriers to implementation, bonding, state/sleep, relaxation, protocols, prof. education, transfer instability.

Hargboel, A. (1987). Luna: A child who has tried the Kangaroo Method. Foraldre og Fødelse, #1. No page numbers listed. Need to get this manuscript. PT


Harris H. (1994). Remedial co-bathing for breastfeeding difficulties. Breastfeeding Review 2(10), 465-467. This is a remarkable picture story of doing KC in a warm bath in the “immediate postpartum period” (really within one hour of birth) to get infant to crawl spontaneously to the breast. Author states that infant needs UNINTERRUPTED time to do this and will go to breast if given time. She says pouring water over infant will keep him warm, crying stops, infants occasionally go to sleep, so stroke him down his back and his journey to the breast commences. Descriptive, crying, temperature, BF, sleep FT


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Harrison D, Yamada J, & Stevens B. (2010). Strategies for the prevention and management of neonatal and infant pain. *Current Pain and Headache Report, 14*, 113-123. This is a review of pain relief strategies, focusing heavily on sucrose and its effectiveness over repeated use over 4 weeks in NICU and 3 months, but then goes into KC on page 118-119 and says “there are increasing #s of RCTS evaluating the efficacy of KC in reducing minor procedural pain. In all studies, reduced pain responses during heel lance or intramuscular injections were found. Two studies compared KC to sweet solutions (sucrose and glucose) during heel lance. Both studies reported greater reduction effect in the KC group, and if sweet solution given concomitantly with KC may provide additional analgesia (Johnston et al., 2009). Site differences occur too (Johnston et al., 2009) and enhanced KC (rocking, singing, talking, finger or pacifier) did not result in enhanced pain reducing effects (Johnston et al. 2009). Integrating KC into the unit is challenging: need setting and policy that supports KC during all nonemergency procedures (blood test, IV line placements, injections) which dictates that such non emergency procedures are only performed when mothers are available for KC, would enhance this technique’s use.O. Other factors to be considered are physiologic state of infant, staffing, maternal readiness, support from unit management for use of this method of pain management (Johnson et al. 2007). Research needed is: more studies on the feasibility of KC during painful procedures, rates of utilization of KC during procedures, effectiveness in sick full term newborns and older infants. KC for pain was graded HIGH (“further research is very unlikely to change our confidence in the estimate of effect”pg. 115). FT, PT, review, pain


Harrison, T. M. (2010). Case study of skin-to-skin intervention in infant with a congenital heart defect. Presentation at the 2010 “Nursing Research: Bench to Bedside”, Midwest Nursing Research Society Annual Research Conference, April 10, 2010. Kansas City, Missouri, USA. A 40 yo mother and her full term white male infant with hypoplastic left heart syndrome who had undergone the first stage palliative hybrid procedure to improve blood flow, gave 14 days of KC for one hour each day. Personal communication from Dr. Harrison related the following: Mom wanted to breastfeeding but protocol is first feed is bottle. So bottle it was and the baby choked, sputtered, gasped for breath, spit, etc. Following the feed they place the baby in KC, but he did not settle down. He was bobbing his head all over the mother’s chest. Dr. Harrison said to mom “I think he is looking for something!” The staff nurse said mom could breastfeed, so the infant was slid down to a nursing position, he latched without assistance and breastfed beautifully without any respiratory difficulties. He was 12 days old and this was his first breast experience. The contrast between the two feedings was incredible and beautiful. After he was finished, he was moved back into the KC position and he fell into a wonderful deep sleep that mom said he had never experienced before. He stayed in KC for close to 2 hours without any problems. This was first subject in Harrison’s study and the mom still does KC whenever pub detected continuously in real time using ECG was analyzed with MARS 5000 Ambulatory ECG Analysis and Editing System. Moms recorded thoughts, feelings, concerns daily and completed survey for further thoughts, feelings, and suggestions about KC. KC began postoperatively when stable and started on oral feedings. After feeding, infant was placed in KC up to 129 minutes after beginning observations, and then was transferred back to bed from 129-137 minutes. HR and SaO2 taken continuously and showed HR was relatively stable around 140 bpm until bottle feeding began, then increased up to 178, and then SSC was given for 10 minutes (minute 45-55) and HR was predominantly 160-182, then breastfed and HR dropped from 82 back to 135 Then KC was given minutes 60-129 and HR was stable around baseline of 140 similar to the pretest period. SaO2 values were stable from 90-100 at all times, only slightly higher occasionally during KC than seen in pretest. Design for high frequency power testing was pretest (30 min before feeding while in open air cot), test (during feeding), and posttest (60 minutes after feeding). HF values varied between 2.00-3.50 across all feeding periods. Number of minutes of KC over the 14 days showed Day 1=78 mins, Day 2=100 mins, Day 3=127 mins, Day 4=85 mins, Day 5=87 mins, Day 6=102 mins, Day 7=91 mins, Day 8=87 mins, Day 9=94 mins, Day 10=70 mins, Day 11=20 mins, Day 12=62 mins, Day 13=90 mins, Day 14=57 mins. Mom was very satisfied and would recommend KC to others, would like to begin KC the sooner the better, one hour was enough, however, holding longer is good, and other comments were “a great experience for me and it helped me feel better”, “holding him makes me feel relaxed, and was very comforting,” “this makes me feel like I’m doing something to help him heal”, “its very therapeutic. You get to enjoy your baby. Gives you a chance to feel like you are being a mom by holding and cuddling baby. It also helps with the stress.” Conclusions were that infant was safe and stable during SSC, mother adhered to intervention rather well, HRV improved over time, mother was satisfied with SSC. SSC deserves further investigation as an intervention to enhance autonomic function in infants with congenital heart defects. Congenital heart defect, BF, Sleep, respiratory difficulty, PT, duration of KC, HR, SaO2, maternal feelings, satisfaction, maternal stress responses.

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Harrison, T.M., & Brow, R. (2017-Sept-Oct). Autonomic nervous system function after skin-to-skin contact in infants with congenital heart disease. *J. Cardiovascular Nursing, 32*(5):E1-E13. doi: 10.1097/JCN.0000000000000397. Infants with complex congenital heart disease (CCHD) demonstrate impaired autonomic nervous system (ANS) regulation, which may contribute to commonly observed impairments in feeding, growth, and development. Close mother-infant physical contact improves ANS function in other high-risk infant populations. Our purposes were to examine feasibility of a 2-week daily skin-to-skin contact (SSC) intervention and to describe change in ANS function in response to the intervention after surgical repair of congenital heart disease. Feasibility was assessed by recruitment and retention rates, safety, and acceptability. Autonomic nervous system function was measured with linear and nonlinear measures of heart rate variability (HRV) during a feeding before the 14-day SSC intervention and 3 times during a 4-week follow-up. Recruitment rate was 72%; retention rate was 55.5%. Mothers were universally positive about SSC. Ten mothers and infants completed a daily mean of 77.85 minutes of SSC during the 14-day intervention with no adverse events. Baseline high-frequency HRV, reactivity to challenge, and recovery after challenge improved during the 6-week study. Nonlinear measures demonstrated abnormally high sympathetic activity, especially after feeding, in most measures. *Skin-to-skin contact is feasible in infants with CCHD. Linear measures of HRV suggested improvements in ANS function with this intervention*. This article is one of the *first to describe nonlinear HRV measures in infants with CCHD*. Additional research is needed to identify variations in linear and nonlinear effects based on specific cardiac conditions and with varying intervention doses and timing. This low-cost, low-risk intervention has the potential to improve outcomes in infants with CCHD. FT, evaluative descriptive, KC duration, congenital heart defect, ANS by HRV, maternal feelings, not on charts 3-1-2017

Harrison, T.M., & Ladungton-Hoe, S.M. (2015 Nov-Dec). A case study of infant physiologic response to skin-to-skin contact following surgery for complex congenital heart disease. *The Journal of Cardiovascular Nursing, 30*(6):506-516. doi: 10.1097/JCN.0000000000000202. The physiologic responses to a single session of KC in an 18-day old full term infant (39.3 weeks ga, 3050 gms bw, 77 Appgar) with hypoplastic left heart syndrome revealed that HR (preKC=141.18, KC= 141.11) (HR should be 90-164 and it exceeded 164 80% of time during bottle feeding, 70% of time during breastfeeding, and 45% of time during postKC, but did not exceed normal during KC); RR (preKC = 70.88 breaths/min, KC = 66.82 and appearing lower during KC), SAO2 (preKC = 92.13, KC = 93.38%), blood pressure (using an inflatable cuff) (preKC = ???? and temperature (this was taken 17 minutes after start of KC by digital auxillary thermometer), and Brazelton Behavioral state with predominant state for 30 seconds as outcome, each recorded every 30 seconds for 30 minutes prior to KC (wrapped in blanket, lying on side on mother’s lap), transfer into KC took 2.5 mins. During KC (65 mins), and post-KC (10 mins) on 18th day of life. Infant had completed two open heart surgeries (first at 7 days of age, second at 12 days of age to correct his condition and was 6 days post second surgery when case study was done)???? for 10 minutes after KC stayed within clinically acceptable range throughout the 135 minute observation period on 18th day of life. When put in KC originally, he was fussy and restless, so Mom moved him back to her lap for another bottle feeding even through infant completed a bottle feeding 30 minutes before the pretest period. Transfer from KC to lap took < 1 minute. During the bottlefeeding of expressed breast milk, infant choked and gasped several times while trying to coordinate sucking, swallowing, and breathing and after 4 minutes refused the bottle. Transferred back to KC in < 1 minute. KC began again and infant was awake, then slept for 1.5 minutes, then awoke and had rooting behavior, bobbing his head against mother’s chest and crying. Then mother moved him over onto the nipple, he spontaneously latched and regulated sucking, swallowing, and breathing without difficulty for 4.5 mins, then fell asleep for 65 mins. Then transferred back to her lap in supine position in < 1 minute. For Post-KC infant was supine on mother’s lap, dressed in cotton shirt and covered with blanket. At minute 4 of post-KC, infant was given oral meds and then given oral meds again during the last 2.5 mins of post_KC This case study provides beginning evidence that KC is safe in full term infants following surgery for complex congenital heart. Further research is needed with infants before surgery and earlier in the post op period and length of stay, maternal infant interaction and neurodevelopment should also be measured. FT, Case study, HR, RR, SaO2, Temp, BP (real cuff BP, not MAP), transfer times, behavioral state, crying.

Haxton, D., Doering, J., Gingras, L. & Kelly, L. (2012). Implementing skin-to-skin contact at birth using the Iowa model: Applying evidenced to practice. *Nursing for Women’s Health, 16*(3), 220-229. doi: 10.1111/j.1751-486X.2012.01733.x. Prolonged skin-to-skin contact (SSC) between mothers and newborns in the hour after birth is associated with physiologic and psychological benefits for both mothers and infants, yet this is not a standard practice at all birthing facilities. The purpose of the project described in this article was to implement SSC immediately after birth for healthy term newborns as a routine, evidence-based practice in a labor and delivery unit at a Midwestern U.S. academic medical center. When incorporated into routine newborn care, SSC promotes key maternal-infant health outcomes of importance to quality nursing care. FT, Implementation, Birth KC, quality improvement project, barriers, breastfeeding BP, staff issues get this to complete annotation

Hays, S., Feit, P., Barré, P., Cottin, X., Huin, N., Fichetner, C., & Putet, G. (2006). Respiratory arrest in the delivery room during skin-to-skin care in 11 full term healthy neonates. *Archives de Pediatrie, 13*(7), 1067-1068. Says that 3 recent article have reported that KC is a risk factor for respiratory arrest in the delivery room. So, the authors contacted doctors in their region and exhaustively reviewed perinatal charts and found 11 cases of respiratory arrest during birth KC since 2000. In each case the term newborn was prone on mother’s chest and all experience respiratory arrest (and five had cardiac arrest too) at some time between 5-120 minutes postbirth In two infants, stimulation and ventilation by mask was sufficient; in the other, external cardiac massage, intubation and ventilator assistance were needed. One infant died after 20 minutes of ineffective resuscitation; the others were transferred to NICU Four infants died and autopsy showed KCBib 2018
hypoxic ischis pathology. So Birth KC is risk factor for death. Infants need to be vigilant watched, especially if the mother is a PRIMIP. This incidence is grave and other reports show an elevated incidence of death with birth KC. So conduct rigorous evaluation of the newborn, vigilantly watch the couplet during the first hours of life but continue KC. Birth KC, Full Term, life threatening events.

Head, L.M. (2014). The effect of kangaroo care on neurodevelopmental outcomes in preterm infants. *Journal of Perinatal and Neonatal Nursing, 28*(4), 290-299. doi: 10.1097/JPN.0000000000000062. Preterm birth is associated with long-term deficits in executive functioning and cognitive performance. As advances in neonatal care enable more preterm infants to survive, development of strategies to address high rates of neurodevelopmental disabilities and poor academic achievement in preterm infants are crucial. This is a review article that begins with how preterm birth interrupts brain growth and places infants at subsequent risk for developmental delay. Few studies have examined whether kangaroo care affects neurodevelopmental outcomes in preterm infants. This review examined available literature that investigated the effect of kangaroo care on cognition in preterm infants. The second part of the paper is titled “KC’s short-term benefits influence brain development” and here she reviews KC effects on stress allostatic load (cites Weber AM, Harrison TM, Steward DK (2012). Schore’s Regulation theory: maternal-infant interaction in the NICU as a mechanism for reducing the effects of allostatic load on neurodevelopment in premature infants. Biological research for nursing, 14, 375-386), maternal attachment, sleep, and feeding as factors that influence neurodevelopment. And then she reviews the literature about short and long term effects (quoting Tessier 2003, Feldman 2002, 2004 and 2014, and Schneider 2013 and essentially says that because these studies did not control for breastfeeding and supplementation (factors that influence development), the results are invalid. To address neurological disparities in children born preterm, research using kangaroo care as a strategy to improve neurodevelopment in preterm infants is warranted. PT, REView, development, brain, stress, sleep, feeding.

Healthy People 2020 (2010). Healthy People 2020. Topics and Objectives Index - Healthy People. Available from www.healthypeople.gov/2020/topicsobjectives2020. Accessed 12-29-2012. Full citation is on full text article bib. The breastfeeding goals are 81.9% of mothers initiate breastfeeding, 60.6% breastfeed at 6 months, and 34.1% breastfeed at one year.

Heidarzadeh M, Hosseini MB, Eshhadmanesh M, Gholamtabi Tabari M, Khazaei S (2013). The Effect of Kangaroo Mother Care (KMC) on Breast Feeding at the Time of NICU Discharge. Iran Red Crescent Med J. 2013 Apr;15(4):302-306. Apr 5. Exclusive breastfeeding is one of the most important essential components of Kangaroo Mother Care. This study was performed to evaluate the effects of KMC on exclusive breastfeeding just at the time of discharge. In this cross sectional study, 251 consecutive premature newborns admitted to neonatal intensive care unit (NICU) between May 2008 and May 2009 in Alzahra University Hospital in Tabriz were evaluated. All mothers were educated for KMC method by scheduled program. Standard questionnaire was prepared by focus group discussion, and mothers filled it prior to infant hospital discharge. 157 (62.5%) mothers performed kangaroo mother care (KMC group) versus 94 (37.5%) in conventional method care (CMC group). In KMC group exclusive breast feeding was 98 (62.5%) vs. 34 (37.5%), and P = 0.00 in CMC group, at the time of hospital discharge. Receiving KMC and gestational age were the only effective factors predicting exclusive breastfeeding. Our result indicated that there was a 4.1 time increase in exclusive breastfeeding by KMC, and also weekly increase in gestational age increased it 1.2 times, but maternal age, birth weight, mode of delivery, and 5 minute Apgar score had no influence on it. KMC is more effective, and increases exclusive breast feeding successfully. It can be a good substitution for CMC (conventional methods of care). It is a safe, effective, and feasible method of care for LBWI even in the NICU settings. PT, BF, Exclusive BF, CHECK IF ON CHARTS

Heimann K1, Ebert AM2, Abbas AK2, Heussen N3, Leonhardt St, Orlikowsky T4. (2013, Dec.) Thermoregulation of Premature Infants during and after Skin-to-Skin Care. Z. Geburtshilfe Neonatol. 2013 Dec; 217(6):220-224. doi: 10.1055/s-0033-1361175. Providing normothermia is an important issue in daily routine care of premature neonates. We recently found with infrared thermography (IRT) a drop in skin temperature of premature babies after they were positioned from skin-to-skin care (SSC) back into the incubator. Since this did not disappear within 10 min, we wanted to find out how long it takes until the baby has fully warmed up after SSC and if the IRT measurements correlate with conventional rectal temperature? A prospective observational study was undertaken with 3 premature infants (3 male, median gestational age 28 weeks (25-29), median age at study 34 days (28-52); median birth weight 898 g (400-1095), median weight at study 1263 g (790-1465)); temperature was determined with IRT (leg, back, arm, head, upper abdomen; diameter 1 cm, scale 0.00°C), comparison with 2 conventional sensors and rectal temperature. Temperatures were recorded every 2 min and displayed for 4 time points, namely at the beginning and the end of skin-to-skin care (SSC1, SSC2), as well as at the beginning and the end of a subsequent 60 min incubator period (I). A significant rise during SSC occurred while the cooling after SSC persisted during the complete incubator measurement time (I; p<0.05). Rectal temperature remained stable through the whole measuring period. While SSC in our setting led to an increase in temperature, the lack of compensation of peripheral heat loss in the incubator after 60 min may express an inadequate peripheral regulation of body temperature. This should be taken into account before routine care after SSC. PT, Temp, Residual, thermoregulation. NOT ON CHARTS 4/4/14

Descriptive. Temperature of 10 preterm infants (median 27 wks, age 36 days, weight 1322 g) was determined by two conventional sensors and by infrared thermography of leg, back, arm, head, upper abdomen. Measurements were 10 minutes each in incubator, at beginning of KC, after 90 minutes of KC, and back in incubator. Patients increased temperature during KC, then cooled down in incubator by 0.62°C, abdomen and back tems were maintained and heat and leg temps significantly increased. In post-KC incubator, all temp areas were significantly lower than when in SSC. PT, descriptive, temp by thermography  Not on charts 4.4.2014

Heimann, K., Vaessen, P., Peschgens, T., Stanzel, S., Wenel, T.G. & Orlikowsky T. (2010). Impact of skin-to-skin care, prone and supine positioning on cardiorespiratory parameters and thermoregulation in premature infants. Neonatology, 97(4), 311-317. DOI: 10.1159/000255163 Comparative effectiveness study, not RCT because all infants got all three treatments. Skin-to-skin care and supine position are standard positions. Influence on cardiorespiratory parameters and thermal regulation are discussed controversially. Compared KC with prone and supine position and tested H1: KC has no impact on cardiovascular parameters and thermoregulation. 18 spontaneously breathing PT infants (Median GA= 28 weeks, 24-32; chroniclog age 36 days (7-64 days) and weight 1543 gm (R=750-2100 gm). HR, RR, breathing pattern, desat episodes (<85 &>80; <80), oxygen saturation, rectal temperature in Germany in a 6 hour measuring cycle of three subsequent series. 120 mins each in SSC and prone position and supine position, then compared by Wilcoxon.

During KC no increase in apnea nor bradycardic episodes and no difference in respiratory rate, breathing pattern, oxygen saturation and duration of desats compared to supine or prone. Episodes of desat <85 and >80 and <80 were more frequent in supine than prone. HR increased in KC and prone compared to supine, and temp ws not sig higher during KC and prone compared to supine except a rise between the start and end of the 6 hour measuring cycle. No sign that KC mediated changes in quality or quantity of desats and in body temps compared to prone in preterm infants. Supine was worst position for preterm infant. PT, comparative effectiveness descriptive study, HR, RR, breathing pattern, apnea, bradycardia, SaO2, desats, temperature, prone, supine very low birth weight, micropreemie (24-32 wks) GET THIS Cost of 2650 for inc article VERY IMPORTANT ARTICLE for argument that KC position is as safe as supine positioning and being prone does not harm infant. Heinemann, A.G., Hellstrom-Weastan,L., & Nyqvist, K.H. (2013). Factors affecting parents’ presence with their extremely preterm infants in a neonatal intensive care room. Acta Paediatrica, Jul; 102(7):695-702. doi: 10.1111/apa.12267. A qualitative (semi-structure interviews) descriptive study of 7 mothers and 6 fathers for parent-identified factors that influence their stay with their extremely preterm infant in NICU. Parents came from level III NICU with University hospital in Sweden where 9 single rooms were available and KMC was encouraged as a parent activity. Things that facilitate staying: opportunity to stay overnight in same room, opportunity to take over care of infant empowerment of mothers and parents in parental role and increased motivation to stay. KMC helps them feel in control and feel needed, which increases parental presence. “All participants had positive experiences of providing KMC. It was a meaningful task that gave a sense of calm and relaxation…KMC strengthened their motivation to be with the infant, strengthened the mother-child unit, and reduced parents’ sense of helplessness and redundancy…. Where parents were unah le to perform KMC, they felt they had failed and were worthless.” Pg??? Next page, “Although parents experienced the sounding of alarms from medical equipment as disturbing, they eventually got used to it. “Increased presence made it easier to become acquainted with the infant and realize that she or he was a unique person with individual needs. KMC strengthened the emotional ties, facilitated the parent-infant interaction, and was an important component in the process of becoming a parent.”(See Alarm fatigue article by T. Tanner, 2013) Atmosphere in NICU is very stressful for parents. Barriers: high levels of illumination and noise makes parental sleep difficult and staying overnight difficult. Low staffing levels limited use of KMC when they had to wait for assistance to transfer infant. Performance of painful procedures was stressful to parents and barrier to parental presence. “This study shows that parent-infant non-separation should be the core component of the NICU family-centered care policy. Parents should have opportunities for unrestricted present and use of KMC. There should be parent accommodation in the NICU ideally with single care room or parent beds in the intensive care and intermediate care rooms. KMD is an essential component of this process.” The last table is the table of all the stems they asked about in their interview with the parents. PT, Qualitative, Parents as providers, calm/relaxation, maternal feelings, transfer, barriers, stress, family centered, separation, parental KC

Henderson, A. (2011). Understanding the breast crawl: Implications for nursing practice. Nursing for Women’s Health, 15(4), 296-307. doi: 10.1111/j.1751-486X.2011.01650.x. This is a clinical review article that states that Klaus in 1998 called the process of initiation of BF at birth THE BREAST CRAWL and that UNICEF recommends the breast crawl as the “preferred method for initiating breastfeeding.” The breast crawl is a process that is more than just a way of providing breast milk, it is a behavioral process that benefits mothers and babies together. The breast crawl is defined as “the newborn, undisturbed and skin to skin on mother’s chest for the purpose of locating and self-attaching for the first feeding” (p.297). The breast crawl is a five part process: 1) infant rests on mom’s abdomen and intermittently looks at her. 2. Infant salivates and mouth her fingers. 3. Leg and arm movements propel her towards the breast. 4. Upon reaching sternum, her head bounces up and down and side to side. 5.She approaches nipple, mouth open, and after several attempts self-latchs and suckles.(Others call this inborn INNATE process prefeeding and feeding behaviors with 1) the birth cry, 2) relaxation, 3) awakening, 4) crawling, 5) breast preparation, 6) at breast, 7) sucking (This is Nyqvist et al, 2010 Towards Universal KC.) KC facilitates the breast crawl. Maternal body is the habitat for newborn stabilization and supports innate behaviors. She says that skin to skin contact immediately after birth is recommended by AAP, and that the Kangaroo position (chest to chest) facilitates the breast crawl. The Kangaroo position should be frog like, head to one side, wear hat and diaper and blanket. KC is now the standard of care for all KCBib 2018
newborns, healthy and vulnerable. GOAL of KMC is to “empower parents as they practice the skills and responsibilities of caregiving while meeting all of their newborn’s physical and emotional needs (quote from Nyqvist et al, 2010 Towards Universal KC). Neonatal reflexes also facilitate BF. The Reflexes are Sucking, Swallowing, Rooting, hand-to-mouth, arm and leg movements, finger extension/extending, mouth gaping, tongue dart/licking, head turning to right/left, head bobbing/nodding, placing, palmar grasp, plantar grasp, and Babinski toe fan (pg. 298). When on the semi-reclined mother (her body is foundation of support and arms contain infant), gravity holds baby on the chest, pressure on top of feet elicits placing, brushing foot sole against body elicits stepping, instinctive stroking from mother elicits baby's which in turn directly stimulate lip and tongue reflexes. Hand to mouth movements stimulate the mouth gape reflex, gravity assists head and arm movements to stimulate the breast and position at the nipple. Newborn has all senses and olfactory is acute and infant responds to chemical cues secreted from Montgomery Tuberces on areola and surrounding glands as well as to milk scent. These cues stimulate search, mouthing, grasping and rooting (pg. 298 and citation of Brown 2008 and Schaal et al., 2009). Suckling is part of social learning and behavior and the olfactory bulb is part of the olfactory cortex within the limbic lobe (site of emotional memory, emotions and visceral responses to emotions in brain). Oxytocin release is stimulated by uterine pressure (from infant in kangaroo position). Nipple stimulation, food intake, warmth, light massage/stroking, stimulation of anterior chest, abdomen and urogenital organs. Increased levels of oxytocin stimulate increased trust, sociability, decreased fear and anxiety, vasodilation (vasodilation of maternal chest skin causes it to heat up and the chest and breast are then a warm and safe environment [Kimura C & Matssooka M, 2014]). Changes in breast skin temperature during the course of feeding. J Hum Lact, 23(1):60-69). Lower HR, lower BP, enhanced healing, improved nutrient storage, increased social memory and curiosity, social bonding, relaxation, and elevated endorphin levels, by directly counteracting the effects of cortisol. Oxytocin also stimulates the amygdala so that the mother is imprinting with details of her newborn and begins bonding. (pg. 300). The breast crawl promotes physical stabilization, temp regulation, HR, RR, and blood glucose are improved and quickly stabilized, and the multisensory stim of KC lower circulating levels of cortisol. Mother and baby are relaxed and have sense of well-being and then infants go into deep quiet sleep. Nurses can facilitate the breast crawl by providing patient education prenatally as well as intrapartally, opportunities for the breast crawl and don’t rush him to do feeding within one hour, navigate barriers, Cesarean is one barrier and baby should be given to father and then to mother when fully alert. She says there are two risks: bed sharing and falls. Observation should be vigilant at all times, and bed sharing which is encouraged because it increases duration of breastfeeding and UNICEF/BABY FRIENDLY says when baby is in bed with mother and mother is sleeping, “it’s only necessary to provide intermittent observation to monitor for any immediate environmental dangers and promote a safe sleep environment (UNICEF UK BFHI 2004). Do not permit sleeping on couch or recliner, only on firm mattress with light blankets, well-fitting sheet and no bulky objects around baby. No smoking, no ETOH use, no substance use (alcohol response or sensitivity to newborn). She gives guidance for prevention of falls, i.e. low bed, head of bed +45 degrees, tucking in linens, no sleeping between parents, mother sleeping on side to enclose baby and let baby roll onto back after feeding. (pg. 305). Breast crawl releases oxytocin which helps reduce maternal blood pressure. Hospitals can promote the breast crawl by educating nurses, get help gaining experience, adequate staffing, encouragement from management. Full term, birth KC, cesarean, KC goal, Newborn reflexes, prefeeding behaviors, oxytocin, bed sharing, barriers, educate nurses, blood glucose, blood pressure, BF difficulties, cis, paternal KC, guidelines from USBC and AAP, effects of breastfeeding, infants at risk for any health condition, Maternal and Neonatal Nurse Perceived Value of Kangaroo Mother Care and Maternal Care Partnership in the Neonatal Intensive Care Unit. American Journal of Perinatology, 20(10):875-80. doi: 10.1055/s-0033-1333675. Kangaroo Mother Care (KMC) enhances infant and maternal well-being and requires maternal-care partners (MCP) for implementation. Objective To examine maternal and neonatal nurse provider perspectives on the value of KMC and MCP. Prospective cohort design of neonatal nurses and mothers of preterm infants self-report anonymous questionnaire. Analyses of categorical independent variables and continuous variables were calculated. In all, 82.3% of nurses (42) and 100% (143) of mothers participated in the survey. Compared with 18% of nurses, 63% of mothers believed “KMC should be provided daily” and 90% of mothers compared with 40% of nurses strongly believed “mothers should be partners in care.” In addition, 61% of nonwhite mothers identified that “KMC was not something they were told they could do for their infant” compared with 39% of white mothers. Nonwhite and foreign-born nurses were 2.9 and 3.1 times more likely to encourage MCP and KMC. Mothers held strong positive perceptions of KMC and MCP value compared with nurses. Nonwhite mothers perceived they received less education and access to KMC. Barriers to KMC and MCP exist among nurses, though less in nonwhite, foreign-born, and/or nurses with their own children, identifying important provider educational


Hendricks-Munoz, K. (2002). Karen Hendricks-Munoz, MD, discusses Kangaroo Care at NYU Medical Center. Msnynhealth.org. Posted July 16, 2002. available at www.msnynhealth.org/articles/kangaroo_care.html. Describes KC, theypermit it as long as mom likes, says moms breast warms up and cools down with infant. Cites HR, RR from other studies and states “We are continuing to find that KC helps babies grow stronger and leave hospital sooner-up to 20 days sooner—without evidence of increased infection. Also quotes a study of less maternal depression: P1, clinical report, HR, infection, growth, LOS, Mat depression, Mat-Neonatal Temporal Synchrony.

Hendricks-Munoz KD, Li Y, Kim YS, Prendergast CC, Mayers R, Louise M.(2013-Jan 28). Maternal and Neonatal Nurse Perceived Value of Kangaroo Mother Care and Maternal Care Partnership in the Neonatal Intensive Care Unit. American Journal of Perinatology. 20(10):875-80. doi: 10.1055/s-0033-1333675. Kangaroo Mother Care (KMC) enhances infant and maternal well-being and requires maternal-care partners (MCP) for implementation. Objective To examine maternal and neonatal nurse provider perspectives on the value of KMC and MCP. Prospective cohort design of neonatal nurses and mothers of preterm infants self-report anonymous questionnaire. Analyses of categorical independent variables and continuous variables were calculated. In all, 82.3% of nurses (42) and 100% (143) of mothers participated in the survey. Compared with 18% of nurses, 63% of mothers believed “KMC should be provided daily” and 90% of mothers compared with 40% of nurses strongly believed “mothers should be partners in care.” In addition, 61% of nonwhite mothers identified that “KMC was not something they were told they could do for their infant” compared with 39% of white mothers. Nonwhite and foreign-born nurses were 2.9 and 3.1 times more likely to encourage MCP and KMC. Mothers held strong positive perceptions of KMC and MCP value compared with nurses. Nonwhite mothers perceived they received less education and access to KMC. Barriers to KMC and MCP exist among nurses, though less in nonwhite, foreign-born, and/or nurses with their own children, identifying important provider educational

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opportunities to improve maternal KMC access in the NICU. PT, Descriptive, Staff Perspective, Parents as Providers (here called Maternal Care Partnership, barriers to KMC was race and nationality of nurse. Implementation.

Hendricks-Munoz KD, Louie M, Li Y, Chan N, Prendergast CC, & Ankola P. (2010). Factors that influence neonatal nursing perceptions of family-centered care and developmental care practices. American J. Perinatology, 27(3), 193-200. Correlational study of relationship between developmental care education and nursing perceptions and beliefs about KMC, developmental care, and family centered care using 24 item likert scale survey. 59 NICU nurses from 3 different Level 2 NICUS in NY completed Likert scale survey of their perceptions and beliefs about KMC. Neonatal nurses who were supported by an on-site developmental specialist were more likely to have strong beliefs related to the technique of KMC. Clinical care approaches that have a high level of parental participation such as KMC in the NICU are likely to be facilitated as are all development care approaches when a dedicated, trained infant developmental specialist is in the unit too. PT, dev care, KMC beliefs, implementation, nurse perceptions.

Hendricks-Munoz KD, & Mayers RM. (2014-Nov). A Neonatal Nurse Training Program in Kangaroo Mother Care (KMC) Decreases Barriers to KMC Utilization in the NICU. American Journal of Perinatology 31(11):987-92. doi: 10.1055/s-0034-1371359. This study assessed the impact of a nurse simulation training program on perception of kangaroo mother care (KMC) value and transfer skill competency. An 8-item Likert scale skill survey tool and a 24-item Likert developmental care survey tool were used in a prospective cohort study to analyze perceptions of 30 neonatal nurses who underwent a comprehensive KMC simulation-based training program. Competency skills were evaluated pretraining and tracked by direct observation for 6 months posttraining. Pre- and post-survey data were analyzed and KMC utilization for preterm infants born at ≥ 34 weeks gestation was determined. Nurses' competency in infant transfer improved, especially in infants receiving nasal continuous positive airway pressure or ventilator support, from 30 to 93% or 10 to 50%, respectively, p < 0.001. Neonatal nurses' perceived KMC value increased from 50 to 100%, p < 0.001, and parent KMC utilization increased from 26.5 to 85.9%, p = 0.0001. Nurses' support for parental visitation improved from 38 to 73%, p < 0.001; discussion of KMC with parents on the 1st day increased from 5 to 45%, p < 0.001; and initial day of KMC provision improved from 18.0 ± 2.7 to 5.6 ± 1.2 days, p < 0.001. A comprehensive simulation-based KMC education program improved nurses' perception of KMC value, their competency and comfort in infant transfer for KMC care, and successfully promoted KMC parent utilization for the preterm infant in the neonatal intensive care unit. PT, Descriptive evaluative study, transfer, staff issues (competency, comfort), earlier KMC start, more KC use, implementation, education, skills, education about KC, Parental involvement/parent as primary caregiver. Not on Charts 11/25/2014.

Hendricks-Muñoz KD, Xu J, Parikh HI, Xu P, Fettweis JM, Kim Y, Louie M, Buck GA, Thacker LR, Sheth NU. (2015-Nov). Skin-to-Skin Care and the Development of the Preterm Infant Oral Microbiome. Am J Perinatol. 32(13):1205-16. doi: 10.1055/s-0035-1552941. The oral cavity represents an initial entry way for oral and gut indigenous colonization. Skin-to-skin (STS) care, in which the mother holds the diaper clad naked preterm (PT) infant between her breasts, is associated with improved digestive function, decreased stress, and improved survival. This study evaluated the development of oral microbial colonization repertoires and health characteristics in PT infants with or without STS exposure. Saliva from 42 PT infants (<32 weeks of gestation at birth) was collected prospectively at 1 month and/or at discharge. High-throughput 16S rRNA sequencing identified microbial diversity and prevalence of bacterial signatures correlated with clinical STS or non-STS care. Corrected for gestational age (CGA) at sampling, bacterial taxa demonstrated increased Streptococcus as a signature of oral repertoire maturation. STS was associated with increased Streptococcus (p < 0.024), while non-STS was associated with greater Corynebacterium (p < 0.023) and Pseudomonas (p < 0.019) in infants ≤ 32 weeks GA. In infants > 32 weeks CGA, Neisseria and Acinetobacter were more prevalent, 50 vs. 16.7% and 40 vs. 0%, respectively. STS care was associated with shorter hospitalization (p = 0.039). STS care during earlier gestation was associated with a distinct microbial pattern and an accelerated pace of oral microbial repertoire maturation. PT, RCT, microbiome. NOT ON CHARTS 4-5-2018.

Hemel, D., Morson, G.L., & Preuss, E.A. (2013). Best practices in newborn injections. MCN: Am. J. Maternal Child Nursing, 38(3), 137-175. This is a review paper that just barely acknowledges KC’s role in easing pain of injections. The only thing it says, on page 166 under the heading “combining interventions to control pain,” is “Other effective analgesic interventions applicable to newborns include skin-to-skin care, pressure, and lidocaine-prilocaine topical agents (and she cites Kashaninia et al., 2008)….If coordination with a breastfeeding session is not possible, Bunk et al. 2010 recommend holding the baby skin-to-skin and administering a sucrose solution as an alternative combined analgesia strategy.”

Herald Sun Newspaper. (2009). Miracle premature baby Warwick still alive after dying 18 times. August 13, 2009. Available from http://www.news.com.au/heraldsun/story/2008/12/11/2752941. The only thing it says, on page 166 under the heading “combining interventions to control pain,” is “Other effective analgesic interventions applicable to newborns include skin-to-skin care, pressure, and lidocaine-prilocaine topical agents (and she cites Kashaninia et al., 2008)….If coordination with a breastfeeding session is not possible, Bunk et al. 2010 recommend holding the baby skin-to-skin and administering a sucrose solution as an alternative combined analgesia strategy.”

Herald Sun Newspaper. (2009). Miracle premature baby Warwick still alive after dying 18 times. August 13, 2009. Available from http://www.news.com.au/heraldsun/story/2008/12/11/2752941. The only thing it says, on page 166 under the heading “combining interventions to control pain,” is “Other effective analgesic interventions applicable to newborns include skin-to-skin care, pressure, and lidocaine-prilocaine topical agents (and she cites Kashaninia et al., 2008)….If coordination with a breastfeeding session is not possible, Bunk et al. 2010 recommend holding the baby skin-to-skin and administering a sucrose solution as an alternative combined analgesia strategy.”

Herald Sun Newspaper. (2009). Miracle premature baby Warwick still alive after dying 18 times. August 13, 2009. Available from http://www.news.com.au/heraldsun/story/2008/12/11/2752941. The only thing it says, on page 166 under the heading “combining interventions to control pain,” is “Other effective analgesic interventions applicable to newborns include skin-to-skin care, pressure, and lidocaine-prilocaine topical agents (and she cites Kashaninia et al., 2008)….If coordination with a breastfeeding session is not possible, Bunk et al. 2010 recommend holding the baby skin-to-skin and administering a sucrose solution as an alternative combined analgesia strategy.”

Herald Sun Newspaper. (2009). Miracle premature baby Warwick still alive after dying 18 times. August 13, 2009. Available from http://www.news.com.au/heraldsun/story/2008/12/11/2752941. The only thing it says, on page 166 under the heading “combining interventions to control pain,” is “Other effective analgesic interventions applicable to newborns include skin-to-skin care, pressure, and lidocaine-prilocaine topical agents (and she cites Kashaninia et al., 2008)….If coordination with a breastfeeding session is not possible, Bunk et al. 2010 recommend holding the baby skin-to-skin and administering a sucrose solution as an alternative combined analgesia strategy.”

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Herald Sun. (2009). Miracle Baby Warwick Still Alive after Dying 18 Times. Herald Sun Newspaper, Australia. August 13, 2009. Available from http://www.news.com.au/heraldsun/. Case study of a Birmingham UK preterm born 11 wks premature who had bad infection. Parents made do not resuscitate decision and took him out of incubator to hold without all the wires and machines. They Kced him for 8 weeks and 18 times he stopped breathing and then started himself back up again. Mom says “he slept with me in a bed in that room for those 8 days, hearing my heart beating as he lay beside me, his skin on mine. What happened to Warwick is a pure miracle, its as simple as that.” Baby has cerebral palsy now, and is over one year old, but heart problems no longer exist. PT, Compassionate KC. End of life. HAS BEEN LISTED IN PUBLICATIONS AS MIRACLE BABY WARWICK without the newspaper name.

Hernojunus, E. & Kuhn, P. (2013-Feb). Sudden unexpected postnatal collapse of newborn infants: a review of cases, definitions, risks and preventing measures. Translational Stroke Research. 4(2), 236-247. doi: 10.1007/s12975-013-0255-4. This study aimed to review available published reports concerning sudden unexpected postnatal collapse (SUPC) of apparently healthy infants within the first days of postnatal life, establish a structured presentation and delineate recommendations for preventive measures. All published reports of SUPC cases were retrospectively analyzed, and three not previously published SUPC cases at Karolinska University Hospital were detailed to exemplify the varying presentations and outcomes of SUPC. We found 398 published cases of SUPC occurring during first postnatal week. Estimated incidence of the SUPC of a presumably healthy infant after birth differs widely, ranging from 2.6 cases to 133 cases/100,000. However, definition, inclusion, and exclusion criteria vary substantially between reports. Our summary indicates that reported SUPC occurs more frequently than expected from recent surveys. About half of the infants die, and of the remaining survivors, half have neurological sequelae. Of the 233 cases of sudden unexpected death described, no etiology was found in 153 cases. When a defined time for the SUPC event is described, approximately one third of reported events occur during the first 2 hours (1/2 resulted in death; ½ of survivors had neurologic sequelae), between 2 and 24 h and between 1 and 7 days after birth, respectively. Given 5 million annual births in European Union, that is 150 deaths annually. SUPC frequently associated with prone position, skin-to-skin contact SSC, and/or co-bedding. Adequate education of caregivers and appropriate surveillance during the first days of newborns should enable us to save hundreds of lives. FT, Birth KC, Very Early KC, SUPC, life threatening events. SUPC NOT on chart 11 2014.

Hewitt V, Watts R, Robertson J, Haddow G. (2005-Aug). Nursing and midwifery management of hypoglycaemia in healthy term neonates. International Journal of Evidence-Based Healthcare. 3(7):169-205. doi: 10.1111/j.1479-6898.2005.00025.x, The primary objective of this review was to determine the best available evidence for maintenance of euglycaemia* in healthy term neonates, and the management of asymptomatic hypoglycaemia in otherwise healthy term neonates. The review included any relevant published or unpublished studies undertaken between 1995 and 2004. Studies that focus on the diagnostic accuracy of point-of-care devices for blood glucose screening and/or monitoring in the neonate were initially included as a subgroup of this review. However, the technical nature and complexity of the statistical information published in diagnostic studies retrieved during the literature search stage, as well as the considerable volume of published research in this area, suggested that it would be more feasible to analyse diagnostic studies in a separate systematic review. Thus, the review focused on studies that included healthy term (37- to 42-week gestation) appropriate size for gestational age neonates in the first 72h after birth. Excluded were studies of babies who were: preterm or small for gestational age newborns; • term neonates with a diagnosed medical or surgical condition, congenital or otherwise; • babies of diabetic mothers; • neonates with symptomatic hypoglycaemia; • large for gestational age neonates (as significant proportion are of diabetic mothers). All interventions that fell within the scope of practice of a midwife/nurse were included: • type (breast or breast milk substitutes), amount and/or timing of feeds, for example, initiation of feeding, and frequency; • regulation of body temperature; • monitoring (including screening) of neonates, including blood or plasma glucose levels and signs and symptoms of hypoglycaemia. Interventions that required initiation by a medical practitioner were excluded from the review. Outcomes that were of interest included: • occurrence of hypoglycaemia; • re-establishment and maintenance of blood or plasma glucose levels at or above set threshold (as defined by the particular study); • successful breast-feeding; • developmental outcomes. The review initially focused on randomised controlled trials reported from 1995 to 2004. Insufficient randomised controlled trials were identified and the review was expanded to include additional cohort and cross-sectional studies for possible inclusion in a narrative summary. The major electronic databases, including MEDLINE/PubMed, CINAHL, EMBASE, LILACS, Cochrane Library, etc., were searched using accepted search techniques to identify relevant published and unpublished studies undertaken between 1995 and 2004. Efforts were made to locate any relevant unpublished materials, such as conference papers, research reports and dissertations. Printed journals were hand-searched and reference lists checked for potentially useful research. The year 1995 was selected as the starting point in order to identify any research that had not been included in the World Health Organisation review, which covered literature published up to 1996. The search was not limited to English language studies. ASSESSMENT OF QUALITY: Three primary reviewers conducted the review assisted by a review panel. The review panel was comprised of nine nurses with expertise in neonatal care drawn from senior staff in several metropolitan neonatal units and education programs. Authors of journal articles was not concealed from the reviewers. Methodological quality of each study that met the inclusion criteria was assessed by two reviewers, using a quality assessment checklist developed for the review. Disagreements between reviewers were resolved through discussion or with the assistance of a third reviewer. Two reviewers used a data extraction form to independently extract data relating to the study design, setting and participants; study focus and intervention(s); and measurements and outcomes. As only one relevant randomised controlled trial was found, a meta-analysis could not be conducted nor tables constructed to illustrate
comparisons between studies. Instead, the findings were summarised by a narrative identifying any relevant findings that emerged from the data.

RESULTS: Seven studies met the inclusion criteria for the objective of this systematic review. The review provided information on the effectiveness of three categories of intervention - type of feeds, timing of feeds and thermoregulation on two of the outcome measures identified in the review protocol - prevention of hypoglycaemia, and re-establishment and maintenance of blood or plasma glucose levels above the set threshold (as determined by the particular study). There was no evidence available on which to base conclusions for effectiveness of monitoring or developmental outcomes, and insufficient evidence for breast-feeding success. Given that only a narrative review was possible, the findings of this review should be interpreted with caution. The findings suggest that the incidence of hypoglycaemia in healthy, breast-fed term infants of appropriate size for gestational age is uncommon and routine screening of these infants is not indicated. The method and timing of early feeding has little or no influence on the neonatal blood glucose measurement at 1h in normal term babies. In healthy, breast-fed term infants the initiation and timing of feeds in the first 6h of life has no significant influence on plasma glucose levels. The colostrum of primiparous mothers provides sufficient nutrition for the infant in the first 24h after birth, and supplemental feeds or extra water is unnecessary. Skin-to-skin contact appears to provide an optimal environment for fetal to neonatal adaptation after birth and can help to maintain body temperature and adequate blood glucose levels in healthy term newborn infants, as well as providing an ideal opportunity to establish early bonding behaviours. The seven studies analysed in this review confirm the World Health Organisation's first three recommendations for prevention and management of asymptomatic hypoglycaemia, namely: 1 Early and exclusive breast-feeding is safe to meet the nutritional needs of healthy term newborns worldwide. 2 Healthy term newborns that are breast-fed on demand need not have their blood glucose routinely checked and need no supplementary foods or fluids. 3 Healthy term newborns do not develop 'symptomatic' hypoglycaemia as a result of simple underfeeding. If an infant develops signs suggesting hypoglycaemia, look for an underlying condition. Detection and treatment of the cause are as important as correction of the blood glucose level. If there are any concerns that the newborn infant might be hypoglycaemic it should be given another feed. Given the importance of thermoregulation, skin-to-skin contact should be promoted and ‘kangaroo care’ encouraged in the first 24h after birth. While it is important to maintain the infant’s body temperature care should be taken to ensure that the child does not become overheated.

Heyns L, Gie RP, Goussard P, Beyers N, Warren RM, & Marais IJ. (2006). Nosocomial transmission of Mycobacterium tuberculosis in kangaroo mother care units: a risk in tuberculosis-endemic areas. Acta Paediatr, 95(5), 535-539. Case-study of one case in which Mycobacterium tuberculosis was passed to a source within the KMC unit in which 8-10 mothers/infants resided. Infant was born at 29 weeks and spent 23 days between 2 KMC units. The chance for nosocomial transmission of infection was due to untreated active TB positive pregnant women, a TB-endemic environment, and confined, poorly ventilated area, and multiple mothers in one room. Mother of infant was not TB positive, nor were any contacts at home. Only possible source was another mother in the KMC unit who had chronic cough and illness (she was TB positive). Actually 4 of the 6 neonates who shared the environment with this TB+ mother got TB. All parents, visitors, and healthcare workers should be screened to decrease nosocomial transmission. Premature, Descriptive, nosocomial infections, 3rd world? (Not on charts)

Hickson A., Rutherford M, Glover V, Stevenson J, Dore C., Cowan F, & Modi, N. (2006). Neurological outcome of premature infants following a controlled trial of skin-to-skin contact. Early Human Development, 82(9), 631-632. Randomized controlled trial of 78 (KC=40; incubator = 38) preterm infants less than 32 weeks Gestation started KC or incubator within first week of life. Moms were encouraged to give KC once daily for 4 weeks, but mean number of minutes of KC over 4 weeks was 507.36 (approximately 8

Higman, W., Wallace, L.M., Law, S., Bartle, N.C., & Blake, K. (2015). Assessing clinician’s knowledge and confidence to perform kangaroo care and positive touch in a tertiary neonatal unit in England using the Neonatal Unit Clinician Assessment Tool (NUCAT). Journal of Neonatal Nursing, 21: 72-82. This was a quasi-experimental study of 51 medical and nursing neonatal care staff who answered the NUCAT questionnaire to determine learning needs, then took an online knowledge test with rating of confidence and knowledge in the practice of KC. Staff spending more than 75% of time in NICU knew more about Positive touch than workers with less KCBib 2018
time. Clinicians with training in family centered care had significantly more confidence in the knowledge and practice of KC than others. But when given their scores on the NUCAT, knowledge and confidence about KC (but not about positive touch, Positive touch is defined as "involving various types of infant touch interaction including handling, holding, kangaroo care, and massage (Bond, 2002)" and was significantly reduced. Interviews with 6 NICU nurses revealed that LACK OF FORMAL TRAINING AND EVIDENCE-BASED GUIDELINES impeded confidence of clinicians in implementing both KC and PT. Practice of KC was not related to age, years of experience, amount of direct patient care in NICU, but to educational preparation of nurse. PT, Qualitative and quantitative pretest-posttest one group design with qualitative component. NICU, Staff Issues, knowledge, confidence, implementation, Positive touch, staff confidence, not much KC being done. Need to finish review and not on charts 5/25, knowledge, knowledge is lacking

Hiles, M. (2011). An Evidence-Based Intervention for Promoting Sleep in Infants Experiencing Neonatal Abstinence Syndrome (NAS) Due to Maternal-Methadone Use. Philadelphia, PA: National Association of Clinical Nurse Specialists. This is an evaluative study of in which the author implemented skin to skin care for one hour after feedings in newborn infants with NAS to promote infant comfort and sleep, based on the neurobehavioral characteristics of preterm infants, and reported improvement in continuous quiet sleep (Hiles, 2011). The intervention not only enabled the infants to sleep better, the mothers felt good about their unique contribution to provide the intimate contact that comforted their infants exhibiting signs of withdrawal. PT, FT, NAS, sleep, maternal perception. Not on Charts 9/1/2014.


Hill PD, Aldag JC, & Chatterton RT. (1999a). Breastfeeding experience and milk weight in lactating mothers pumping for preterm infants. Birth, 26(4), 233-238. Average frequency of KC/wk was used as covariant in comparison of single vs double pumping on milk yield from 2-5 weeks PP. No infants were breastfed during wks 2-5 PP.. KC was significantly related to 2=5 wk PK milk yield (p<.017). PT, BF

Hill PD, Aldag JC, & Chatterton RT. (1999b). Effects of pumping style on milk production in mothers of non-nursing preterm infants. J Human Lactation. 15(3), 209-216 Says that KC helps increase mother’s milk supply, PT, BF, milk supply,

Hill & Schronk is later in the bib

Hill Z, Tawiah-Agyemang C, Manu A, Okyere E, & Kirkwood BR. (2010). Keeping newborns warm: beliefs, practices, and potential for behaviour change in rural Ghana. Tropical Medicine and International Health. 15(10), 1118-1124 DOI: 10.1111/j.1365-3156.2010.02593.x. Descriptive study of 635 women in rural Ghana who delivered were interviewed about immediate newborn care. Respondents knew that keeping baby warm was essential for health but 71% still had delayed drying, 79% delayed wrapping, 93% early bathing, 10% placed in KC. Birth attendants were in charge and usually left baby alone until placenta was delivered. Early bathing is to reduce body odour in later life, shaping baby’s head, helping baby sleep and feel clearn. KC was easily understod and mostsaid they would try it but changing bathing practices will be difficult. FT, community-based KC, Birth KC, hypothermia. Not on chart 1/21/2011

Hinduja, A.R.A. & Udani, R.H. (2014 Jan-Mar). Skin to skin contact at birth for full term newborns- Randomized controlled trial. Journal of Neonatology, 28(1): 10-17. States that there is insufficient data on SSC’s ability to regulate full term infant’s temperature, and effect weight gain and initiation of breastfeeding. RCT of 60 healthy term newborns (>2500 gms and CRIED immediately at birth (mothers kept record of their time in KC) (Range was 6-18 hrs of KC, M=11.2, SD=2.9 hrs) and 30 who were separated from their mothers at birth (taken to warmer for first .5=1.0 hours of life and then given to mother in postpartum unit dressed and bedded with her in clothes) per conventional/traditional care in INDIA. Breast crawl was observed in 25/30 (83%) of SSC infants. Digital axillary temp at 30 min, 1 hr, 5, and 12 hrs postbirth and then once per day. Hypothermia (<36.5) occurred more frequently in first five days of life in control infants than KC; First 30 minutes: 8/30 had mild cold stress/hypothermia (temp 36.0-36.4.0) and one had moderate hypothermia (32-35.9) in first 30 minutes but 13 of 30 controls had mild hypothermia and 13 had moderate hypothermia. Temp At 1 hr postbirth: 5 KC and 24 controls had hypothermia; at 6 hrs 3 KC vs.20 controls; at 12 hrs No KC vs 13 controls and at 24-48 hrs postbirth 1 KC vs 13 controls had hypothermia (remember, KC ended at 24 hours postbirth). Hypothermia frequency in KC vs controls on day 3 was 2 vs 8 day 4 was 1 vs 8 ; day 5 was 1vs 6, day 6 0 KC vs. 2 controls. 5 KC & KCs had higher daily average temp from 30 mins postbirth through 6 days postbirth. More KC (all 30) than control (only 4) infants initiated BF within 30 mins of birth, and had more BF's per day for first 6 days (mothers taught to exclusively BF every two hours), average daily weight gain improved more in KC than controls on days 4-6 (weighted daily one hour after a feeding on electronic scale), more KC infants (96.6%) regained birth weight by day 6 than controls (23.3%) FT, RCT, 3rd world, temp, BF initiation, weight, BirthKC, hypothermia, postpartum KC – first day only, Maternal Record of KC time, duration of KC

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Hofer, Myron A. (1994). Early relationships as regulators of infant physiology and behavior. *Acta Paediatrica Supplement, June*, vol. 397, pg. 9-18.“The mere presence of the mother not only ensures the infant’s well-being, but also creates a kind of hothouse in which the infant’s development can unfold. This is a private realm of sensory stimulation constructed by the mother and infant from countless exchanges of subtle clues. For a baby the environment (habitat) is the mother. What seems to be a single physical function, such as grooming or nursing, is actually a kind of umbrella that covers stimuli of touch, balance, smell, hearing, and vision, each with a specific effect on the infant. Through hidden maternal regulars’ a mother precisely controls every element of her infant’s physiology, from its heart rate to its release of hormones, from its appetite to the intensity of its activities.” In recent years, animal research has revealed a network of simple behavioral and biological processes that underlie the psychological constructs we use to define early social relationships. Hidden within the observable interactions of parent and offspring are sensorimotor, thermal and nutrient-based events which have unexpected and widespread regulatory effects on infant behavior and physiology. The complex pattern of responses resulting from early separation in infant rats can be traced to the abrupt withdrawal of a number of discrete, independent regulatory processes which had been acting on individual components of the infant’s physiology and behavior. These regulatory processes also appear to mediate long-term shaping effects exerted by early relationships, for example, on the vulnerability of the adult rat to hypertension and stress ulcer. In human development, early regulatory interactions may provide a bridge between biological and psychological processes in the development of our earliest mental representations. THIS IS GREAT!!!! Review, separation, co-regulation NOT ON CHARTS See next Hofer for additional information

Hofer, M.A. (1994). Hidden regulators in attachment, separation, and loss. Monographs of the Society for Research in Child Development, 59(2-3), 192-207. Not a KC study, but it is a review of what happens to infant when mother is NOT available, talking about frequent separations, total separation (i.e. mother not seen, nor smelled during tactile separation), and how separation increases infant cortisol and stress reactivity and having mother there, even partially separated so infant can still see her and smell her, is important for better health in the infant. Review, separation, attachment. NOT ON CHARTS

Hofer, M.A. (1972). Physiological and behavioral processes in early maternal deprivation. Ciba Foundation Symposium. 8 175. NOT KC but speaks to mother being the habitat for the newborn and when she is not, abnormal development occurs.


Holditch-Davis, D., & Black, B.P. (2003). Care of preterm infants: programs of research and their relationship to developmental science. *Annual Review of Nursing Research, 21*, 23-60. This is REVIEW of many different interventions with preterm infants and it includes Kangaroo Care and says that is is a promising area of study as the impact of KC has not been fully examined yet and more research is needed. REVIEW.

Holditch-Davis, D., White-Traut, R. Levy, J., Williams,K.L., Ryan, D., & Vonderheid, S. (2013, Nov-Dec). Maternal Satisfaction with Administering Infant Interventions in the Neonatal Intensive Care Unit. *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 42*(6), 641-654. To examine mothers’ satisfaction with administering interventions for their preterm infants and with the helpfulness of the study nurse by comparing massage with auditory, tactile, visual, and vestibular stimulation (ATVV intervention), kangaroo care, and education about equipment needed at home and to explore whether mother and infant characteristics affected maternal satisfaction ratings.208 preterm infants and their mothers in a 3→group experimental design in 4 NICUs (2 in North Carolina, two in Illinois).When the infant was no longer critically ill, mother/infant dyads were randomly assigned to ATVV (a massage technique with auditory and vestibular components), kangaroo care, or the education group all taught by study nurses. At discharge and 2 months corrected age, mothers completed questionnaires. All groups were satisfied with the intervention and with nurse helpfulness, and the degree of satisfaction did not differ among them. Intervention satisfaction, but not nurse helpfulness, was related to recruitment site. Older, married, and minority mothers were less satisfied with the intervention but only at 2 months. Higher anxiety was related to lower intervention satisfaction at discharge and lower ratings of nurse helpfulness at discharge and 2 months. More depressive symptoms were related to lower nurse helpfulness ratings at 2 months. Mothers were satisfied with interventions for their infants regardless of the intervention performed. Maternal satisfaction with the intervention was related to recruitment site, maternal demographic characteristics, and maternal psychological distress, especially at 2 months. Thus, nursing interventions that provide mothers with a role to play in the infant’s care during hospitalization are particularly likely to be appreciated by mothers. PT, RCT, Massage, maternal satisfaction

Horiiuchi, T. (1999). Kangaroo Care (Japanese Book). Available from Takeshi Horiiuchi, M.D., Chairman, St. Marianna University School of Medicine, Yokohama City Seibu Hospital, Perinatal Center, 1197, Yasahi-ku Asahi-ku, Yokohama City, 241-0811 JAPAN. (045) 366-111. e-mail: koiichii@w15.so-net.ne.jp PT

Hospital, H. D., Solomons, N., & Rosant, C. (2012). Knowledge and attitudes of nursing staff and mothers towards kangaroo KC Bib 2018
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FATHERS, PT. Same study as Ludington-Hoe et al., 1992 in *J Developmental Physiology. HR, RR, SaO2, Temp, Paternal-Infant interaction, sleep, crying*

Houston, S. (2009). Financial impact of Kangaroo Care. (not published yet, available from Sylvia Houston at www.preciousimagecreations.com). Based on stats from March of Dimes that 12.8% of all babies born each year in 2006 were preterm (128 of every 1000 babies born, or 543,000 in 2006), the approximate cost per day of preterm care is $10,000 and the approximate weekly cost of preterm care is $70,000. Because KC babies have an average of 7 days shorter length of stay,(Charpak et al., 1997, Pediatrics), the savings with KC is $8,960,000.00 for every 128 preterms, the savings for lower re-admission rate is $1,152,000.00; and from fewer NEC cases $1,168,000,000, yielding a grant total of $11,280,000.00 and a per baby savings of $88,125.00! Article explains how these figures were derived. PT, Cost, length of stay, readmissions, NEC.

Howell, E., & Graham, C. (2011). Parent’s experiences of neonatal care. A report on the findings from a national survey. The Pickler Institute, Oxford. Survey of over 9000 parents of NICU infants in 125 NICU in UK (50% response rate so N=4500 parents). 77% of parents said they were encouraged to touch, hold and comfort their baby and 5% said this was not the case. A much smaller percent of parents said they had as much KC as they wanted. One in ten parents said they did not know about KC. A significantly smaller proportion of parents in the youngest age group (16-27) said they were involved as much as they wanted to be in the day to day care of their babies, being encouraged to hold and comfort them and having as much KC with them as they wanted. Survey, NICU, parent experience, NOT ENOUGH KC. Parent’s not getting enough KC: Implementation evaluation. Not on charts 5/25/15 and GET THIS IF POSSIBLE BY GOING TO WEBSITE FOR PICKLER INSTITUTE.


Huang, Y.Y., Huang, C.Y., Lin, S.M., & Wu, S.C. (2006). Effect of very early Kangaroo Care on extraterine temperature adaptation in newborn infants with hypothermia problems. *Hu Li Zi Zhi*, 53(4), 41-48. Randomized controlled trial of early KC vs. radiant warmer. 78 consecutive cesarean newborn infants with hypothermia were randomized. KC group got KC with their moms in the post-op room (KC started >30 minutes postbirth); controls got routine care under radiant warmers. Mean temp of KCers was higher (36.29 vs. 36.22, p<0.04) than those under radiant warmers. Extraterine adaptation in hypothermic infants is best treated with KC. “KC could be incorporated into standard care regimen to improve hypothermia care.” After 4 hours, 97.43% of KC group infants had reached normal body temp vs.82.05% of controls. KC should be incorporated into standard care to improve hypothermia care. Full Term, RCT, very early KC, cesarean section, warming, hypothermia, Check chart.

Hubbard JM, Gattman KR. (2017-mar). Parent-Infant Skin-to-Skin Contact Following Birth: History, Benefits, and Challenges. Neonatal Netw. 2017 Mar 1;36(2):89-97. doi: 10.1891/0730-0832.36.2.89. Review. It is a practice with strong roots in nature and has a significant influence on health outcomes, particularly for at-risk newborns in low-resource settings. In this comprehensive review, benefits of SSC for newborns, mothers, and fathers after vaginal and cesarean births are discussed as well as the benefits of SSC observed for infants in the NICU. Barriers to SSC practice implementation are discussed, and proposed solutions and recommendations are offered. By understanding the many benefits of SSC and strategies for implementation, health care providers can best support and promote this high-quality, evidence-based practice with mothers, newborns, and their families. PT, FT, benefits of KC, barriers to KC. Not on charts 27-2017

Hughes KN, Rodriguez-Carter J, Hill J, Miller D, Gomez C.(2015-Dec -2016-Jan). Using Skin-to-Skin Contact to Increase Exclusive Breastfeeding at a Military Medical Center. *Nurs Womens Health*. 19(6):478-89. doi: 10.1111/1751-486X.12244. Evidence shows that early formula supplementation leads to early weaning from exclusive breastfeeding. We implemented an evidence-based practice project on skin-to-skin contact (SSC) for healthy term newborns at a large military treatment facility in an effort to decrease formula supplementation in the early postpartum period. Military women face unique challenges when it comes to breastfeeding. SSC in the early postpartum period is an effective intervention to increase exclusive breastfeeding during the hospital stay and foster future positive breastfeeding outcomes. Through this project, staff knowledge of the benefits of SSC to women and newborns improved and the hospital’s exclusive breastfeeding rate increased by 20 percent. FT, quality improvement project, BF, knowledge, postpartum KC, exclusive BF. Not on Charts.

Hung, K.J., & Berg, Q. (2011). Early skin-to-skin after cesarean to improve breastfeeding. *MCN, American Journal of Maternal Child Nursing, 36*(5), 318-326. Quality improvement project using the PDSA (Plan, Do, Study, Act) approach promoted as a Rapid Cycle Improvement Process for quality improvement from the Health Care Quality Strategies, Inc. group (reference is at end of this citation) to do KC in operating room and during recovery to increase breastfeeding. Tried KC in OR (duration of KC in OR ranged from 3-30 minutes pg. 322) and in recovery for first 3 months of the project and found that when KC was given in the OR there was higher LATCH score in infants who got KC in OR (8.0) vs. no KC within 90 minutes of birth (LATCH =7.7) or within four hours of delivery (LATCH=7.6). Only 33% of the KC OR moms fed formula compared to 42% of moms who got KC in recovery in the first 90 minutes postbirth. NO KC Group within 90 minutes of birth had 74% supplementing with formula. Skin-to-skin contact within the first 90 minutes of birth increased from 20% (before intervention) to 68% (after intervention) and the number of infants who did NOT get KC within the first four hours postbirth decreased from 40% to 9%. Conclusion was that Birth KC was feasible and can be provided “IMMEDIATELY after cesarean birth”. And there is greater likelihood of breastmilk feeding than formula when KC begins in the OR rather than in recovery (lower rates of supplementation too). *Perinatal and neonatal nurses should be leaders in changing practice to incorporate early Skin-to-skin contact into routine care after cesarean birth.* (pg. 1 of article). One mother was quoted as saying “I felt some pain at the end of the surgery because the effects of the anesthesia were wearing off, but when they put the baby in my arms, I forgot about the pain because I was so happy to have him with me” (pg. 323). “With my last child, they took her to the nursery right away (after the cesarean) and she never wanted to latch after that…but this baby latched right away and he nurses really well because I had him with me right away.” (pg. 323). Pge. 323 also states that “early skin-to-skin maternal infant contact has become the standard after vaginal birth, and there is no evidence that suggests that it should not be extended to cesareans.” This is a CEU article and you can get 2.4 hours if you pay $21.94 for it.


Humane Neonatal Care Initiative. See Levin 1999 citation


Hunt F. (2008). The importance of kangaroo care on infant oxygen saturation levels and bonding. *J Neonatal Nursing 14*(2), 47-51. After an extensive review of the literature, they present a case study of a 24 week GA infant who was 28 days old when held by dad for 30 min of Paternal KC and then given to mom for 90 minutes of Maternal KC. During PKC and MKC sessions infant had no desaturations, FiO2 requirement reduced from 43% to 38%, and vital signs improved. Mother showed signs of obvious confidence with handling and caring for infant once she commenced KC. Baby got off CPAP relatively soon and mom was confidence in transfer and discharge. Then they go into issues related to implementation, and recommendations for practice saying all pediatric nurses would benefit from learning more about benefits of KC. Literature needs to be produced for families to understand importance of KC, and wider society awareness of KC will facilitate its implementation. Development of evidence-based guidelines is essential because no protocol inhibits KC use according to Wallin et al., 2004), PT, Case study, CPAP, FiO2, vent KC, stability, desats, SaO2, implementation, staff education, guidelines, need pamphlets NOT ON CHARTS YET.

Hurst NM, & Meier P. (2001). Managing breastfeeding for preterm infants and their mothers. *Central Lines, 17*(4), 1, 3-7. Refers to use of KC on pg 3 with pictures and how helpful it is to promote breastfeeding.Differentiates starting with KC and progressing to KC + nonnutritive sucking to BF. BF, PT

Hurst, N.M., Valentine, C.J., Renfro, L., Burns, P. & Ferlic, L. (1997). Skin-to-skin holding in the neonatal intensive care unit influences maternal milk volume. *J Perinatology, 17*(3): 213-217. 8 mothers started KC during the first 4 weeks postdelivery and 8 others in the following 4 weeks. All babies had been ventilated. Mean 24-hour milk volumes at 2,3,4 weeks after delivery showed strong linear increase in KMC infants, and no change in control infants’ mothers’ milk volumes. PT, milk volume, BF, milk production

Hussey-Gardner B & Famuyide M. (2009). Developmental interventions in the nicu: What are the developmental benefits. *NeoReviews 10*(3), e113-e119. Review of NIDCAP, massage, positioning, KC, music, visual stimuli, light, multimodal stimuli on development. Positive review for NIDCAP, and for KC it says on page e117 “Infants receiving KC (interruitted KC during hospitalization) have exhibited more alertness and less gaze aversion (Feldman et al., 2002), more rapid maturation of vagal tone and state organization, more quiet sleep, more alert wakefulness, less active sleep, better habituation and orientation skills on the NBAS (Feldman et al., 2003), and higher MDI and PDI scores on the Bayley (Feldman et al., 2002). When compared to standard NICU care, preterm infants receiving KMC (continuous KC skin to skin home care with daily output. Monitoring) demonstrated similar developmental outcomes, with no difference in development as measured by the Griffiths Mental Dev Scales at 6 and 12 months corrected age, and no differences in the same outcome measures at 18 and 24 months corrected age.


incidence of cerebral palsy, visual deficits, and hearing impairments at 12 months of age (Charpak et al., 2001). The developmental benefits of KMC may be better for low birthweight preterm infants (Tessier et al., 2003). When compared with standard NICU care, treated infants had higher IQ scores on the Griffiths Mental Dev. Scales at 12 months corrected age, and the difference was most significant for preterm infants born earlier (30-32 wks GA) (Tessier et al., 2003).” Review, developmental care, development., PT

Hutton and Hassan


Hynan, MT & Hall, SL (2015). Psychosocial program standards for NICU parents, J Perinatol 35 (S1): S1-S4; doi:10.1038/jp.2015.141 because this is correct citation for this article which states on page S1 “Distress is the companion of everyone in the NICU.” See fuller annotation as National Perinatal Association, 2015-Dec. 1 citation that follows. Distress is the companion of everyone in the NICU. PT, Toxic stressors, single family rooms, family integration.

Ibe OE, Austin T, Sullivan K, Fabanwo O, Dissa E, & Costello AM. (2004). A comparison of kangaroo mother care and conventional incubator care for thermal regulation of infants <2000 g in Nigeria using continuous ambulatory temperature monitoring. Ann Trop Paediatr 24 (3), 245-251. Cross-over quasi-experimental study of ambulatory KMC alternating with incubator care in Lagos, Nigeria. Each KMC/incubator session was 4 hours, 38 KMC sessions compared to 38 incubator sessions in 13 stable 1200-1999g infants who were 24 hrs-30 days old who wore cotton vests and caps (pg. 246) during KMC (IS this REALLY KMC?) and only diaper in incubator. KMC done by mother or by surrogate female. Infant forehead and axillary temp and maternal chest temp every 5 min x 4 hrs for each session. Each day had 3 KMC and 3 incubator periods. Mean axillary temp in KMC = 37.6 (0.5); incubator = 37.1 (0.8); mean microambient temp in KMC = 34.3(0.2) and incubator = 33.6 (3.5). Core (axilla)-periphery difference in incubator 1.0 (0.7). Risk of hypothermia reduced by >90% in KMC vs. incubator, and more cases of hyperthermia (>37.9) not significant. Microambient temp (next to infant, under bra top of mom) higher in KMC than incubator (tho room temp was same). 88% of Moms thought KMC safe, 100% preferred KMC to incubator because no separation. 63% had problems adjusting to KMC, 53% thought KMC was convenient for mom, 75% thought KMC was comfortable for mom, 100% thought KMC comfortable for baby. KMC is preferred method for managing stable LBW infants. Quasi-Exp, 3rd world, PT, Axillary temp, forehead temp, core-periphery gradient, Micro-ambient temp/brain temp) Maternal feelings, surrogate KC: Swaddled KC (dressed), SEPARATION

Imdad A, Bhutta ZA.(2013). Nutritional management of the low birth weight/preterm infant in community settings: a perspective from the developing world. Pediatrics.162(3 Suppl):S107-14. doi: 10.1016/j.peds.2012.11.060. A Pakistan study. Globally, about 20 million infants are born with low birth weight (LBW; <2500 g). Of all LBW infants, approximately 95% are born in developing countries. The greatest incidence of LBW occurs in South-Central Asia; the second greatest is in Africa. The two main reasons for LBW are preterm birth (<37 weeks) and intrauterine growth restriction (IUGR), which are risk factors for increased morbidity and mortality in newborn infants. Maternal nutrition status is one of the most important risk factors for LBW/IUGR. Providing balanced protein energy and multiple micronutrient supplements to pregnant women will reduce incidence of IUGR. Calcium supplementation during pregnancy will reduce the incidence of pre-eclampsia and preterm birth in developing countries. Exclusive breastfeeding is protective for a mother and her infant and has been shown to reduce morbidity and mortality in infancy. Kangaroo mother care for preterm infants will reduce severe morbidity and mortality as well. Community-based intervention packages are among the most effective methods of reducing morbidity and mortality in mothers and children. Future research should focus on improving triage of preterm and IUGR infants. Exclusive breastfeeding should be promoted, and appropriate alternative food supplements should be provided when breastfeeding is not possible. PT, 3rd world, Clinical review, IUGR, exclusive BF, morbidity, mortality

INJOY VIDEOS (2010). Web-Enhanced Parent Guides. There are two that are of interest to us: Mother and New Baby Care and Better Breastfeeding. In Mother and New Baby Care chapter 2 is Feeding Your Baby from page 10-12, and on page 20 there is a section called “Ways to Keep Your Baby Close” and the first one says “Hold her skin-to-skin whenever possible (now and in the weeks to come).” And under the picture of KC on the same page it says “Skin-to-skin contact keeps your baby calm and helps you learn her hunger cues.” In Better Breastfeeding, chapter 2 Latching On and Positioning, section 1 called “Getting off to a good start” it says on page 10 under “ways to prepare for breastfeeding: “Talk with your hospital staff and healthcare provider to make sure that you will have a long period of holding your baby skin-to-skin right after birth.” In the section entitled “Rooming-in at the Hospital” it says “Rooming-in allows you to hold your baby skin-to-skin and breastfeed from the beginning, giving you both a good start.” And in the right hand column there is a whole section entitled “Skin-to-skin contact” and it says “Hold your baby skin-to-skin right after delivery for at least an hour, with no clothing or bedding between the two of your. The hospital staff can usually do everything they need to while you hold her. If she is alert, she may latch on and breastfeed. If you have a cesarean birth, hold your baby skin-to-skin as soon as you can.l If you are both doing well, KCBib 2018
you can ask for your baby to be brought to you. Hold her skin-to-skin as much as you can in her first days and weeks – it helps breastfeeding and puts her right where she needs to be!” This is followed by a picture of mother breastfeeding in KC and the picture is labeled “Skin-to-skin contact” and the caption says “See How you cn hold your baby skin-to-skin right after birth.” Below the picture there is box called “TAKE NOTE. Skin-to-skin Contact. Studies show positive effects on babies who have immediate skin-to-skin contact and who are held close to the breast after birth. The benefits of skin-to-skin contact: It keeps babieswarm and comfortable, they latch on better, which helps your milk production, they breastfeed exclusively for a longer period of time, they cry less.” (all on page 10) On page 11 it says in the “Your Baby’s Position” section: Hold your baby so he is facing you, tummy-to-tummy (and skin-to-skin if possible)” FT, BF, PP KC, home KC, Birth KC. Not on charts as of 10/14/2010.

Institute of Medicine Committee on Understanding Premature Birth and Assuring Healthy Outcomes, (2007). Respiratory (Chapter 10) in Understanding Preterm Birth: Causes, Consequences and Prevention. IOM: Washington, D.C. This is a big book that relates costs of prematurity and all aspects of care of preterm infants. In chapter 10, there is a whole section on KC which I have copied here: “Kangaroo Care. Kangaroo Care provides skin-to-skin care by placing the naked preterm infant in an upright position between the mother’s breasts and allows uninterrupted breastfeeding. This concept of caring for preterm infants originated in Bogota, Colombia and is a low cost way to assist preterm infants with temperature regulation, nutrition, and stimulation (Charpak et al., 1996). Kangaroo Care is initiated after a routine period of stabilization after birth. A number of studies from developing countries including a few randomized controlled trials suggest that KC improves weight gain, reduces incidence of nosocomial infections and reduces the incidence of severe illness and respiratory disease up to 6 months of age (Conдо-Agüelo, 2005). Mothers who provide Kangaroo Care were more likely to continue to BF and were more satisfied with the care that their infants received in the NICU.” (no page on the online edition but in the book it is on page ??) FT, Review, respiratory distress, satisfaction, BF, weight gain, temp regulation, infection.


International Lactation Consultant Association. (2007). Breastfeeding: The 1st Hour-Welcome Baby Softly. Especially for Healthcare Professionals. Available from www.ILCA.org. This trifold contains a summary about the value of early breastfeeding, what skin-to-skin contact is, what is known about skin-to-skin care, how babies use their senses in the first hour of life, how to welcome babies softly, and how IBCLCs can help. It concludes with references and is an excellent resource for lactation consultants to use. Guidelines, Breastfeeding, Birth KC, FT

Irwin, L.G., Siddiqui, A., Hertzman, C. (2007). Early Child Development: A Powerful Equalizer. Final Report for the World Health Organization’s Commission on the Social Determinants of Health. Vancouver, BC: Human Early Learning Partnership (HELP). 440-2206 East Mall, Vancouver, B.D. V6T 1Z3, phone: 604-827-5395, FAX: 604-822-0640 or email lori.irwin@ubc.ca or get from web site: www.earlylearning.ubc.ca/WHO. This is a full treatise on the types of nurturing environments needed for optimal gender equity and early child development (early childhood is prenatal through 8 years). Manuscript states the the early years are critical for brain development and KC is discussed on page 31 and 32 under the heading of linkages between health care systems and early child development programmes because health care workers may be the only professionals parents come into contact with during these early years. “We suggest linking early development programmes and services with health care systems will improve child survival rates. The example of Kangaroo Care from Bogota, Colombia is instructive here. KC is based on mothers, fathers, and caregivers providing skin-to-skin contact for low birth weight infants as part of early stimulation, which has been shown to improve survival rates of the most vulnerable infants. Through skin-to-skin contact, infants gain the early stimulation that matters for their survival – costs of this intervention are minimal, but benefits are immeasurable. While the case of KC is a unique hands-on early stimulation programme, developed in hospitals and carried out within and beyond the walls of institutions, health care providers can facilitate early child development in various other ways as well.” (pg. 31-32). A box on page 32 relates: “Kangaroo Care: Beginnings in Bogota, Colombia. Each year about 20 million infants of low birth weight are born worldwide, which imposes a heavy burden on health care and social systems in developing countries (Ruiz-Pelaez, Charpak, & Cuervo, 2004). Premature babies (under 2000 grams) born in poorly resourced settings may not have access to incubators and those that do are separated from their mothers. KC was first developed in 1978 to help pretermature babies with temperature regulation and bonding in Bogota. Mothers, father or caregivers carry/sleep with newborn babies skin to skin in upright positions 24 hours a day. KC has b een shown to be at least as effective as traditional care in incubators at a fraction of the costs. It is a practice with roots in local traditional child rearing that has been taken up in many industrialized nations (e.g. France, Sweden, USA,Canada and more). KC has been shown to deliver ideal conditions for premature infants, reduce costs of caring for premature infants, improve breastfeeding rates, improve bonding, and in some settings reduce morbidity and hospital stay.” (pg. 32). PROVIDES THE BEST CARE. Separation, BF, bonding, morbidity, length of stay, costs, PT Not on Charts 3/20/2010

KCBib 2018
Isaacson LJ. (2006). Steps to successfully breastfeed the premature infant. Neonatal Network, 25(2), 77-86. On page 81 begin two sections entitled Kangaroo Care and then Kangaroo Care Plus Gavage Feeding. It generally recommends KC because KC familiarizes the infant with mother’s scent and feel of breast, means experience let down during KC, and report largest let down when holding in KC (Meer et al., 1998). Under gavage feedings it says gavage feedings can be given during KC and allows infant to associate full stomach feelings with being at breast. At 30 wks pma infants want to suck and can go to breast in KC and “for the most part, infants on CPAP, nasal cannula, or, of course, room air, are stable enough to participate in this (suckling at breast and gavage feeds in KC) step.” (pg. 82). Clinical Review, PT, BF, CPAP, Cannula, gavage feed, let down. Not on Charts yet.

Issah K., Nang-Beifah A., & Opoku, C.F. (2011). Maternal and neonatal survival and mortality in Upper West Region of Ghana. International Journal of Gynaecology and Obstetrics;113(2):208-10. doi: 10.1016/j.ijgo.2011.01.007. A 6 month evaluation in 2009 of 24/7 KMC that was instituted in 5 hospitals to reduce neonatal mortality is reported. 47 maternal deaths were reported, 46.5% occurred within 24 hours of admission. 23 were linked to delays in receiving care and non-adherence to treatments. KMC resulted in 622 (89.5%) OR 695 targeted infants surviving. At the end of 2009, only 30 of the recommendations had been implemented. KMC improved neonatal survival. PT/FT, descriptive study of implementation of 24/7 KMC, neonatal mortality. Not on charts as of 9/2/2011.

Ith.P, Dawson, A., & Homer, C. (2012)a. Quality of maternity care practices of skilled birth attendants in Cambodia. International Journal of Evidence-based Healthcare. 10, 60-67. doi: 10.1111/j.1744-1609.2012.00254.x. Report of how birth attendants are doing in providing good health care and on page 63 it says “The majority of babies (87%) were not put skin-to-skin contact with their mother and only one baby was given to his mother within half an hour of birth. Babies were left alone on a nearby table or given to family members outside the delivery room.” 3rd world, BKC, practice. NOT on Charts.

Jablonski, L. (2011). Listening to newborns: What babies have to say about transitions to life. Journal of Obstetric, Gynecologic, and Neonatal Nursing, 40(Suppl 1), S24-S25. DOI: 10.1111/j.1552-6909.2011.02424.x. FT study of nurses who chose four areas in which they wanted to know the evidence: delayed cord clamping

Jackson, P.C. (2010). Complementary and alternative methods of increasing breast milk supply for lactating mothers of infants in the NICU. Neonatal Network, 29(4), 225-230. On page 228 of this REVIEW of interventions to increase milk production it talks about Kangaroo Mothering. It says that recently (citeTunnell, R. 2004) that KC had been adopted from fullterm use to NICU use. It provides a definition of KC then a bit of history with hypothermia studies and then goes into breastfeeding studies (moms BF longer at 3.6, and 9 months PMA (Charpak et al.,2001 in Pediatrics), more likely to be EXCLUSIVELY BF, then cites Rao, Cattaneo, Sloan and Roller’s studies, saying that in addition to breastfeeding benefits, KC helps bonding. The review concludes with “Because risks to the infant are minimal with kangaroo mothering, it should be practiced universally with premature infants in the NICU” (pg. 228). On Page 229 it says “KC is an alternative therapy. Alternative therapies may be effective in maintaining and/or increasing breast milk supply for NICIU mothers. They should be considered on their own or as complementary therapies at the first sign of lactation difficulties. Kangaroo mothering and relaxation therapies may be attempted without risk of adverse side effects.” REVIEW, BF, PT and FT review.


Janevski MR, Vujičić AD, Đukić SM.(2016-Apr). Salivary Cortisol as a Biomarker of Stress in Mothers and their Low Birth Weight Infants and Sample Collecting Challenges. J Med Biochem. 35(2):118-122. doi: 10.1515/jomb-2015-0015. Salivary cortisol measurement is a non-invasive method suitable for use in neonatal research. Mother-infant separation after birth represents stress and skin-to-skin contact (SSC) has numerous benefits. The aim of the study was to measure salivary cortisol in mothers and newborns before and after SSC in order to assess the effect of SSC on mothers’ and infants’ stress and to estimate the efficacy of collecting small saliva samples in newborns. Salivary cortisol was measured in 35 mother-infant pairs before and after the first and the fifth SSC in small saliva samples (50 μL) using the high sensitivity Quantitative ELISA-Kit (0.0828 nmol/L) for low cortisol levels detection. Samples were collected with eye sponge during 3 to 5 minutes. Cortisol level in mothers decreased after SSC, the highest levels were measured before and the lowest after SSC and the differences in values were significant during both the first (p<0.001) and the fifth SSC (p<0.001). During the first SSC the cortisol level decrease was detected in 14 (40%) and an increase in 21 (60%) newborns, and during the fifth SSC a decrease was detected in 16 (45.7%) and an increase in 19 (54.3%) newborns, without confirmed significance of the difference. Saliva sampling efficacy using eye sponge was 75%. Cortisol level decrease in mothers proves the stress reduction during SSC, while variable cortisol levels in infants do not indicate stress reduction and imply the need for further research. The used sampling method appeared to be one of the most optimal considering the sample volume, sampling time and efficacy. FT, quasi-experimental study, cortisol, infant stress, stress over longitudinal KC. Not on charts 4-28-2017

KCBib 2018
Jarrell JR, Ludington-Hoe SM, & Abouelfetoh A. (2009). Kangaroo care with twins: a case study in which one infant did not respond as expected. Neonatal Netw 28(3): 157-163. This is a case study of one twin who consistently dropped his oxygen saturation level when moved from incubator to KC. He had been on a ventilator for 34 days and had been extubated for 4 days when first tested. 

KC was stopped early due to SaO2 <88 and his SaO2 immediately started returning to normal once back in the incubator. This infant with chronic lung disease had difficulty in KC and vital signs that exceeded normal limits, similar to Smith S. work in early 2000s. Maternal breast temperatures did not differ between breasts. OT, Case study, HR, RR, SaO2, temperature, BPD, maternal breast, negative outcome, twin

Jayaraman D, Mukhopadhyay K, Bhalla AK, Dhalwal (2017-Feb). Randomized Controlled Trial on Effect of Intermittent Early Versus Late Kangaroo Mother Care on Human Milk Feeding in Low-Birth-Weight Neonates. J Hum Lact. 2017 Feb 1:890334416685072. doi: 10.1177/0890334416685072. [Epub ahead of print] Breastfeeding at discharge among sick low-birth-weight (LBW) infants is low despite counseling and intervention like kangaroo mother care (KMC). Research aim: The aim was to study the effects of early initiation of KMC on exclusive human milk feeding, growth, mortality, and morbidities in LBW neonates compared with late initiation of KMC during the hospital stay and postdischarge. A randomized controlled trial was conducted in level 2 and 3 areas of a tertiary care neonatal unit over 15 months. Inborn neonates weighing 1 to 1.8 kg and hemodynamically stable were randomized to receive either early KMC, initiated within the first 4 days of life, or late KMC (off respiratory support and intravenous fluids). Follow-up was until 1 month postdischarge. Outcomes were proportion of infants achieving exclusive human milk feeding and direct breastfeeding, growth, mortality and morbidities during hospital stay, and postdischarge feeding and KMC practices until 1 month. The early KMC group (n = 80) achieved significantly higher exclusive human milk feeding (86% vs. 45%, p < .001) and direct breastfeeding (49% vs. 30%, p = .021) in hospital and almost exclusive human milk feeding (73% vs. 36%, p < .001) until 1 month postdischarge than the late KMC group (n = 80). The incidence of apnea (11.9% vs. 20%, p = .027) and recurrent apnea requiring ventilation (8.8% vs. 15%, p = .02) were significantly reduced in the early KMC group. There was no significant difference in mortality, morbidities, and growth during the hospital stay and postdischarge Early KMC significantly increased exclusive human milk feeding and direct breastfeeding in LBW infants. OT, RCT, BF, Exclusive BF, apnea, mortality, morbidity, growth, weight, home KC. Early vs. Late

Jeanette C, Klaus PH, & Klaus MH. (2004). #6: No separation of mother and baby with unlimited opportunity for breastfeeding, J Perinatal Education 13(2), 35-41. Actually Jeanette Crenshaw is the author. See Crenshaw. A position paper providing the evidence for Lamaze International’s guidelines for normal birth. #6 has to do with non-separation and provides the evidence for skin to skin care immediately after birth (cry less, stay warmer, breathe easier, instinctively attach and start to breastfeed usually within an hour of birth). They recommend Birth KC on page 41 and say do not dry the infant’s hands and has good review of the hormonal cascade begun by KC. In this position paper-one of six care practice papers published by Lamaze International and reprinted here with permission-the value of keeping mothers and their babies together from the moment of birth is discussed and presented as an evidenced-based practice that helps promote, protect, and support normal birth. The paper is written for childbearing women and their families. Babies held skin-to-skin with their mothers cry less often, breathe easier, and stay warmer than babies who are separated from their mothers. They also instinctively attach to the breast and begin breastfeeding, usually within one hour of birth. The advantages of rooming-in for mother and baby are also discussed. The accompanying commentary-written by two leading professionals in the field of maternity care and pediatrics-provides further evidence to support the practice of keeping mothers and their babies together after birth. Lamaze International encourages women to give birth in settings that do not separate mothers and babies after birth. Birth KC, Full term, separation, breast search, latch, guidelines, infection (says same thing as WHO 1998).

Jeffries, A.L., & Canadian Paediatric Society, Fetus and Newborn Committee. (2012). Kangaroo care for the preterm infant and family. Paediatric and Child Health, 17(3), 141-146. No doi. POSITION STATEMENT. Also available on the Canadian Paediatric Society website www.cps.ca or from http://www.cps.ca/eng/Statements/PN/Kangaroo.htm?utm_source=Health+Newborn+ Statement was released 5/22/2012. “Kangaroo care (KC) is the practice of skin-to-skin contact between infant and parent. In developing countries, KC for low-birthweight infants has been shown to reduce mortality, severe illness, infection and length of hospital stay. KC is
also beneficial for preterm infants in high income countries. Cardiorespiratory and temperature stability, sleep organization and duration of quiet sleep, neurodevelopmental outcomes, breastfeeding and modulation of pain responses appear to be improved for preterm infants who have received KC during their hospital stay. No detrimental effects on physiological stability have been demonstrated for infants as young as 26 weeks’ gestational age, including those on assisted ventilation. Mothers show enhanced attachment behaviors and describe an increased sense of their role as a mother. The practice of KC should be encouraged in nurseries that care for preterm infants. Information is available in developing guidelines and protocols. *Pg. 141* and they cite Ludington-Hoe et al. 2008, Kledzik 2005, DiMenna 2006, and Nyqvist et al. 2010 as sources of protocols. Position Statement, Preterm, stability, temp, sleep, cardiorespiratory, safety, development, micro-preemies, maternal feelings. NOT ON CHARTS 5/22/2012.

Jeffries, A.L. & Canadian Paediatric Society, Fetus and Newborn Committee (2013). Kangaroo care for the preterm infant and family. *Paediatrics and Child Health, 17*(3): 141-146. This is a Review article that is the same as the Canadian Paediatric Society’s Position statement of 2012.


Jiang S, Warre R, Qu X, O'Brien K, Lee SK. (2014-Nov). Parents as practitioners in preterm care. Early Hum Dev. 2014 Nov;90(11):781-5. doi: 10.1016/j.earlhumdev.2014.08.019. From CANADA. The very preterm birth of an infant is physiologically traumatic for the infant and physiologically and psychologically traumatic for the parents. The manner of care delivery in the first few days and weeks of the infant’s life plays a large role in determining the impact of that trauma. For optimal outcomes parents need to be integrated into the care process as the primary practitioners of their infant’s care in the neonatal intensive care unit.

Supporting and enabling parents to be central to the care process establishes a consistent care environment where parents are in control and able to support their infant’s physiological and psychological needs, thereby improving infant outcomes and reducing parent stress and anxiety. This article reviews the role of parents in the optimal development of preterm neonates, and discusses the elements crucial (LE. SKIN TO SKIN CONTACT) to promoting parent involvement in the neonatal intensive care unit and supporting parents following discharge. PT, theory, review, parents as providers, parental stress/anxiety


Johnson, R.B., Spencer, S.A., Rolfe, P., Jones, P., & Malla, D.S. (1992). Effect of post-delivery care on neonatal body temperature. *Acta Paediatrica, 81*(11), 859-863. 300 infants (KC beginning immediately after birth when infant put to breast under mom’s clothing or possibly under swaddling and kept against mother’s breast) was as effective as oil massage or plastic swaddling in keeping babies warm. Fullterm and Preemies were analyzed as one group, and there are many methodological omissions in the report. Kangaroo Care may or may not have been given. RCT, Birth KC/VEKC, swaddling, temperature, Preterm and fullterm, massage

Johnson, A.N. (2005). Kangaroo holding beyond the NICU. *Pediatric Nursing* 31 (1), 53-56. A review article that cites many studies as well as International Network for Kangaroo Mother Care. Article relates origins of KC; the effects of KC on infant onf outcomes, maternal feelings, pain outcomes, maternal attachment (and quotes general adult attachment literature in relation to touch effects), infant development (called long-term study of community KC), and has a simple and useful table of effects on page 54 and she outlines the role of all nurses in KC on page 55. Implications for nursing are that KC should be expanded to the pediatric units (because “no studies in Pediatric Intensive Care unit” pg. 55), prenatal classes to parents and into the community. Visual aids and reading materials are important tools (pg. 55). And “the use of IVs and oxygen does not preclude the practice of kangaroo holding” (pg. 55). “Advance practice nurse need to be included in the plan for KC” (55) Also effects on maternal pain should be considered. Review, FT, PT Community KC, Maternal Pain, Maternal Stress, Pediatric PICU KC, INK, guidelines, need pamphlets for implementation, advanced practice nurses, FT, postpartum KC, home KC (Not on Charts yet)

Johnson, A.N. (2007). Skin-to-skin holding effects on breastmilk caloric composition. Presentation at 29th National Neonatal Nurses Meeting of the Academy of Neonatal Nurses, Sept. 6, 2007, Las Vegas, NV. Based on the premise that more than one hour of KC is believed to promote breastmilk production, she undertook a pilot repeated measures cross-over (I imagine the sequence of KC and non-KC was randomized but I do not know) study of 12 moms who gave a 1 hour/session of KC for at least two sessions over a four day period and then were also measured when they did not hold their infant. After the KC and non-holding sessions moms used pump to express milk. All expressed milk over 4 days was measured and weighed. A one milliliter aliquot of milk was centrifuged for fat and calories. Mums were M=26.8 yrs old, had M=14 yrs education, lived M=7.5 miles from hospital, and gave birth to 66.7% males at M=30.1 wks gestation and Mean birthweight = 1428.8 gm. Mean birthweight loss = 63.2 gms. Use crenamccrit plus for fat and caloric intake. Expressed milk right after KC all had values of 23 cal/ml or more (R=23-33 cal/ml) and standard KCBib 2018
error was very small (0.003), milk after no-holding had ≥5 cal/ml (R²=22-25cal/ml/standard error was 0.124 – more variability). Caloric composition increased right after KC in every mother. KC affects caloric composition of mother’s milk. All readings taken at same time of day. PT, Quasi-Exp, BF, milk composition

Johnson, A.N. (2007). The maternal experience of kangaroo holding. J Obstetric, Gynecologic, and Neonatal Nursing, 36(6), 568-573. Qualitative study of 18 moms who gave KC for one hour in tertiary NICU and were interviewed with several questions (on page ). Moms interviewed over 5 months following a 60-minute KC session in NICU. Observations of mom’s KC holding were made too. Triangulation of maternal interviews, demographic data, and observation data support use of KC to improve maternal confidence of caring for preterm infant. Three themes emerged about their experience: 1. They needed to feel needed in the NICU because they felt isolated in the chaos of the NICU, “I needed to be a mother and couldn’t have it in the NICU until I did this.” One mother told her infant “I will make you feel so much better in my arms” (pg. 570). After holding mothers felt important and “being needed by the nurses” and “being important in caring for (their) infants” (pg. 571). Mothers reported that KC was ‘a way to express my love’, ‘gave a warm feeling of joy’, “Happiness I have never felt before” “heart warming in many ways.” Many moms felt nervous or scared with 1st KC but only confidence by 3rd KC session and that “each holding is better than the last” (pg. 571). Many reported that KC helped them understand their baby’s needs better and giving KC made them feel important in their infant’s care. 2. They need support to do KC (encouragement, teaching, planning for KC by nurse, control over environmental activity, noise, visitation; maternal articulation of the KC plan.). Mothers want to know when they can do KC and they want to know the schedule in advance, and they “try not to ask if they can Kangaroo hold”. When nurses placed privacy screens the mothers had a sense that it gave her time alone with her baby and another said it was more like home, and another said “despite the loud noises the rest of the time, we can escape to be alone for an hour” (pg. 571), and 3. Mothers were satisfied with their interactions with their babies during KC regardless of the infants physical health status. Gestational age or ability to respond to the mother. All mothers described connectedness to infant that differed from other holding experiences (p. 571). One mother said KC was an intense experience for her and another said “she is telling me that everything is fine when she moves her hands near mine” (p. 572). Mothers also said that KC taught them how to be a mother and KC moms were more active in providing care for their infants than non-KC moms during a shift. KC is important for maternal role attainment, and KC is not as spontaneous as one might think (p. 572). Nursing Assessment of Infant needs to be done each time. Supports Messmer’s work on increased confidence. Nurses play essential role by offering KC to mothers to help guide them in their confidence with the infant. In summary, moms reported feelings of “being needed” and feeling comfortable” with KC regardless of infant’s health status. There are multifaceted advantages of KC on maternal attachment behaviors. Preterm, Qualitative, maternal confidence, interactions, maternal feelings, education of moms, support, satisfaction, attachment

Johnson, A.N. (2007). Factors influencing implementation of kangaroo holding in a special care nursery. MCN: The American J of Maternal Child Nursing, 32(71), 25-29. No doi. Descriptive study of 67 RNs who completed a survey to identify factors that supported implementation of KC in level III nursery. Primary factor for implementing was the assessment of infant physiologic stability, then adequate nursing staff patterns, maternal readiness, encouragement from management. Nurses with 5 or more years of practice were more likely to implement KC than less experienced nurses. Support included educational programs, adequate staffing, and encouragement. Says KC is usually done with stable, older preemies. Descriptive, PT. Implementation, barriers to practice. Not much KC being done, Name is Amy Nagorski Johnson, RN, Ph.D., University of Delaware


Johnson, J. & Quach, C.(2017-June). Outbreaks in the neonatal ICU: a review of the literature. Curr Opin Infect Dis. 2017 Jun 2. doi: 10.1097/QCO.0000000000000383. [Epub ahead of print]. Neonates in the neonatal ICU (NICU) are uniquely vulnerable to colonization and infection with pathogens such as multidrug resistant Gram-negative bacteria, which in turn are associated with increased infection-related morbidities and higher case-fatality rates. We reviewed the English, French, and German language literature published between 2015 and 2017, for reports of NICU outbreaks. A total of 39 outbreaks in NICUs were reported with Gram-negative bacteria (n=21; 54%) causing most, and extended spectrum beta-lactamase-producing organisms being the most frequent resistance mechanism reported (n=5). Five viral outbreaks were reported (respiratory syncytial virus~3). A significant proportion of outbreaks (33%) did not identify a source. Whole genome sequencing was used more (n=6 reports). The most common described infection prevention and control interventions included staff and parent education on hand hygiene, patient isolation, additional contact precautions, including discontinuation of ‘kangaroo care’, and cohorting. Reporting and publication bias are likely common. NICUs must be vigilant in identifying outbreaks, conduct comprehensive investigations, and implement targeted infection prevention and control strategies. Molecular epidemiology capacities are an essential element in outbreak investigation. More studies are needed to determine the added value of active colonization screening and their impact on outbreak development. PT, descriptive survey, infection, stop KC. Not on charts 6-19-2017

KCBib 2018
Johnston CC, Aita M, Campbell-Yeo M, Duhin LJ, Latimer MA, & McNaughton KJ. (2007). The social and environmental context of pain in neonates. Chapter 12 in Anand KJS, Stevens BJ, and McGrath PJ (Eds.) Pain in Neonates and Infants. (3rd Ed.) N.Y.: Elsevier, pp. 177-189. On page 180, a discussion of KC begins, first citing Dodd 2005 saying that her work showed that KC facilitates parents’ recognition and understanding of infant cues, allowing them to respond as needed – meaning respond to pain cues. Then she reviews three paternal KC studies (LIH et al 1992; Christenson et al., 1996; Bauer et al., 1996) She concludes that “the studies provide beginning evidence that early paternal involvement in care of infant is necessary, meaningful, and even critical. What has not been explored is the full contribution fathers can make…..specifically in the area of providing comfort against pain.” (pg. 181).

PT, FT, Review, pain, research with fathers in pain is needed.


Randomized cross over of 18 preterms who were 28-37 weeks GA and within the first 10 days of life were tested with 15mins of KC before heel stick, heel stick with mother one day and heel stick with unrelated female (usually a nurse) the other day to determine effect of PIPP scores and effect sizes in this pilot. HR and change from baseline and return to baseline are usually measured but they did not report any of these findings, except to say that overall PIPP scores were NOT significantly different between the mothers and alternate mothers giving KC even though the tables show that alternate woman PIPP scores were consistently higher (not significantly so, given the small sample size) than maternal PIPP scores, showing that HR rise over baseline did not differ. Only 38% of 82 mothers approached agreed to participate over three years of data collection because they did not want another woman giving Kangaroo Care. The differences between related and unrelated females and mother in decreasing PIPP pain response is small, but not negligible because in a larger sample size it would have reached significant difference. This study did not have an incubator period to determine if strange female was better than incubator, but strange female needs to be compared to father too. They will not do the study again because of the high refusal rate to let an alternate do the KC. Given the high refusal rate, non-related females are less desirable than fathers for lowering pain responses. PT, randomized cross over, pain, HR, nurses/non-related female, Surrogate KC.

Skin-to-skin care (SSC), often referred to as ‘kangaroo care’ (KC) due to its similarity with marsupial behaviour of ventral maternal-infant contact, is one non-pharmacological intervention for pain control in infants. The primary objectives were to determine the effect of SSC alone on pain from medical or nursing procedures in neonates compared to no intervention, sucrose or other analgesics, or additions to simple SSC such as rocking; and to determine the effects of the amount of SSC (duration in minutes), method of administration (e.g. who provided the SSC) of SSC in reducing pain from medical or nursing procedures in neonate. The secondary objectives were to determine the safety of SSC care for relieving procedural pain in infants; and to compare the SSC effect in different postmenstrual age subgroups of infants. For this update, we used the standard search strategy of the Cochrane Neonatal Review group to search the Cochrane Central Register of Controlled Trials (CENTRAL; 2016, Issue 1); MEDLINE via PubMed (1966 to 25 February 2016); Embase (1980 to 25 February 2016); and CINAHL (1982 to 25 February 2016). We also searched clinical trials’ databases, conference proceedings, and the reference lists of retrieved articles for randomized controlled trials and quasi-randomized trials. Studies with randomisation or quasi-randomisation, double- or single-blinded, involving term infants (≥ 37 completed weeks' postmenstrual age (PMA)) to a maximum of 44 weeks’ PMA and preterm infants (< 37 completed weeks' PMA) receiving SSC for painful procedures conducted by healthcare professionals. The main outcome measures were physiological or behavioural pain indicators and composite pain scores. A mean difference (MD) with 95% confidence interval (CI) using a fixed-effect model was reported for continuous outcome measures. We included variations on type of tissue-damaging procedure, provider of care, and duration of SSC. Twenty-five studies (n = 2001 infants) were included. Nineteen studies (n = 1085) used heel lance as the painful procedure, one study combined venepuncture and heel stick (n = 50), three used intramuscular injection (n = 776), one used 'vaccination' (n = 60), and one used tape removal (n = 50). The studies were generally strong and had low or uncertain risk of bias. Blinding of the intervention was not possible, making them subject to high risk, depending on the method of scoring outcomes. Seventeen studies (n = 810) compared SSC to a no-treatment control. Although 15 studies measured heart rate during painful procedures, data from only five studies (n = 161) could be combined for a mean difference (MD) of -10.78 beats per minute (95% CI -13.63 to -7.93) favouring SSC. Meta-analysis of four studies (n = 120) showed no difference in heart rate following the painful procedure (MD 0.08, 95% CI -4.39 to 4.55). Two studies (n = 38) reported heart rate variability with no significant differences. Two studies (n = 101) in a meta-analysis on oxygen saturation at 30 and 60 seconds following the painful procedure did not show a difference. Duration of crying meta-analysis was performed on four studies (n = 133); two (n = 33) that investigated its response to heel lance (MD = -34.16, 95% CI -42.86 to -25.45), and two (n = 100) following IM injection (MD = -8.83, 95% CI -14.63 to -3.02), favouring SSC. Five studies, one consisting of two substudies (n = 267), used the Premature Infant Pain Profile (PIPP) as a primary outcome, which favoured SSC at 30 seconds (MD -3.21, 95% CI -3.94 to -2.47), at 60 seconds (3 studies; n = 156) (MD -1.64, 95% CI -2.86 to -0.43), and at 90 seconds (n = 156) (MD -1.28, 95% CI -2.53 to -0.04); but at 120 seconds there was no difference (n = 156) (MD 0.07, 95% CI -1.11 to 1.25). No studies on return of heart rate to baseline level, cortisol levels, and facial actions could be combined for meta-analysis findings. Eight studies compared SSC to another intervention with or without a no-treatment control. Two cross-over studies (n = 80) compared mother versus other provider (father, another female) on PIPP scores at...
30, 60, 90, and 120 seconds with no significant difference. When SSC was compared to other interventions, there were not enough similar studies to pool results in an analysis. One study compared SSC (n = 640) with and without dextrose and found that the combination was most effective and that SSC alone was more effective than dextrose alone. Similarly, in another study SSC was more effective than oral glucose for heart rate (n = 95). SSC either in combination with breastfeeding or alone was favoured over a no-treatment control, but not different to breastfeeding. One study compared SSC alone and in combination with both sucrose and breastfeeding on heart rate (HR), NIPS scores, and crying time (n = 127). The combinations were more effective than SSC alone for NIPS and crying. Expressed breast milk was compared to SSC in one study (n = 50) and found both equally effective on PIPP scores. There were not enough participants with similar outcomes and painful procedures to compare age groups or duration of SSC. No adverse events were reported in any of the studies. SSC appears to be effective as measured by composite pain indicators with both physiological and behavioural indicators and, independently, using heart rate and crying time, and safe for a single painful procedure. Purely behavioural indicators tended to favour SSC but with facial actions there is greater possibility of observers not being blinded. Physiological indicators were mixed although the common measure of heart rate favoured SSC. Two studies compared mother-providers to others, with non-significant results. There was more heterogeneity in the studies with behavioural or composite outcomes. There is a need for replication studies that use similar, clearly defined outcomes. Studies examining optimal duration of SSC, gestational age groups, repeated use, and long-term effects of SSC are needed. Of interest would be to study synergistic effects of SSC with other interventions. PT, Pain, Meta-Analysis Not on Charts 2-22-2017


Johnston, C.C., Campbell-Yeo, M., & Filion, F. (2011). Paternal vs Maternal Kangaroo Care for procedural pain in preterm neonates: A randomized controlled trial. Archives of Pediatric and Adolescent Medicine, 165(8), 792-796. Doi: 10.1001/archpediatrics.2011.130 A randomized cross-over study of 62 preterms from 28-36 weeks gestational age who were in NICU for at least 2 blood sampling procedures. Heel lances were at least 24 hours apart, infants were held in KC for 30 minutes before and during lance with the mother or the father, and with the other parent in the subsequent session. Which parent came first was randomized. KC is supposed to be helpful because oxytocin is released during KC and oxytocin has antinociceptive effects by potentiating endogenous opiate release (Lund I, Ge-Y, Yu, LC et al., 2002). Repeated massage-like stimulation-induced long-term effects on nociception contribution of oxytocinergic mechanisms. Eur J Neuroscience 2002, 16(2), 330-338; Uvnas-Moberg K. 1998. Oxytocin may mediate the benefits of positive social interaction and emotions. Psychoneuroendocrinology, 23(8), 819-835. The endogenous opiate release is then released into breast milk (citations 1, 45, 46 below) and is one mechanism for the analgesic effect of breastfeeding (47,48 below). Premature Infant Pain Profile and time for heart rate to return to baseline were outcomes and parents were asked four questions: 1) how many times they had provided KC before the study? 2) how did they feel when they provided KC during the heel lance? 3) would they do it again? And 4) Would they recommend it to other parents? (pg 794) and all 69 moms and 36 fathers responded positively to all questions. The refusal rate was 22% mostly because one parent or the other did not want to do KC or did not want to be videotaped (only infant’s face was videotaped). Males recovered HR more quickly to baseline level, receiving sucrose lengthened time to recovery (pg. 794) so sex and sucrose were included in recovery analysis. At 30 and 60 seconds after heel lance, Maternal KC infant had significantly lower scores on the PIPP than in paternal KC (30 second mean difference was 1.435 (95% CI = 0.232-2.632); 60 seconds mean difference was 1.548 (95% CI=0.069-3.027); at 90 and 120 second, no differences were seen. The difference in time to return to KC baseline HR was significant, with the time in maternal KC being 204 seconds and in paternal KC 246 seconds (mean difference, 42 second (95% CI=0,069 3.027); at 90 and 120 second, no differences were seen. The difference in time to return to KC baseline HR was significant, with the time in maternal KC being 204 seconds and in paternal KC 246 seconds (mean difference, 42 second (95% CI=0,069 3.027); at 90 and 120 second, no differences were seen. Both parent blunted the pain response compared to incubator scores in previous studies. Mothers are marginally more effective than fathers in decreasing pain response: “there is something unique about the comfort of a mother’s contact over and above that of another caring adult. Number of previous KC sessions was NOT a significant factor in the analysis (pg. 795). Future research should address feasibility issues and nonparent providers of KC during painful procedures. PT, RX-over, Maternal KC, Paternal KC, pain, HR, PIPP, REFUSAL RATE, oxytocin Not on Charts 9/10/2011 (Ref 1, 45, 46, 47, 48 1; Acolet, Sleath, Whitelaw, 1989 on KC bib; 45: This)


in Canada. Infants got KC for 15 min before and during heel lance. In incubator prone, swaddled in blanket. Used PIPP, videotaped and assessed every 30 seconds. Noticed that infants had physiologic stability and deep sleep within a minute of onset of KC (pg 7). PIPP scores 90 seconds post-lance significantly lower in KC than incubator (8.871 vs 10.677, p<.001) and at 30, 60, 120 seconds in favor of KC but nonsignificant. Time to recovery was significantly shorter by one minute for KC (123 sec vs. 193 secs). Facial actions were highly significantly lower in KC at all times, reaching a two-fold difference by 120 second post-lance. HR was significantly lower across the first 90 seconds in the KC condition. Mean SaO2 levels were sig. higher at 60 and 90 second post-heel lance. “Very preterm infants appear to have endogenous mechanisms elicited through skin-to-skin maternal contact that decrease pain response, but not as powerfully as in older preterm neonates. The shorter recovery time in KMC is clinically important in helping maintain homeostasis”

Had 32% refusal rate by moms (felt too stressed, did not want anything extra done to baby, did not want to see infant in pain)(pg. 4 of 9)

PT, R cros-over, PIPP, HR, SAO2 Pain

**HISTORY/EPIDEMIOLOGY**

Preterm, descriptive cross over study, hearing recorded filtered maternal voice or no voice during heel stick of 20 infants who from 32-36 weeks pma who heard filtered maternal voice recording for 10 minutes at 60-70 decibels 3 times/day for 48 hours after feedings. At end of 48 hours, randomization determined which half of infants got heel stick hearing maternal voice first and the second condition (no voice) was within 10 days of first. Premature Infant Pain Profile score was outcome. Maternal voice recording made no differences at all. Order did not affect PIPP scores either, nor facial recordings. Different modalities of maternal presence appear to be necessary to blunt pain response. Skin-to-skin contact has been proven efficacious for diminishing procedural pain in both fullterm and preterm neonates, but mothers often are not able to be present during a painful procedure, so Johnston tried voice alone and it did not work.

Kangaroo Care does.

Preterm, descriptive cross-over, pain, PIPP, maternal voice

**METHODS**

Johnston CC, Filion F, & Nuyt AM. (2007). Recorded maternal voice for preterm neonates undergoing heel lance. Advances in Neonatal Care 7(5), 258-266. No doi. Descriptive cross over study (hearing recorded filtered maternal voice or no voice during heel stick) of 36 weeks gestational age put in randomized cross-over design (1st condition was KC + singing, rocking, sucking; 2nd condition was KC alone). No sig differences in any of the 30 sec time periods over the 2 min of blood sampling nor in time to return to baseline. Pain scores were lower and comparable to other studies of KMC. KC alone is sufficient to decrease pain response to heel stick.

**RESULTS**

PT, Quasi-Experimental, Pain, crying

Johnston CC, Filion F, Campbell-Yeo M, Goulet C, Bell L, McNaughton K, & Byron J. (2008). Enhanced kangaroo mother care for heel lance in preterm neonates: a crossover trial. J. Perinatology 29(1), 51-56. doi: 10.1038/jp.2008.113. 90 preterms between 32-36 weeks gestational age and randomized cross-over design (1st condition was KC + singing, rocking, sucking; 2nd condition was KC alone). No sig differences in any of the 30 sec time periods over the 2 min of blood sampling nor in time to return to baseline. Pain scores were lower and comparable to other studies of KMC. KC alone is sufficient to decrease pain response to heel stick.
They are looking at the process and they are looking for an increase in the rate of infants exclusively breastfed. Breastfeeding, FT NOT on CHARTS as of 10/29/09.

Joint Commission on Accreditation of Healthcare Organizations (2012). The Perinatal Core Measure Set. On the website www.jointcommission.org/PerformanceMeasurement and this is citation about the Perinatal Core (PC) measures PC 05 (exclusive breast milk feeding of healthy term infants by discharge) and PC 05a (exclusive breast milk feeding considering mother’s choice) becoming a mandate in hospitals delivering more than 1100 infants per year. The mandate goes into effect on Jan. 1, 2014. Also see the reference for The Joint Commission and the AWHONN 2013 statement and the United States Breastfeeding Committee 2013 statements in this bib. The website for the Joint Commission is http://www.jointcommission.org/accountability_measures.aspx. Last accessed June 18, 2013.

Jolivet, R.R. (2010). Current resources for evidence-based Practice. March/April 2010. J Obstetric, gynecologic and Neonatal Nursing, 39(2), 199-203. This is a review of Renfrew et al., 2009 article on Breastfeeding promotion for infants in neonatal unit which is a systematic review of 48 studies of clinically stable infants. “The reviewers found strong evidence to suggest that even short periods of skin-to-skin mother-baby contact are associated with increased duration of breastfeeding.” And so does peer support programs at home and in hospital. (Page 202 for quote). PT, Review, BF.

Jonas, W., Johansson, L.M., Nissen, E., Ejdeback, M., Ransjo-Arvidsson, A.B., & Uvnas-Moberg, K. (2009). Effects of intrapartum oxytocin administration and epidural analgesia on the concentration of plasma oxytocin and prolactin, in response to suckling during the second day postpartum. Breastfeeding Medicine 4(2), 71-82 DOI: 10.1089/bfm.2008.0032. “This is not really a study of KC effects but it has measured duration of BF to determine its effects on oxytocin release. This study is measuring effects of oxytocin administration during labor by IV or immediately after birth by intramuscular injection on oxytocin and prolactin secretion during Breastfeeding on postpartum day 2. On page 72 it states” skin to skin contact between mother and infant after birth during the early sensitive period (cites???) enhances breastfeeding duration and maternal-infant interaction in a more long-term perspective (cites ???) probably Bystrova et al., 2009). Large amounts of oxytocin are released during labor. In addition, maternal oxytocin is released by skin to skin contact and breast massage by the newborn in the perinatal period (cites??/). But the study was conducted in Sweden where “mothers and infants should have been in skin to skin contact for the first 2 hours after birth “(pg. 72). And “mother were encouraged to maintain frequent skin to skin contact with their newborn” (pg. 73), and “When the baby had started to suckle the breast, mothers were asked to stay in skin to skin position with their baby for 60 minutes, regardless of the duration of the breastfeeding episode. All mothers complied with this instruction. The duration of skin to skin contact between mother and infant before start of breastfeeding and the duration of breastfeeding were recorded.” (pg. 73). Then on page 74, in Table 2, it reports the “duration of skin to skin contact before breastfeeding in minutes and seconds. For all participants, (n=61) the median was 2.0 and range was 1.00-7min 30 seconds. For the oxytocin IV (before birth) group (n=8), median was 3.0 (R=1.7.00 mins); for oxytocin IM (n=13), median was 2.0 mins (R=1.7 mins); for epidural analgesia group (n=20) with (n=14) or without (n=6) intrapartum oxytocin infusion median was 3 mins (R=1.6 mins,30 second) and for the women who received none of the interventions (n=20), median was 2 mins (R=1.9 mins). No significant differences in amount of KC before breastfeeding session was seen. Results: All mothers showed pulsatile oxytocin release during first 10 minutes of breastfeeding. Giving oxytocin with epidural pulsatile oxytocin release. Prolactin was released during breastfeeding too on PP2. Oxytocin infusion facilitated release of prolactin but decreased endogenous oxytocin levels dose-dependently. Epidural analgesia in combination with oxytocin infusion influenced endogenous oxytocin levels negatively. Descriptive comparative study, Full Term, birth KC, postpartum KC, oxytocin, prolactin, epidural. NOT ON Charts as of Aug 25, 2009.

Jonas W., Wiklund I, Nissen E, Ransjo-Arvidsson A-B, & Uvnas-Moberg K. (2007). Newborn skin temperature two days postpartum during breastfeeding related to different labour ward practices. Early Human Development 83, 55-62. Purpose was to determine if epidural and oxytocin during labor affect newborn temperature during breastfeeding on postpartum day 2. 47 mother infant pairs, 9 got oxytocin stimulation during labor, 20 got epidural and oxytocin during labor, 18 moms got neither epidural nor oxytocin during labor. 27 mother-infant fullterm pairs who were all lying dressed on mom’s bed, awake, hungry, calm, and no crying on Day 2 of life. All were then undressed and weighed with diaper. Then immediately placed in KMC and covered with light blanket. This is standard practice and all moms continued KC for at least 30 minutes and all moms were Breastfeeding. Measurements taken on morning of Day 2 of life. Treatment groups were based on oxytocin and epidural: 9 moms had received oxytocin during labor, 20 moms had epidural + oxytocin, 18 moms had neither oxytocin nor epidural and served as control. Skin temp on back (between shoulder blades, put in KC and covered with blanket), Skin temp taken immediately after placement in KCand 5, 10, 20, and 30 minutes after placement. Skin temperature immediately after placement in KC was higher in epidural infants (37.07) compared to control (34.19). Skin temp rose significantly over first 10 minutes and then were stable in control and oxytocin stimulation by IV in labor group. No such skin temp rise occurred in infants who mom had epidural during labor. First skin temp higher in epidural than controls, skin temp increased sig during the experimental period in the control infants, same response in moms who got oxytocin (p<.008), no such rise in infants whose mom’s had epidural during labor (infant skin temp did not rise in epidural moms). In summary, novel finding of rise in newborn skin temperature during breast feeding on postpartum day 2 and KMC two days postbirth is similar to findings immediately after birth. But if mom got oxytocin or epidural in labor, her babies skin temp did not rise during KC as well as infant temp of moms who did not have oxytocin or epidural. Interventions during birth prevent infant from responding naturally to KC. Epidural hampers infant skin temperature during KC breastfeeding on postpartum day

KCBib 2018
2 Watch birth interventions as they have long term effects. **Quasi experimental because could not randomize. Fullterm, temp ↑, interscapular temp, epidural-related temp, analgesia** KMC = normal behavior, oxytocin. Epidural, temperature rise pattern was same as seen by Ludington 2000. (See also Bystrova 2007 in which KMC was considered normal and other treatments were evaluated for their effect). Routine KC, Intermediate KC, back temp, Postpartum Day 2, negative effect of epidural. (NOT ON CHARTS YET).

Jonas W, Nissen E, Ramso Arvidson AB, Wiklund I, Henriksson, P, & Uvnas-Moberg, K (2008). The short and long term decrease of blood pressure in women during breastfeeding. *Breastfeeding medicine* 3(2), 103-109. DOI: 10.1089/bfm.2007.0031. **Not a KC study per se**, but reports that Blood Pressure drops during breastfeeding. On PP day 2, 8.8 systolic +/-11.0 and diastolic drops 7.7 +/- 9.3. At a 25 week follow-up period, a significant fall is vagal blood pressure with systolic falls were 15 +/-10 and 10 +/-9.7 for diastolic fall. BP falls significantly in response to individual BF periods during the entire observation period. PT, BP, maternal BP, oxytocin

Jones, E., & Spencer SA. (2007). Optimising the provision of human milk for preterm infants. *Archives of Disease in Childhood, Fetal & Neonatal Edition* 92(4), F236-F238. Clinical review of techniques to improve breastfeeding of preterm infants, which is far less than optimal. Makes the point that expression of milk must begin early after preterm’s birth because mean amount of milk production on Day 7 post-birth is strong predictor of adequate milk volume at 6 weeks postpartum (p. F236). She says we should encourage mothers to produce milk, express as soon as possible after birth, express at least 8 times each 24 hours, provide support & breast pump, use shield, and reduce stress of NICU and preterm birth by doing KC. “The early instigation of KMC is thought to be beneficial in this respect, with mothers experiencing feelings of milk ejection during KMC (and it shows a picture of KC with a ventilated infant). It has been shown that mothers of VLBW who practiced KMC lactated on average four weeks longer than controls, with less chance of discontinuing lactation before discharge. In contrast, the use of nasal oxytocin spray does not markedly improve the milk yield during the first five days postpartum.” (pg. F237). **Preterm, clinical report, breastfeeding, ventilated KC, milk ejection, maternal stress** Not yet on charts.

Jones H, Santamaria N. (2017-Nov). Physiological benefits to parents from undertaking skin-to-skin contact with their neonate, in a neonatal intensive special care unit. Scand J Caring Sci. doi: 10.1111/scs.12543. [Epub ahead of print] There has been increased focus on the use of family-centred care interventions, such as skin-to-skin contact (SSC) in Neonatal Intensive Special Care (NISC) Units over the past two decades. SSC between a parent and their neonate has previously shown to promote positive mental and emotional health in parents and assist in bonding and attachment between parent and neonate. The purpose of this study was to investigate the effect that SSC between parent and their neonate has on the parent’s heart rate (HR) and blood pressure (BP). There has been a lack of prior research investigating the physiological responses from SSC on parents, hence the need to conduct this study. The study was conducted as an observational cohort study at The Royal Women’s Hospital NISC Unit in Melbourne, Australia. One SSC between parent and neonate was recorded, and three repeated measures analyses of variance (anova) were conducted to investigate the relationship between SSC and the parent’s HR, systolic BP and diastolic BP. The study found statistically significant differences between the parent’s initial HR and BP, to measurements taken during the SSC (p < 0.05). This may suggest that parents’ find SSC with their neonate to be a stress-reducing intervention, whilst they are in a NISC Unit. This may in turn promote associated benefits, such as a decrease in parental depression and anxiety, whilst they are in the NISC Unit, physical health benefits, as well as increased feelings of bonding between parent and their neonate. Based on the findings, it is suggested that SSC should be promoted in NISC Units as a family-centered care intervention that lowers parent’s HR and BP and may provide associated health benefits. **PT, correlational study, maternal HR, maternal BP, maternal stress** NOT ON CHARTS

Jonas J, & Ellen E. (2002). Kangaroo Care. Indian Journal of Continuing Nursing Education. 3(2), 10-13. Measured HR and temperature increased during KC and then dropped after KC I think KC was an hour or so long. **PT, pretest-posttest design, HR, Temp. DO NOT HAVE GET THIS**

Jones, J, Kassity N, & Duncan K. (2001). Complementary Care: Alternatives for the Neonatal Intensive Care Unit. *Newborn & Infant Nursing Reviews, 1*(4): 207-210. A simple review of common KC outcomes and suggests that KC may lead to accelerated recovery and healthier outcomes due to its promotion of attachment bonds. KC when used with milk fortifiers may improve weight gain and better health. Review, PT, BF, weight, oxygenation, apnea decreases, etc. alternative therapy NOT ON CHARTS yET

Jones, P., Alberti C, Jule L, et al., 2010. Mortality in out of hospital premature births. *Acta Paediatrica* 100:181-187). This identifies the plastic bags, warming mattresses and Kangaroo Care as methods to help keep baby alive and prevent hypothermia when infants are born out of hospital. Community KC, temperature, etc. **Not on charts.**


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Jonson B.H., Abraham, M.A., & Parrish, R.N. (2004). Designing the neonatal intensive care unit for optimal family involvement. *Clinics in Perinatology, 3*, 353-382. This is a review of how to design a single bedded nicu for optimal family involvement. Optimal family involvement is described as having practices that reflect family-centered care, such as breastfeeding, skin-to-skin care, and developmental care. (pg. 354). In relation to skin-to-skin care, it says on page 355: “Skin to skin care. This type of care has been used in neonatal intensive care for over 25 years. Mothers and fathers consistently report positive emotional effects of providing this type of care for their infant (cities Kirsten, Bergann & Hamm, 2001 and Tossier et al., 1998). For mothers, skin-to-skin contact has been shown to increase breast milk production (cities Furman, Minnick, & Hack, 2002 and Hurst et al., 1997). Research also suggests that skin-to-skin care has beneficial effects for infants, including enhancing growth, reducing pain response to procedures, and promoting neurobehavioral development into the first year of life (cities Kirsten et al., 2001; Johnston et al., 2003; and Oghi et al., 2002)” (pg. 355). *Review, PT, elites KC as one strategy for optimal family involvement, pain, milk production, development, NOT ON CHARTS YET as of 9/14/09*


Kadam S, Binoy S, Kanbur W, Mundkar JA, & Fernandez A. (2005). Feasibility of Kangaroo mother care in Mumbai. *Indian J Pediatrics 72*(1), 35-38. 89 low birth weight infants (<1800 gsm, stable cardiopulmonary in air, APGAR of 7 at 5 mins and on feeds (breast or breast milk feeds by spoon), Mean age = 3.2 days (1-8 days range) randomized (44 KC. 45 conventional care [CMC]) in tertiary care unit. Moms sat semi reclined holding upright baby beneath cloth dupatta for at least one hour each session and continuing for as long as comfortable (Mean =±9.8 hrs/day SD =±3.7 hrs) and until discharge (wt gain for 3 days, maintaining temp, feeding well, and mom confident of caring for baby at home). CMC under radiant warmer until disc. HR and SaO2 continuous, RR each hour when in quiet state. Axillary temp for 3 minutes each hour and when hypothermic (<36°C) & hyperthermic (>38°C). KMC group had significantly: less hypothermia (10/44 vs. 21/45), higher SaO2 (95.7 vs. 94.8%), and decreased respiratory rate (36.2 vs 40.7). No differences in # of hyperthermia episodes, sepsis (KMC=6; CMC=8), apnea (KMC=6, CMC=8), BF onset (KMC 4.7 days ±3.3; CMC5.6 days±3.9), hospital stay (KMC=8.5 ±4.4; CMC9.3 ± 4.5 days), weight gain (KMC = 1494±211g; CMC = 1462±205g). 15 KMC babies transferred back to conventional care (for sepsis = 6, for apnea = 6, for jaundice = 7 – which equals transfer back to CMC rate of 34%). Klebsiella pneumoniae was predominant organism. One baby died in each group (due to sepsis for KMC and NEC for CMC). Moms asked 3 questions: Do you feel comfortable when giving KMC? Will you continue giving KC at home? Does your husband agree with this care? 86% moms happy with KMC, 14% felt CMC was better; 79% felt they would be able to give KMC at home; 64% fathers agreed with KMC. PT, CT, temp., SaO2, HR, RR, apnea, sepsis/infection, hospital stay, maternal feelings, community KC, BF, weight gain, transfer back rate. 3rd world

Kaffashi, Scher, Ludington-Hoe, & Loparo. GET from office. brain complexity and maturation article is to be added.

Kaffashi J.F., Scher, M.S., Ludington-Hoe, S.M., & Loparo, K. (2013) An analysis of the Kangaroo Care intervention using neonatal EEG complexity: A preliminary study. *Clinical Neurophysiology, 124*(2):238-246. doi:10.1016/j.clinph.2012.06.021 Preterm quasi-experimental study. Starts by saying that Kc promotes physiologic stability and interactions.. Three groups of infants were compared: one group (n = 8) of 30+weeksGA who received 1.5 hours of KC/day for 4 days/week from 32-40 weeks postmenstrual age at Rainbow Babies and Children’s Hospital; one group of similarly aged and healthy preterm infants at Magee Women’s Hospital (Pittsburgh) who did not receive any KC and one group of fullterm infants at Univ of Pittsburg with EEG within 24 hours of birth in a sleep lab (n = ). Comparisons of brain complexity as measured by quantifying EEG with Approximate Sample Entropy to quantify complexity as a part of Discriminant Analysis method were made. Two time series measures of predictability were used for comparisons. Brain complexity was highest in the KC treated preterm infants and higher than the non-KC preterm infants at postmenstrual age. The KC preterm infants’ brain complexity was closer to the full term neonata group than to the premature non-KC group (according to Mahalanobis Distance), suggesting that the KC intervention accelerates complexity of the brain and neurophysiologic maturation of premature infants. Right hemispheric maturation was more advanced in the KC group than in other brain locations as assessed by Approximate and Sample Entropy (pg. 77). This was first study to report impact of KC on neurophysiologic maturation over a multi-week period. Als (2004) found that EEG (and MRI) changes consistent with accelerated maturation occurred in preterm infants who received development care between 28-33 wks at 2 weeks and 9 months of age (Als H, Duffy FH, McNulty GB, Fvkin MI, Vjajpenyam S, Mulkern RV et al., 2004). Early experience alters brain function and structure. Pediatrics, 113: 846-857). A follow up at 8 years of age of early developmental care found both neurobehavioral and neurophysiologic results in the neonatal period predicted behavioral brain function at school ages (McAnulty GB, Duffy FH, Butler SC, Bernsstein JH, Zurkowski D, Als H. 2010. Effects of newborn individual developmental care and assessment program (NIDCAP) at 8 years: preliminary data. Clinical Pediatrics (Philadelphia), 2010, 49: 258-270. Only KC, not NIDCAP, affects sleep. Greater complexity in the right hemisphere was found in SSC group but not in controls. The immature brain has right hemispheric dominance (Schore AN, 2001. The effects of early relational trauma on right brain development affects regulation, and mental health. Infant Mental Health 22. 201-269 – separation is trauma to the right brain); Grossmann et al, 2010 (Grossman T, Oberercker R, Koch SP, Friederici AD. 2010. The KC Bib 2018
developmental origins of voice processing in the human brain. Neuon 65: 852–858), Mento et al. al. 2010 below), Chiron C, Jambaque I, Nabbout R, Lourens R, Syrota A, Dulac O., 1997. The right rain hemisphor is dominant in human infants. Brain 120(Pt 6), 1057–1065 and we speculate that more advanced cortico-cortical connections exist in early life preferentiallly in the right rather than the left hemisphere in particular regarding greater responsiveness of the right hemisphere to sensory stimulation. Right hemisphere response to sensory input has been previously demonstrated based on the neonates response to painful stimuli (Fernandez M, Blass EM, Hernandez-Reif M, Field T, Diego M, Sanders C. 21003. Sucrose attenuates a negative electroencephalographic response to an aversive stimulus for newborns. Dev Behav Pediatr 24, 261–266) as well as ovice processing (Grossman et al, 2010) and pitch detection and discrimination (Mento 2010). There is a general paucity of cortical larverization for many functions in the immature brain, so the right hemisphere in the neonates demonstrates the more dominant cortical function as re already expected for spatial sensory representations nd arousal in response to positive sensory or noxious stimuli respectively. The functions maybe active as early as 30 weeks GA in the preterm and fetal brain (Mento GA, Suppiej GA, Bisiacchi PS. 2010). Functional hemispheric asymmetries in humans: electrophysiologic evidence from preterm infants. Europena J Neuroscience, 31: 565–574. ) Thus, “KC accelerates brain maturation in healthy preterm infants when compared toa similar non-KC group” (Abstract). Infants cared for in incubator had the lowest brain complexity at 40 weeks postmenstrual age. PT; Quasi-experimental (no randomization to groups, just comparison between three groups), brain complexity, stability, separation

Kambarami, R. (2002). Kangaroo care and multiple births. Annals of Tropical Paediatrics, 22(1), 107–108. States that there is a global paucity of data on use of KC in twins or triplets (pg. 107). Retrospective chart review cross sectional (twins and triplets) survey of 68 twins & 4 triplet mothers, but 26 twins and 2 triplet mothers had only one infant for the study in Zimbabwe. Infants had been admitted to the KC unit where 24/7 KC was given. Admitted on day 4 of life and stayed a median of 3 days. Six were sent to NICU for sepsis, 2 for poor weight gain, one for pallor after admission to KC unit. But, all were discharged from the KC unit, discharged well and exclusively BF. Twins and triplets who received KC in first week of life tolerated it well, managed to breastfeed well in a very short time and left the hospital early. Author concluded that “KC is feasible and safe for twins and triplets.” PT, FT retrospective survey and chart review, sepsis, exclusive BF, LOS, Shared KC, wgt.

Kambarama RI, Chidede O, & Kowo DT. (1998). Kangaroo care versus incubator care in the management of well preterm infants – a pilot study. Annals of Tropical Paediatrics, 18(2), 81–86. 37 KC group getting 24/7 KC in a KC unit in Zimbabwe gained twice as much weight per day as the 37 controls (20.8 g vs. 10.2g, p =0.001), had shorter hospital stay (16.6 vs 20.7 days, p=0.04), and better survival rate (97.3% vs. 95%) and were less frequently, but not significantly when age and birth weight were adjusted for. “KC has major advantages over incubator care of preterm infants”…(p. 81) RCT. PT, Weight, LOS, mortality, sepsis (?illness, general morbidity), incubator

Kambarama RA, Chidede O & Kowo DT. (1999). Kangaroo care for well low birth weight infants at Harare Central Hospital Maternity Unit—Zimbabwe. Central African J. of Medicine, 45(3), 56-59. 613 mother-infant pairs, got KC in tertiary level hospital whilst pretermers were “well.” Median KCU admission age =12 days; 72% discharged home from KMC Unit and 28% referred to NICU. More likely to go back to NICU if male, BS<1500g, KCU admission weight <1500 grams, and KCU admission age 14 days or more. 27% sent to NICU for apnea, 27% for respiratory distress, 18% for aspiration pneumonia, 8% for jaundice, 7% for poor feeding, 5% for maternal illness, 4% for sepsis, 3% diarrhea. Birth weight was strongest predictor of being sent back to NICU. Establishment of KMCU in tertiary hospital is feasible. KC for well pretermers is suitable for most mothers and infants, and infants are most likely to go back to NICU if male, very low birth weight, and greater than two weeks old when admitted to KMC Unit. Preterm, Implementation, regression, tertiary level hospital, feeding, jaundice, sepsis, maternal illness, guidelines for admission to KC unit, birth weight.

Kambarami R, Chidede O, & Pereira N. (2003). Long term outcome of preterm infants discharged home on kangaroo care in a developing country. Annals Tropical Paediatrics, 23 (1), 55-59. 297 preterm infants born at Harare, Zimbabwe were discharged home on KC. 26.6% died (median age=66 days), 47.5% survived, 25.9% lost. Hospital readmit rate = 22.9% with 8.8% mortality. Maternal mortality = 4.7%, chronic infant morbidity was 7.4%. Infant mortality was related to young age of mom, birth weight <1500, and maternal mortality, not to discharge weight or birth weight. Descriptive, PT, Home follow-up, Morbidity, Mortality, hospital readmit rate, birth weight

Kambarami R, Mutambirwa J, & Maramba PP. (2002). Caregivers’ perceptions and experiences of ‘kangaroo care’ in a developing country. Trop Doct 32 (3), 131-133. Focus group showed that nurses preferred KC to conventional methods, but still it’s use is not widespread. Knowledge & awareness of method need to be improved. Qualitative, focus group, staff perception, implementation, PT

to both demand and supply-side factors. This study assessed the changes in maternal and newborn services in health facilities as well as demand for maternal and newborn health services in Eastern Uganda. The health assessment data were collected in August 2013 and September 2015 in the districts of Kamuli, Pallisa, and Kibuku. We purposively collected data on the availability of services from 40 health facilities that provided maternal and newborn services. In addition, we conducted 24 focus group discussions (FGDs) with women and men; and 18 key informant interviews (KIs) with health workers. On the supply side, most health facilities persistently lacked lifesaving medicines such as misoprostol, IV Ampicillin, IV Gentamycin, IV Metronidazole, Magnesium Sulphate, Ergometrine, Corticosteroids, ferrous sulphate, Folic Acid, Combined ferrous, Benzy1 penicillin, and Diazapam (IM or IV). Basic newborn equipment such as stethoscope, fetal scope, working baby scale, newborn suction devices, newborn resuscitation device, and thermometer were persistently not available in most of the health facilities. Binders for Kangaroo Mother Care, blanket to wrap newborn, baby warmer or heat lamp were persistently not available in at least 80% of the health facilities. Other equipment for the management of labor and abortions such as Manual vacuum aspirator for abortion care, blank partographs and vacuum extractor were not available in most of the health facilities including referral facilities at baseline and follow-up. On the demand side, the qualitative interviews exposed long distances and inadequate transport to the health facilities, inadequate information, poverty, and poor services at the health facilities as major factors that impede women to utilize/access maternal and newborn services. There are distinct influences on both demand and supply side, which restrain both health care uptake and its quality. The frequent disparity between the health facility readiness to provide services and the women readiness to utilize them needs to be addressed as the country intensifies its efforts to reduce maternal and newborn deaths through boosting facility deliveries.

3rd world, Implementation NOT CHARTS


Karas, D.J., Mullany, L.C., Katz J., Khisty, S.K., Leelen, S.C., Darmstadt, G.L., & Tiesch, J.M. (2012). Home care practices for newborns in Rural Southern Nepal during the first 2 weeks of life. Journal of Tropical Pediatrics, 58(3):200-7. doi: 10.1093/tropej/fmr057. Descriptive study of characteristics (feeding hygiene care, skin/cord care, thermal care) of 23,356 and 22,768 infants on Days 1 and 14 of life in Nepal who participated in a community-based trial of Essentials of Newborn Care practices. 56.6% were breastfed within 24 h and 80.4% received prelacteal feeds within the first 2 weeks of life. Only 13.3% of caretakers always washed their hands before caring for their infants. Massage with mustard oil was near universal, 82.2% slept in a warmed room, and KC was rare (4.5%). Many behaviors were detrimental to health and key areas for community-based training were identified.

3rd world, FT, PT, Community-based KC, Essential Care, massage, little KC being done. Training and education needed

Karl, D.J., Beal, J.A., O’Hare, C.M., & Rissmiller, P.N (2006). Reconceptualizing the nurse’s role in the newborn period as the “attacher”. MCN, American Journal of Maternal Child Nursing, 31(4), 257-261 NOT A KC STUDY. This is a clinical report of attachment theory and how the postpartum nurse should take on the role of “Attacher” so that the mother bonds to her, the nurse, so the nurse can mother the mother as she is supposed to mother the child, and then help the mother attach to the infant. On page 259 there is Table 1: The Nurses Role in Facilitating Mother-Infant Attachment and under the second box of major tenets of attachment theory is “Proximity-seeking and contact-maintaining” and the supportive nursing interventions to help accomplish this are “Maximise contact between mothers and their babies by encouraging: rooming in, skin-to-skin contact, breastfeeding and infant massage.” On page 260, the text relates” Several ways in which nurses can promote proximity and contact-maintaining behaviors include continuous rooming-in, breastfeeding, skin-to-skin contact (kangaroo care) and infant massage. Each of these is associated with facilitating attachment and contributes to the attachment process. For example, research from the past few decades shows that skin-to-skin contact decreases maternal stress and increases parent-child attachment (Feldman, W.S., & Eidelman, A., 2003).” FT, clinical article, attachment, postpartum KC, massage

Karlsson H. (1996). Skin-to-skin care: heat balance. Archives of Disease in Childhood 75: F130-F132. Nine healthy neonates, FULLTERM, were given 60 minutes of KC on Mom’s chest and rectal temp increased by 0.7°C, going up to 37°C, during KC. Heat was gained from areas in contact with mother’s skin; heat loss from un-protected heads was high, but dry heat loss during KC was similar to dry heat loss in an incubator. Overall, there was reduced heat loss in infants during KC, allowing heat to be conserved. Kcers attained and maintained rectal temps. FULLTERM, Rectal temp, descriptive, Temperature

Karlsson, V., Heinemann, A.B., Sjors, G., Nykvist (but this is incorrect, it really is Nyqvist). K.H., & Agren, J. (2012). Early skin-to-skin care in extremely preterm infants: Thermal balance and care environment. Journal of Pediatrics, 161(3), 422-426. DOI 10.1016/j.peds.2012.02.034 Transfer of heat from parent to infant is sufficiently high to compensate for the increase in evaporative and convective heat loss. The increased water loss through the skin during SSC is small and should not affect the infant’s fluid balance. To evaluate infant thermal balance and the physical environment in extremely preterm infants during skin-to-skin care (SSC). Measurements were performed in 26 extremely preterm infants (gestational age 22-26 weeks; postnatal age, 2-9 days) during pretest (in incubator), test (during SSC), and posttest (in incubator) periods. Infants’ skin temperature and body temperature, ambient temperature, and relative humidity were measured. Evaporimetry was used to determine transepidermal water loss, and insensible KCBib 2018
water loss through the skin was calculated. The infants maintained a normal body temperature during SSC. Transfer to and from SSC was associated with a drop in skin temperature, which increased during SSC. Ambient humidity and temperature were lower during SSC than during incubator care. Insensible water loss through the skin was higher during SSC. SSC can be safely used in extremely preterm infants. SSC can be initiated during the first week of life and is feasible in infants requiring neonatal intensive care, including ventilator treatment. During SSC, the conduction of heat from parent to infant is sufficiently high to compensate for the increase in evaporative and convective heat loss. The increased water loss through the skin during SSC is small and should not affect the infant’s fluid balance. PT, micropreemie, temper, ambient humidity, TEWL, insensible water loss, etc. See also Abouel fattoh et al., 2012 for another article on TEWL and humidity during KC.

NOT ON CHARTS 10/3/2013 SUSIE GET THIS AND DO FULL REVIEW

Kashannia Z, Sajedi F, Rahgozar M, & Noghabi A. (2008). The effect of kangaroo care on behavioral responses to pain of an intramuscular injection in neonates. *J for Specialists in Pediatric Nursing (JSPN)* 13(4), 275-280. No Doi Available. Randomized controlled trial of 100 healthy term infants (KC= 50; 22 males, 28 females and KC was in mother’s postpartum bed at 45 degrees with 2 receiving blankets over infant’s back and maternal fingers exerted slight pressure over infant’s back and no rubbing, speaking, jiggling, or other touch before, during, after injection and for 10 minutes before shot; control (put in quiet room, left for 10 minutes ) in Bandar Abbas, Iran was conducted. Infants were 2500–4000 gram birth weight, 2 hours old, uninfected, APGARS of ≥7 at 1min, ≥37 weeks GA, Sao2 ≥ 95%, NSVD, no birth trauma, no congenital anomalies, no drug use by Mom. After placement in KC, researchers left mom and baby alone for 10 minutes to acclimate and then attached pulse oximeter, brought to quiet alert state, vastus laeralis grasped, swabbed, and injected with 30 guage needle with 0.5 ml of vitamin K, and then gauze pad pressure for remaining two minutes of procedure. The face was videotaped only for duration of crying measurement. The Neonatal and Infant Pain Score (NIPS) was used (facial grimace as relaxed or grimaced, cry as no cry, whimper, or vigorous cry; breathing patterns as relaxed or changed; leg movement as relaxed or extended/fixated; state of arousal – sleeping/awake =0, irritable = 1; arm movements as relaxed or extended/fixated). Score is 0-2=mild/no pain, 3-4=mild to mod pain; >4=severe pain. Range of NIPS was 0-7; KC group had significantly fewer infants getting higher scores in each of the NIPS categories than controls. NIPS was significantly more severe (Kc= 31 (62%) had score <2; 16 had score 3-4; 3 had score of >4 , control = 1 has score of 0-2; 19 had scores of 3-4, 30 (60%) has score >4 ) in controls (p=0.001); cry duration longer in control (KC=14.55 seconds, control =24.61 seconds), and 30 KCers and 6 controls did not cry at all with the shot. KC is context dependent because the person giving KC must be relaxed and sucrose/taste-induced analgesics have rapid onset; KC has gradual onset – so be sure to give 10 minutes of KC before pain stimulus (pg. 279). SML has 4 issues with this study: first, why were infants brought to quiet alert state rather than being left relaxed and in quiet state as found after 10 minute adaptation period (pg. 276), and second, on page 277 it states that one researcher did all the vit K shots and that she “was not aware of either the purpose of the study nor that different groups” – but how can one give a shot in KC without being aware that some babies are in KC and others were in a crib? Third, a table of random numbers was used to randomize infants to get equal #s of male and females. Table of random numbers has to have all of the sampling frame (all 100 babies) present and assigned a number at the same time, and when data was collected over two months, this condition was not met, and is not able to control for sex unless separate tables are used (one for each sex) and then why would they end up with exactly the same number of males/females in each group and an uneven number of males/females in each group? No rationale for this uneven representation was given.[ Fullterm, pain, crying, NIPS, randomized controlled trial, RCT, Early KC. Not on charts yet. See also Sajedi 2007 article

Kattwinkel, J., Perlman, J.M., Aziz, K., Cobry, C., Fairchild, K, Gallagher, J, & Zaichkin, J. (2010). Special report-Part 15: Neonatal Resuscitation: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation, 122, S909-S919. doi:10:1542/peds-2010-2972E. This article presents the latest guidelines for neonatal resuscitation. Although fewer than 1% require extensive resuscitation efforts, about 10% of newborns require some assistance at birth to begin breathing. Identify infants who do NOT require resuscitation by assessing three variables: term gestation, spontaneous crying or breathing, and good muscle tone. Infants who do not meet one or more of these criteria may need: provision of warmth, clearing the airway if indicated, drying, stimulation, ventilation, chest compressions, and administration of epinephrine and/or volume expansion. Assess infant during the GOLDEN MINUTE – the first minute of life. Guidelines recommend that at every birth, at least one person be designated as primarily responsible for the newborn, that this person is capable of initiating newborn resuscitation, environment should include person capable of complete resuscitation including intubation. The guidelines state that term infants who have good muscle tone and cry or breathe spontaneously should not be separated from the mother, but should be dried and placed in skin-to-skin contact with the mother, with both of them covered with dry linen. These infants may continue to be observed for breathing, activity, and color while in contact with the mother. FT, Guidelines, BIRTH KC, NRP, separation, life threatening events (See Lewis’s 2012 review too)

Kaur R, Narula S, Parmar V, Kumar A, Basu S., Kavita R, Sharma R, & Kaur D. (2004). Intermittent Kangaroo Mother Care in Neonatal Intensive Care Unit, Chandigarh. Presentation at “Workshops on KMC at Neoncon 2004. XXIV NNFI Annual Convention at Chandigarh, 28 October, 2004” Available from file/EN/KangarooMotherCareInitiative(KMCI).htm. This report begins by stating that KMC has been routine practice in the NICU in Chandigarh since 2002 and that doctors, nurses, paramedics have been educated and trained in KMC. Once stable, all neonates are given at least 4 hours/day of KMC until discharge. Mothers, fathers, grandparents and siblings provide KMC. Because they don’t have lyca bands to hold the infants in place, they use sport bras and veils to do the job. Infants wear a diaper, head cap and booties. Then the report relates the statistics of their practice: 62 low birthweight infants have received KMC.

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19(31%) were <1000 grams, 32 (32%) were 1001-1500 grams, and the rest were between 1501 and 2500 gms. Smallest baby was 548 grams. No significant variations in heart and respiratory rates have been noted. Temperatures remained 36.5-37.4°C even in very low birth weight babies under incubator care. No hypothermia, no hyperthermia. Oxygen saturation shows improvement of 2.3%. Nurses reported that manpower needs close supervision of infant, and use of heat convectors by Staff decreased considerably, KMC babies had fewer complications, and survival was better. Mothers reported increased expressed breastmilk and acceptance of KMC, more confident in handling infants, and feel as though they are contributing positively to the care of the infant. Authors concluded that KMC is good, safe, economical alternative in developing countries having constraints on manpower and equipment. It is well accepted by mothers, families, and nurses. **Descriptive, Preterm, 3rd world, implementation report**. Micropreemie, temperature, heart rate, HR, respiratory rate, RR, SaO2, sibling KC, grandparental KC, surrogate KC, grandparental KC, paternal KC, duration is 4 hrs/day, breast milk production, nursing time, complications, mortality, maternal feelings, wraps. *(Not yet on charts)*. See also Parmar et al., 2009 for a report of 135 infants.

Kc, A., Wrammert J, Nelin V, Ewald U, Clark R, Mååqvist M. (2015). *Level of mortality risk for babies born preterm or with a small weight for gestation in a tertiary hospital of Nepal*. BMC Public Health. 2015 Sep 10;15(1):877. doi: 10.1186/s12889-015-2232-1. Globally, 15 million babies were born prematurely in 2012, with 37.6% of them in South Asia. About 32.4 million infants were born small for gestational age (SGA) in 2010, with more than half of these births occurring in South Asia. In Nepal, 14% of babies were born preterm and 39.3% were born SGA in 2010. We conducted a study in a tertiary hospital of Nepal to assess the level of risk for neonatal mortality among babies who were born prematurely and/or SGA. This *case-control study* was completed over a 15-month period between July 2012 and September 2013. During this period, the hospital had an incidence of preterm birth and SGA of 8.1 and 37.3%, respectively. In the multivariate model, there was a 12-fold *increased risk of neonatal death* among preterm infants compared to term. Babies who were SGA had a 40% higher risk of neonatal death compared to those who were not. Additionally, babies who were both preterm and SGA were 16 times more likely to die during the neonatal period. Our study showed that the risk of neonatal mortality was highest when the baby was born both preterm and SGA, followed by babies who were born preterm, and then by babies who were SGA in a tertiary hospital in Nepal. In tertiary care settings, the risk of *mortality* for babies who are born preterm and/or SGA can be reduced with low-cost interventions such as Kangaroo Mother Care or improved management of complications through special newborn care or neonatal intensive care units. The risk of death for babies who are born prematurely and/or SGA can thus be used as an indicator to monitor the quality of care for these babies in health facility settings, PT, mortality. **Descriptive case-control study in which KMC is recommended trea**. *Not a KC study*.

Keegan, L. (2010). *Stork Story*. This blog about her experience of having KC at her cesarean birth when baby was already dried and diapered and then handed to her for KC (without any head cap for a few minutes, though). Available at www.@MothersUtopia@Laura_Keegan. FT, Lay report, cesarean section, OR KC.

Keegan, L. (2008) *Breastfeeding with Comfort and Joy: A photographic guide for mom and those who help her breastfeed*. Available from www.BreastfeedingwithComfortandJoy.com. This book includes the importance of skin to skin with mom and dad. There is an accompanying youtube show about breastfeeding but it does not have any pictures of KC. BLOG, FT, BF.

Keely A, Lawton J, Swanson V., & Denisson FC. (2015-May). *Barriers to breast-feeding in obese women: A qualitative exploration*. Midwifery. 31(5):532-9. doi: 10.1016/j.midw.2015.02.001. Exploring by qualitative design factors influencing breast-feeding practices in obese women who had either stopped breast-feeding or were no longer exclusively breast-feeding 6-10 weeks following the birth of their babies, despite an original intention to do so for 16 weeks or longer. Specifically (i) to identify the barriers to successful breast-feeding and reasons for introducing formula and/or stopping breast-feeding, and (ii) to explore the women's views and experiences of current breast-feeding support services. Semi-structured face-to-face interviews analysed using thematic analysis. 28 obese subjects were recruited from one large maternity unit in Scotland and interviewed in their homes at 6-10 weeks following birth. Three major themes emerged: the impact of birth complications (19 of 28 women had given birth by caesarean section and some felt this led to feeling 'out of it' post-operatively, a delay in establishing skin-to-skin contact, and in establishing breast-feeding), a lack of privacy (women described reluctance to breast feed in front of others, difficulties in achieving privacy, in hospital, at home and in public), and a low uptake of specialist breast-feeding support (despite experiencing problems such as physical difficulties during breast-feeding or a perception of low milk supply, breast-feeding support services were underserved by this sample of women). A small number of the women in this study used breast-feeding clinics and reported finding these useful. A further small number felt they benefitted from the support of a friend who was successfully breast-feeding. Midwives should be mindful of the presence of additional factors alongside maternal obesity, such as caesarean delivery, physical difficulties when breast-feeding, poor body image, and lack of confidence about sufficient milk supply. Hospitals need to facilitate early skin-to-skin contact and privacy in postnatal accommodation. **Qualitative, FT, BF, Exclusive BF, barriers to BF, Cesarean birth**.

225 it states: “In addition, immediate skin-to-skin contact between mother and infant and early initiation of breastfeeding are shown to improve breastfeeding outcomes” Has chart on benefits of breastfeeding on pge 226 (disease prevention, nutritional, immunologic, developmental, psychologic, maternal health, economic, and environmental) and on page 226 there is a box entitled KEY RECOMMENDATIONS FOR PRACTICE, and the second item is “Unless contraindicated by a medical condition, mothers should have immediate skin-to-skin contact with their infants through the first feeding to increase the likelihood of breastfeeding success, and should be encouraged to room-in, feed on demand, and avoid supplements and pacifiers in their infants.” And this is rated as A level evidence based on AAP guidelines, Gartner et al., 2005 (the AAP guidelines), Anderson, Moore, Hepworth & Bergman, 2003; Phillip & Merewood, 2004; and WHO Evidence for the Ten Step to Successful Breastfeeding. 1998.) Says on page 227 that breastfeeding education should begin as soon as antenatal visits commence. And then “A 2003 Cochrane review found that immediate skin-to-skin contact between mother and newborn improves breastfeeding outcomes. Postpartum breastfeeding should occur within the first hour of life, even if weighing, bathing or administering medications are delayed.” (Pg. 227). Clinical guidelines for breastfeeding, birth KC, FT. [Not on charts yet as of 6/2009]


Kennep A, Alwazer FAN-A, & Theorell, T. (2010). Women’s authority during childbirth and Safe Motherhood in Yemen. Sexual and Reproductive Healthcare, 1(4), 129-134. DOI: 10.1016/j.srhc.2010.07.001. 220 women who gave birth were interviewed. If woman had her questions answered and requests met had 83% higher probability of perceiving own authority. Women who had KC ad had 28% higher and women with distant contact had lower probability of perceived own authority. Women’s social and demographic background played no role in perceived own authority at birth. Supporting women to exercise their own authority during childbirth would significantly facilitate their ability to give birth successfully and with personal satisfaction. In a country were women are routinely disempowered at birth, empowerment is important. Disempowerment occurs at hands of skilled birth attendants, most especially MDs and also midwives who work against the mother’s personal power and authority. KC EMPOWERS MOTHER. FT, Community-based KC, Birth KC, Maternal feeling. NOT ON CHART 1/21/2011

Kenanga Purbasary E, Rustrina Y, Budiarti T. (2017). Increasing Confidence and Ability in Implementing Kangaroo Mother Care Method Among Young Mothers. Compr Child Adolesc Nurs. 40(sup1):1-7. doi: 10.1080/24694193.2017.1386964. Mothers giving birth to low birth weight babies (LBWBs) have low confidence in caring for their babies because they are often still young and may lack the knowledge, experience, and ability to care for the baby. This research aims to determine the effect of education about kangaroo mother care (KMC) on the confidence and ability of young mothers to implement KMC. The research methodology used was a controlled-random experimental approach with pre- and post-test equivalent groups of 13 mothers and their LBWBs in the intervention group and 13 mothers and their LBWBs in the control group. Data were collected via an instrument measuring young mothers' confidence, the validity and reliability of which have been tested with a resulting r value of 0.941, and an observation sheet on KMC implementation. After conducting the education, the confidence score of young mothers and their ability to perform KMC increased meaningfully. The score of confidence of young mothers before education was 37 (p = .1555; and the ability score for KMC implementation before education was 9 (p = .1555). The median score of confidence of young mothers after education in the intervention group was 87 and in the control group was 50 (p = .001, 95% CI 60.36-75.56), and ability median score for KMC implementation after education in the intervention group was 16 and in the control group was 12 (p = .001, 95% CI 1.50-1.88). KMC education should be conducted gradually, and it is necessary to involve the family, in order for KMC implementation to continue at home. A family visit can be done for LBWBs to evaluate the ability of the young mothers to implement KMC. PT, pretest-posttest randomized controlled trial, observation study, maternal education, maternal confidence feelings

Kennedy N, Goudse LD, & Morley DC. (2000). Temperature monitoring with ThermoSpots in Malawi. The Lancet. 355, 1364. Ten infants <2000g, had auxiliary and rectal temps measured 2x/day ± 5 days. KC was done for hypothermia. KC was cost-free and effective method of rewarming. LBW, PT, Axillary temperature, Rectal temperature, Rewarming, PT. [Not on charts yet]


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The authors of the article on physiology in newborn infants, subjected to different ward routines in St. Peter's Hospital system vs. how beneficial is it to the newborn and his/her mother (1999, and 3) the Humane Neonatal Care Initiative article by Levin A in Acta Paediatr. 1999. The Humane Neonatal Care Initiative includes section 8. Mother-and-child skin-to-skin and air-to-air contact should be used as much as possible, and the use of technical equipment in childcare should be reduced. I need to get this article to see what it says.

Kennell J, H. (2006). Randomized controlled trial of skin-to-skin contact from birth versus conventional incubator for physiological stabilization in 1200 to 2199 g newborns. Acta Paediatrica, 95(1), 15-16. This is a commentary on Bergman’s RCT. Ten infants <2000g had axillary and rectal temps measured 2x/day x 5 days. KC was done for hypothermia. KC was cost-free and effective method of rewarming. Kennell asks why Bergman would even think of trying this study and did not cite the previous studies done by Ludington-Hoe and another by Anderson et al and their published reports as reasons, but was glad that Bergman did this trial. He also makes laudatory comments about the breast biosynchrony study of Ludington-Hoe et al., that was published in Journal of Obstetric, Gynecologic, and Neonatal Nursing in 2006. PT, Commentary, breast biosynchrony temps. LBW, Axillary temperature, Rectal temperature, Rewarming


Kennell JH, & Klaus, M.H. (1988-Dec). The perinatal paradigm: is it time for a change? Clin Perinatol. 15(4):801-813. Two different care procedures, traditional separation of mother and newborn vs birth kangaroo care for mother and newborn, are presented to raise the difficult question of whether we should completely reevaluate our paradigms of care in the perinatal period. The authors report that traditional care is outmoded and evidence suggests that a switch toward non-separation and skin to skin contact is merited. In this thorough review, should we continue to use the same framework of beliefs (how beneficial is it to the health care provider and hospital system vs. how beneficial is it to the newborn and his/her mother) in deciding on the benefits and risks of any care procedure? FT, review, birth KC, separation

Kennell JH, & Klaus MH. (1998-Jan). Bonding: recent observations that alter perinatal care. Pediatric Review. 19(1):4-12. This is a review of KC effects on bonding/attachment in immediately post delivery period and how powerful KC is and the suggestion that we should allow KC with all infants to promote the bonding between mother and newborn. FT, review, attachment/bonding, birth KC

Kennell, J.H., & Klaus, M.J. (2005). Foreword. In Lawrence RA and Lawrence RM, Breastfeeding. A Guide for the Medical Profession. 6th Edition. Philadelphia, PA: Elsevier Mosby. Pp. vii-viii. This forward states on page vii “The same researchers (referring to Swedes) found that, when infants are skin-to-skin with their mothers for the first 90 minutes after birth, they hardly cry at all compared with infants who are dried, wrapped in a towel and placed in a bassinet. In addition, the researchers demonstrated that if a newborns is left quietly on the mother’s abdomen after birth he or she will, after about 90 minutes, crawl gradually up to the mother’s breast, find the nipple, self-attach, and start to suckle on his or her own. It would appear that each of these features - the crawling ability of the infant, the absence of crying when skin to skin with the mother, and the warming capability of the mother’s chest – evolved genetically more than 400,000 years ago to help preserve the infant’s life.” Pg. vii. Birth KC, BF, crawl, cry, Not on CHARTs 12/28/2011.

Kennell JH & McGrath S. (2001-Mar). What babies teach us: the essential link between baby’s behavior and mother’s biology. Birth, 28(1):20-21. This is a commentary article on two articles: 1) Postpartum maternal oxytocin release by newborns: effects of infant hand massage and sucking by Matthiesen et al., published in Birth. 2001, and “Maternal analgesia during labor disturbs newborn behavior: effects on breastfeeding, temperature, and crying” by Ansjo-Arvidson et al., in Birth, 2001 in which full term infants in both studies were in birth KC. Again, Drs Kennell and McGrath are very positive about the articles and add content on oxytocin and say that birth kc should be a routine practice. FT, Commentary, Birth KC, oxytocin, routine KC, BF

Kennell JH, McGrath SK (2003). Beneficial effects of postnatal skin-to-skin contact. Acta Paediatrica,92(3):272-273. This article is a commentary on the article “Skin-to-skin contact may reduce negative consequences of "the stress of being born": a study on temperature in newborn infants, subjected to different ward routines in St. Petersburg” In a randomized trial, Bystrova et al.
examined the traditional neonatal practice of swaddling. They demonstrated that extended skin-to-skin contact with the mother is the most effective way to maintain the infant's temperature and decrease the "stress of being born". Only through research such as that reported by Bystrova et al. can the advantages or disadvantages of routinely accepted perinatal practices be evaluated. PT, commentary and review, temperature, reduce physiologic stress/stability, birth KC, routine KC

Kennell JH, Trause MA, & Klaus MH. (1975). Evidence for a sensitive period in the human mother. Ciba Found Symp. 1975(33):87-101. This is a review article. In certain animal species immediate separation of a mother from here young for a brief period after delivery (the sensitive period) may result in aberrant maternal behaviour. In the human, disorders of mothering, including child abuse, increase disproportionately in situations associated with early neonatal separation of mother and infant, such as prematurity. Mothers in the United States who were offered early contact with their premature infants showed differences in attachment behaviour when compared with mothers whose first contact with their infants was three weeks after delivery. Mothers who had one hour of close physical contact with their nude full-term infants within the first two hours after delivery and who had 15 extra hours of contact in the first three days behaved significantly differently during a physical examination of the infant at one month and one year, and in their speech to their infants at two years, from a control group of mothers who had only routine contact. In a similar study in Guatemala, mothers who had 45 minutes of early extra contact showed significantly more attachment behaviour at the time of the first breast-feeding (12 hours). These and other studies in the human suggest that shortly after birth there is a sensitive period which appears to have long-lasting effects on maternal attachment and which may ultimately affect the development of the child. PT, FT studies, Review, birthKC, Separation, maternal behaviors, attachment, BirthKC with preterms referred to in this article. GET THIS First KC study

Kent, J.C., Prime, D.K., & Garbin, C.P. (2012). Principles for maintaining or increasing breast milk production. Journal of Obstetric, Gynecologic and Neonatal Nurses. 41(1), 114-121. DOI: 10.1111/j.1552-6909.2011.03133.x. NOT A KC study per se but recommends KC. First week of life is important for establishing adequate milk supply. This is a clinical article about normal breastfeeding behaviors (at 1st breastfeeding within 2 hrs of birth, colostrum intake is 0-5 ml; for first 2 days postbirth before secretory activation, colostrum intake is 37-169ml/L(dKent 2007) How breastfeeding works. J Midwifery & Women’s Health 52(6),564-570, infant should pass meconium within 2 days of birth, infant may lose up to 7% birthweight by 3-5 days postbirth (Gartner LM, Morton J, Lawrence JK, A., Naylor AF, O’Hare D, Schanler RJ & Eidelman, AI 2005) Breastfeeding and the use of human milk. Pediatrics 115(2), 496-500. By 6 days postbirth infants are taking 556-705 ml/day and weight gain in first week should be 15-30g/day (Lawrence & Lawrence 2011. Milk production is fully established by one month (Kent 2007) and normal milk production between 1-6 months post birth is 750-800 ml/day (R=440-1220 for infants growing normally). Over first six months the normal infant’s daily energy requirement, expressed as kilojoules per kilogram of body weight) decreases from 430 to 330 kilojoules/kg (1kilocalorie [kcal]=4.184 kilojoules [kJ]) and the energy required for growth decreases from 1 to 3 months, equaling 35% and between 3 & 6 months equaling 17.5% (Food & Agriculture Organization, n.d., Energy requirements of infants from birth to 12 months. Available at www.fao.org/docrep/007/y5686e/y5686e05.htm#bm05.3) Moms should feed 8-12 times/day and exclusively BF infants average 8/day (R=4-13/day). Milk at beginning of feed is low fat; hind milk is high fat (p. 115) and has 3 times as much fat as foremilk (Bishara R, Dunn MS, Merko SE, Darling P(2008) Nutrient composition of hindmilk produced by mothers of very low birth weight infants born at less than 26 weeks gestation,J Hum Lact 24(2),159-167). Because a breast may be full at one feeding and well drained at another, daily fat intake of breastfed infant is INDEPENDENT of feeding frequency when milk production is in normal range (pg 116). Sucking time ranges from 12-67 min/feeding and no relationship exists between duration of a breastfeed and amount of milk consumed during that breastfeed because they spend some time in non-nutritive sucking on each breast. On page 117 it says “The following three recommendations facilitate effective drainage (of breasts). First, early frequent, unrestricted skin-to-skin contact. Laying the baby skin to skin prone between the mother’s breasts will elicit the basic “baby led” instinctive feeding behavior of searching out and attaching to the breast. This positioning can help to calm and relieve stress in a compromised dyad while they are still learning the skills of breastfeeding.” FT,PT, breast milk production, colostrum, birth weight loss, hindmilk, fat content, VEKC, EKC. not on charts 2/7/2012.

Keshavarz, M. & Haghighi MNS (2010). Effects of kangaroo mother care on duration of exclusive BF and feeding pattern in neonates of mothers who delivered by cesarean section (Farsi). Medical Science Journal of Islamic Azad University Medical Branch, 2(4), 182-188. Randomized controlled trial of 80 convention care vs 80 in KC (2 hrs after cesarean KC was given and then 60min/day for 2 consecutive days and then at home. In KC group, # of feeds in hospital was greater and # of infants EXCLUSIVELY breastfed up to 6 months was greater. Time between birth and first feeding did not differ between the groups. Number of infants severely crying in hospital was lower in KC group than controls (5.6 vs. 12.3). KC is recommended in delivery and cesarean section units and then continuing at home. FT, RCT, Cesarean, BF, EXCLUSIVE BF, # of crying infants. home KC, postpartum kc, separation

Kesenmodel, U.S. & Isleving, L.R. (2011). Measuring and improving quality in obstetrics – the implementation of national indicators in Denmark. Acta Obstetrica Gynecologica Scandinavica, 90(4), 295-304. DOI: 10.1111/j.1600-0412.2011.01078.x. This is a report that Denmark has started mandating reporting by all hospitals of how well they are doing in meeting quality care indicators of care KCBib 2018
during delivery, which are anesthesia/pain relief, continuous support for women in the delivery room, lacerations, 3rd or 4th degree; acute cesarean section, postpartum hemorrhage; establishment of skin-to-skin contact between mother and newborn infant; severe fetal hypoxia, delivery of a healthy child after uncomplicated delivery. Guidelines for good health care, cesarean. Birth KC. NOT ON CHARTS 9/9/2011

Kieviet N, Dolman KM, & Honig A (2013). The use of psychotropic medication during pregnancy: how about the newborn? Neuropsychiatric Disease and Treatment. 9:1257-1266. Aug 28. Report of a new diagnosis from Amsterdam: withdrawal from SSRIs and it is called Poor Neonatal Adaptation (PNA). Infants are at risk of developing symptoms of Poor Neonatal Adaptation (PNA) after exposure to psychotropic drugs in utero. Such symptoms are largely similar after exposure to antidepressants, antipsychotics and benzodiazepines and consist of mostly mild neurologic, autonomic, respiratory and gastro-intestinal abnormalities. Most symptoms develop within 48 hours after birth and last for 2-6 days. After exposure to Selective Serotonin Reuptake Inhibitors (SSRIs), mirtazapine or venlafaxine in utero, breastfeeding is presumably protective for development of PNA. The dosage of antidepressants does not seem to be related to the risk of PNA. In order to objectify possible symptoms of PNA, observation of mother and child at the maturity ward is advisable. If PNA symptoms do not occur, an observation period of 48-72 hours is sufficient. This applies to all types of psychotropic drugs. When PNA symptoms are present it is advisable to observe the infant until the symptoms are fully resolved. Observation can be performed by trained nurses using the Finnegan scoring list. This observation list should be administered every 8 hours. Interpretation of the scores should be carried out by a paediatrician. In most cases symptoms are non-specific. Therefore other diagnoses, such as infection or neurologic problems, have to be excluded. When there is any doubt on possible intoxications during pregnancy, toxicological urine screening is indicated. Most cases of PNA are mild, of short duration and self-limiting without need for treatment. Supporting measures such as frequent small feedings, swaddling and increase of skin to skin contact with the mother is usually sufficient. In case of severe PNA it is advised to admit the infant to the Neonatal Care Unit (NCU). Phenobarbital is a safe therapeutic option. There seem to be no major long term effects; however, additional studies are necessary in order to draw definite conclusions. FT, FT, Poor neonatal adaptation, KC is supportive measures for PNA. PNA = NAS neonatal abstinence syndrome.

Kieviet, N., Hoppenbrouwers, C., Dolman, K., Berkhof, J., Wennink, H., & Honig, A. (2014). Risk factors for Poor Neonatal Adaptation after exposure to antidepressants. Acta Paediatrica. abla ahead of print. Infants in utero who are exposed to antidepressants are at risk of Poor Neonatal Adaptation (PNA), which is a Finnegan Score ≥ 4. 247 infants who were exposed to a single antidepressant during at least the last trimester of pregnancy were followed and 157 (64%) developed PNA. Formula feeding was associated with PNA compared to breastfeeding or mixed feeding; SSRIs were associated with increased risk of PNA compared to Serotonin and Norepinephrine Reuptake Inhibitors. Women who used SSRIs during pregnancy should not reduce their treatment dosage and should be encouraged to breastfeed or maximize skin to skin contact in order to reduce the risk of PNA. FT, regression analysis, Poor Neonatal Adaptation, NAS

Kiger, J., Huff, L., & Southgate, W.M. (2014 - April). Arrhythmia during Kangaroo Care. Journal of Pediatrics. 164(4):941. doi: 10.1016/j.jpeds.2013.11.058 Available from www.jped.com and type in James Kiger Case study of a term male infant who was admitted to the neonatal intensive care unit following resuscitation for a spontaneous pneumothorax. Needle decompression was performed and after brief supplemental oxygen support he improved quickly. At 18 hours of life he was stable on room air, with normal oxygen saturations, and began breastfeeding and kangaroo care. Shortly after the infant was placed on the mother's chest, the bedside nurse noted a significant change in the heart rhythm on the cardiopulmonary monitor and alerted the physician team. The tracing on the bedside monitor and telemetry was of concern for supraventricular tachycardia or atrial fibrillation (Figure A). The infant had no apparent distress, cyanosis, or change in respiratory pattern. Auscultation revealed regular S1 and S2 sounds, thus, they decided the infant really did not have tachycardia and the spurious arrhythmia was attributable to UNINTENDED transduction of maternal heart rate, as has been found by Sontheimer et al., 1995 and Kluthe et al., 2004 (both on this bib). So, “this case highlights a potential pitfall, which could lead to costly and unnecessary workup ifnot promptly recognized.” Pg. 1 of article. FT, Case study, HR, tachycardia, arrhythmia, maternal VS pickup by infant.

Kirkwood BR, Manu A, Ten Asbroek AH, Soremekun S, Weebong B, Gyan T, Danso S, Amenga-Etego S, Tawiah-Agyemang C, Owusu-Agyei S, Hill Z. (2013). Effect of the Newhints home-visits intervention on neonatal mortality rate and care practices in Ghana: a cluster randomised controlled trial. Lancet, 381(9884), 2184-2192. doi: 10.1016/S0140-6736(13)60095-1. This is a descriptive evaluation report of implementing Essential Care of the Newborn throughout Ghana to determine if infant mortality dropped. Two home visits were made in pregnancy and three during the first week of life. Increases were also noted in initiation of breastfeeding in less than 1 h of birth (3743 [49%] of 7673 vs 3280 [41%] of 7921, respectively; 1·22, 1·07-1·40; p=0·004), skin to skin contact (3355 [44%] vs 1931 [24%], respectively; 2·30, 1·85-2·87; p=0·0002), & many other outcomes like use of bednet for sleeping. The meta-analysis summary estimate of a reduction of 12% (95% CI 5-18%) in infant mortality provides the best evidence for the likely effect of adding the home-visits strategy delivered within programmes in sub-Saharan Africa and in south Asia. Improvements in the quality of delivery and neonatal care in health facilities and development of innovative, effective strategies to
increase coverage of home visits on the day of birth could lead to the achievement of more substantial reductions. FT, PT, Essential care of newborn, 3rd world, Birth KC, Postpartum KC, mortality, breastfeeding. HOME VISITS helped reduce mortality.


Kirsten GF & Kirsten CL (2000). The impact of an aggressive breast feeding programme for very low birth weight infants on the prevalence of nec. Proceedings of the 3rd World Iamaneh Conference, Stellenbosch, S.A. 164-165. VLBW and LBW preterm randomized controlled trial of intermittent KC in level II NICU. where being fed breast milk during intermittent KMC significantly decreased the incidence of necrotizing enterocolitis (NEC) (10% vs 2.8%). PT, RCT, infection, micropreemies, NEC, LBW. GET THIS--ROM AUTHOR, not on charts yet.


Kirsten GF & Weyers H. (2006). The impact of mother kangaroo care on the prevalence of blood product transfusions in infants <1800 g managed in a developing country. ISBT Science Series, 1, 33-36. 622 VLBW preterms <1800 were put into randomized controlled trial of two groups: one group was nursed with intermittent KC and fed mainly breast milk; the other group got no KC and was fed formula in incubator. If hematocrit <28% transfusions given, and if infant was receiving oxygen they got transfused at higher levels of hematocrit. No erythropoetin was given. Fewer infants with mild or no respiratory distress syndrome treated with KMC and breast milk in level 2 NICU received packed red cell transfusions compared with the control group (13% vs 23%, p < .001). When transfusion was necessary, KMC infants received a lower mean number of packed red cell transfusions (1.03 vs 0.47), and 87% (n=357) got no transfusions vs 77% (n=265) of controls who got no transfusions. The reductions in red cell transfusions occurred predominantly in the KMC group of infants with birth weights >800 grams and gestational age > 28 weeks. Fewer KMC infants got fresh frozen plasma even though there was no sig difference in platelet transfusions. Lower need for fresh frozen plasma due to lower rate of infection in KMC group. Reduced # of transfusion due to improved health of infants, but benefit did not extend to smallest <800 g and most immature infants <28 wks. The lower rate of transfusion led to significant cost savings with KMC group costs being 55% lower than control group’s costs and fewer infants were exposed to risk of HIV transmission. PT, RCT, BF, RDS, infection, cost, Micro-preemie. No benefit to <800 g and <28 wks. GET THIS. Not on charts yet.

Kitajima, H. (2003). Prevention of methicillin-resistant Staphylococcus Aureus infections in neonates. Pediatrics International, 45(2): 238-245. Review of Methicillin resistant staph aureus (MRSA) which gets established very early after birth. “If there have been no problems at delivery of a newborn baby, it is of great importance that the mother immediately hold the newborn to establish the mother’s original bacterial flora onto the child. The common bacterial flora would work to prevent the colonization of more alien and harmful pathologic bacteria. Strict adherence to the following seven guidelines would significantly help nosocomial infections. These guidelines should generally be applied to all newborns in the NICU except guideline #2 which concerns infants no longer in the NICU. 1. Skin contact and early breastfeeding (for the mouth and intensive tract), by the mother should be carried out immediately after delivery,” (pg. 240). “It can therefore be deduced that one of the most effective preventive methods is to thoroughly occupy the hair follicles with a non-toxic similar bacterial strain to keep the toxic strain from being established. However, regardless of whether an infant is born by c/s or natural vaginal delivery, skin-to-skin contact between a newborn and his mother should be established immediately upon birth in the delivery room so that the mother’s beneficial Staphylococcus epidermis bacteria can be transferred to the child at the earliest possible moment. This has been referred to as Kangaroo Care or Touch Care and should be begun in the delivery room. It could also be considered the first stage in infection control for a newborn baby’s skin.” (pg. 241). Staph aureus s and staph epidermis establish themselves in the hair follicle of the host and compete to survive. The carriers are medical personnel and MRSA is by horizontal infection. Early SSC has been shown to reduce the risk of serious infection by colonizing infants with their mother’s skin flora. “The embryo in the womb exists in a germ free state but becomes exposed to bacterial flora upon passing through the mother’s birth canal. Immediately after delivery, the newborn infant’s mouth should be place don the mother’s nipple in order to reseed the bacterium on the mother’s skin and aperticularly, to induce the flow of mother’s breast milk (colostrum) which should be given at the earliest possible stage” (241). Fullterrn, Preterm, Infection, birth KC. VEKC (Very Early KC starting within 30 minutes of birth), BF, nosocomial infections. MRSA GET THIS. NOT on CHARTS YET. oral care of preterms.


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Klaus, M.H. (2009). Commentary: An early, short, and useful sensitive period in the human infant. Birth 36(2): 110-112. Commentary on Bystrova, Ivanov et al. 2009 which found that KC, not swaddled holding, is very important for improved mother-infant interaction at 12 months post-birth, (even though no measurements were taken after fullterm birth hospital discharge and 12 months age). He does a good job of summarizing Bystrova data, referring to his study (1) and congratulating Bystrova et al. on producing definite evidence of a sensitive period (but so did de Chateau who followed up for 3 years, and all the Mikael-Kostyra work in Poland). Klaus explains the effect through oxytocin released from hypothalamus of mom and infant as soon as KC begins, which produces calm, and with decreased anxiety and feeling affection they begin attaching to each other. Oxytocin also makes them sleepy and lessens pain. From the beginning KC was found to have soothing effects on the infant, who became calmer during skin-to-skin contact. Infants spent more time in quiet sleep, the heart rate was lower and more stable, apnea became less common or disappeared, and body temperature was maintained. Overall, stabilizing the infant’s physiological system was one of the first benefits of KC interventions to be demonstrated. Newborns should not be separated from their mothers (if both are well). Babies should have skin-to-skin contact with their mothers for the next 2 hours, breastfeeding they are ready and beginning to go to know their parents. AT 2 hours the baby can have vitamin K and eye ointment and all required measurements can be taken. For the past decade, WHO-Euro teaching programs have advocated that the baby should be dried BY THE MOTHER (Ludington’s emphasis) while the infant is placed skin-to-skin with her immediately after birth and that the newborn examination take place with the baby in this position or in the mother’s bed (Chalmers et al., 1999). This is not a critical period but a sensitive period and many times on the succeeding day and weeks parents can enjoy their baby skin-to-skin.” (pg. 111).

Commentary, birth KC, FT, PT, sensitive period, separation, stability, temp, apnea, sleep, calming, routine care at 2 hours age, pain. Not on charts yet 6/2009

Klaus, M.H. & Kennel, J.H. (1970). Mothers’ separation from their newborn infants. Pediatric Clinics of North America, 17(4), 1015-1037. “Each species of mammalian mothers and babies exhibit recurring sequences of maternal behaviors at delivery or in the first days or months of life. Interference with these behavior patterns may result in undesirable, even catastrophic, effects on the young. There is a sensitive period shortly after birth during which brief periods of partial or complete separation may dramatically destroy a mother’s feeding and care of her infant” (pg. 1015). PT, FT???? feeding, birth behaviors, separation. Not on Charts 12/2/2015. GET THIS AND FINISH


Klaus, M.H., Jerauld R, Kregers NC, McAlpine W, Steffa M, & Kennell JH. (1972). Maternal attachment: Importance of first postpartum days. New England J. Medicine, 28, 460-463. Non-randomized controlled trial ( moms assigned according to day of delivery) of 28 moms (14 in extra contact who got 1 hour of skin to skin during the first three hours postbirth. then 5 hours of skin to skin each afternoon for three days after delivery; and 14 in standard maternal care-glimpse of baby after birth, brief look at baby at birth and for identification at 6-12 hours life, then 20-30 min visits every 4 hours for bottle feeding) were watched at 28-32 days postbirth during a bottle feeding for maternal behaviors. At one month post-birth mothers who had been allowed extended contact with their FT infants beginning immediately after birth showed more affectionate behavior (more soothing, more fondling and eye-to-eye contact, and than did mothers in a control group. Actually, more reluctant to leave infant with someone else, usually stayed and watched during exam, had greater soothing behavior, more eye to eye contact and fondling. This was beginning evidence for sensitive period. See Klaus 2009 and Bystrova et al. 2009 for definitive study of sensitive period. Full term, Maternal affectionate Behavior, Quasi-experimental, late KC, residual effect. Sensitive period.

Klaus MH, Kennell JH (1970-Nov). Mothers separated from their newborn infants. Pediatr Clin North Am. 17(4):1015-1037. “Each species of mammalian mothers and babies exhibits recurring sequences of maternal behavior at delivery and the first days and months of life. Interference with these behavior patterns may result in undesirable, even catastrophic, effects on the young. There is a sensitive period shortly after birth during which brief periods of partial or complete separation may dramatically disturb a mother’s feeding and care of her infant.” (pg. 1015). Review of the sensitive period and negative effects of separation across mammalian species. GET THIS not on charts yet NEW FOR BIBLIO STUDY

Klaus MH, Kennell JH (1971-Aug). Mothers separated from their newborn infants. Obstetric & Gynecologic Survey, 26(8), 584-586. This is a verbatim copy of the article immediately above. Not on charts yet NEW FOR BIBLIO study

Klaus, M.H., & Kennell, J.H. (1971-Sept.). Mothers separated from their newborns. Clinics in Obstetrics and Gynecology, 14(3), 926-934. This is the research study of early contact(skin-to-skin, chest-to-chest) vs late (routine care, at 21 days of life mother is allowed to touch her preterm infant) which was routine care in 1970. PT, RCT, separation, family integrated care, first KC study ever, not on charts. NEW FOR BIBLIO STUDY. FIRST KC STUDY


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Fullterm, birth KC, breast crawl, Not on charts yet

Klaus MH, Kennell JH, Plumb N, Zuehlke. (1970 Aug). Human maternal behavior at the first contact with her young. Pediatrics.46(2):187-192. This is the original BIRTHKC For FULLTERM mothers report. RCT of women randomly assigned to receive EXTRA CONTACT (one hour of skin to skin in first three hours postbirth) with their newborn within 10 minutes of birth

Klaus P & Klaus M. (2007). Preface. In P. Gangal (Ed.). Breast Crawl. Unicef India, 2007, pp. 7, 8. Preface to Breast Crawl book. This section reports several facts: Baby in first hour after birth is in special state, eyes wide open, quiet, listening to mother’s familiar voice (80% of infants remember father’s voice too from womb, pg. 7), warmed by mothers chest from skin-to-skin contact (pg.7), soothed by her touch and this state lasts 30-45 minutes or more. While looking he is memorizing mothers face and four hours later will pick mother’s picture over others (pg. 7), and mother is doing the same so she can distinguish her baby by smell and touch within 24 hours of birth (pg. 7). Oxytocin is secreted by mom and baby (oxytocin activates production of prolactin for letdown and aids in production of gastrin and somatostatin and cholecystokinin (GI hormones which aid absorption of food by elongating intestinal villae), raises pain threshold, creates calm in mom and baby, causes feeling of sleepiness, and creates love (it is hormone of love)(pg. 7). When infant sucks on hand she gets taste of amniotic fluid (tastes like substance secreted by breast and she uses the smell and taste to guide to the nipple (pg. 7).Other benefits of breastcrawl are helping infant feel more secure, reducing infant mortality thru immunological properties of human milk, encouraging a longer period of breastfeeding.(pg. 8). Behaviors rehearsed in uterus are used now. Baby has ability to reach at birth to touch mother’s breast (other reaching develops at 4 months post-birth), and massages and elongates the nipple for good placement. Each touch of nipple creates surge of oxytocin in mom’s and baby’s brains. Stepping movements help baby climb to breast, and stepping on abdomen over uterus helps uterus clamp down, decreasing bleeding and expelling placenta (pg. 8). Review, birth KC, scent, pre-feeding behaviors, etc. Not on charts yet, FT, metabolism, prolactin, cholecystokinin, somatostatin, gastrin, pain, comfort, calm, sleepiness.

Klaus MH, Trause MA, Kennell JH. (1975). Does human maternal behaviour after delivery show a characteristic pattern? Ciba Found Symp. 1975;(33):69-85. This is a report of 3 descriptive observational studies of moms looking at their fullterm or preterm infants when first seeing the infant nude. Mother was not nude and infants were beside mothers not in KC. NOT A KC study. Specific kinds of maternal behaviour such as nesting, retrieving, grooming and exploring, are seen in non-human mammalian mothers immediately before, during and after delivery. In this study 22 human mothers were filmed during the first 10 minutes of contact with their normal nude full-term infants, who were placed beside them in private rooms in hospitals in Guatemala and the US; and nine mothers of premature infants were filmed on their first three visits to the nursery. Another 10 Guatemalan mothers and infants were observed for 10 minutes almost immediately after delivery in hospital. These observations were compared to maternal behaviour after home deliveries in California. After hospital delivery all US mothers, but only half of the Guatemalans, began touching their infants’ extremities with their fingertips and proceeded within a few minutes to palm contact on the trunk. US mothers had an intense interest in eye-to-eye contact. Mothers of premature infants showed only fragments of this behaviour. In home births when the mothers are active participants in delivery, they pick up the infant immediately after birth, stroke its face with their fingertips and start breast-feeding within the first minutes after delivery. Initially the infant only licks the nipples. There is striking elevation in mood in the parents. These observations focus attention on reciprocal behaviour patterns that develop early between mother and infant and which serve to unite them. PT, FT (2 cohorts), descriptive newborn observations and maternal behaviors, NOT A KC STUDY, just newborn observations. So not on any charts.

Kledzik, T. (2005). Holding the very low birth weight infant: Skin-to-skin techiquestes. Neonatal Network 24 (1), 7-14. This article offers practical solutions for common barriers to skin-to-skin holding. Has pictures of sitting and standing transfer techniques. Article describes the nursing considerations and techniques involved to successfully implement skin-to-skin holding for VLBW, technology dependent infants. Skin-to-skin holding has been reported as a valuable intervention for preterm infants for over a decade. However, many neonatal intensive care units are not practicing this therapy and cite lack of protocols and techniques as a barrier. This article describes in detail the nursing considerations and techniques involved to successfully implement skin-to-skin holding for very low birth weight, technology-dependent infants. NICU protocols can be derived from this article Clinical, Skills, implementation, barriers, Preterm, transfer, guidelines/protocol. Get this for files

Kluger, J. (2014). A preemie revolution. Cutting edge medicine and dedicated caregivers are helping the tiniest babies survive and thrive. Time, 185(21), 24-31, (June 2, 2014 issue). A summary report of the incidence of preterm birth (4 million babies born in USA in 2010, 478,790 born before 37 weeks, 462,408 survived at least one year), the common problems premature infants experience (feeding, breathing), the stressful aspect of the NICU (“The least predictable consequence of treatment [for prematurity problems] involves the preemie brain. Even a quiet NICU is a too cold, too bright assault and much of the bustle is uncomfortable or painful.(pg. 29). A 25-week old baby is not meant to have a tube down its throat, a needle in its arm, and monitors taped to the skin. ‘The brain does not develop the way it should,’ says Konduri. ‘MRIs show significant differences between a full-term baby and a 40-week baby who was born KCBib 2018
prematurely,' (pg. 29-30) and revelation of two innovative treatments to get preemies home sooner and stronger (“One of the most powerful – and newly appreciated - therapies is as old as the human species: just plain holding babies as much as possible, a technique called kangaroo care. It’s no accident that infants are hard-wired to need cuddling, and adults are hard-wired to oblige. Respiratio, heart rate, sleep cycles, appetite and more stabilize when a baby is in an adult’s arms. Oxytocin – the hormone often called the cuddle chemical – rises in both the cuddler and the cuddlee. And when that cuddler is the mother, the extra oxytocin finds its way into breast milk, which doubles down on the dose the baby gets. A newly released Israeli study [referring to Feldman et al., 2014] followed a group of NICU babies born in the late 1990’s, some of whom got kangaroo care and others who did not. At that time, the technique was not considered standard treatment and hospitals did not provide it on a systematic basis – at least not one that went beyond the amount of holding the babies when relatives came to visit or they were otherwise being tended to. During exams at 3, 6, 12, and 24 months as well as at 5 and 10 years, the children who got constant cuddling out-performed the other group, with stable sleep patterns, steadier respiration and heart rates, and better attention skills. For all that, even a preemie’s mother may find holding her baby surprisingly difficult, something Shannon Dreier, a Milwaukee mom whose some Abram was born at 26 weeks of gestation, discovered. ‘I was afraid to touch Abe,’ she says. ‘the nurses are used to these babies. They’d say, ‘Get your hands in there’ but it wasn’t until about a week after he was born that I was able to do kangaroo care.’” (pg. 30). Another new treatment, far more experimental, involves the use of inhaled nitric oxide to increase blood flow to the lungs and improve function...” A picture of paternal KC is on page 27.

PT, Consumer report, sleep, stability, HR, RR, oxytocin, breast milk, sleep, cognitive development, NICU environment, pain, toxic, paternal KC.

Kloth C, Wauer RR, & Rudiger M. (2004). Extrasystoles: Side effect of kangaroo care? Pediat Critical Care Medicine 5 (5), 455-456. Case report of one preterm infant exhibited cardiac arrhythmia on the ECG monitor during KC, leading to interruption of KC. Arrhythmia disappeared after placing baby back in incubator. Most likely reasons for arrhythmia were not valid, and arrhythmia reappeared upon continuation of KC. ECG monitoring revealed the reason was monitoring error due to superimposed electrical activity from the parent.

Oxytocin saturation represents a more reliable method of monitoring during KC (N.B.: this is similar to the Sontheimer et al.’s 1995 report entitled “Pitfalls in respiratory monitoring…” which says you pick up maternal breaths and pauses if leads are not placed under the infant’s axilla where the mother’s cardiac cycle is not picked up). PT, Case study, descriptive, HR, arrythmia, oxygen saturation, life threatening event, apnea. Maternal VS pickup by infant. Barnes et al., 2005 made commentary on this report.


Kollmann M, Aldrian L, Scheuchenpiggeler A, Mautner E, Herzog SA, Urlesberger B, Ragam RB, Lang U. Obermayer-Pietsch B, Klaritsch P. (2017-Sept). Early skin-to-skin contact after cesarean section: A randomized clinical pilot study. PLoS One. 12(2):e0168783. doi: 10.1371/journal.pone.0168783. Early bonding by skin-to-skin contact (SSC) has been demonstrated to be beneficial for mothers and newborns following vaginal delivery. The aim of this study was to investigate the impact of intraoperative bonding (early SSC) after cesarean section on neonatal adaptation, maternal pain and stress response. This prospective, randomized, controlled pilot study was performed at a single academic tertiary hospital (Department of Obstetrics and Gynecology, Medical University of Graz, Austria) between September 2013 and January 2014. Women were randomly assigned to intraoperative (“early”) SSC (n = 17) versus postoperative (“late”) SSC (n = 18). Main variables investigated were neonatal transition (Apгар score, arterial oxygen saturation, heart rate and temperature), maternal pain perception and both maternal and neonatal stress response by measuring stress biomarkers salivary free cortisol and salivary alpha amylase. There was no evidence for differences in parameters reflecting neonatal transition or stress response between the ‘Early SSC Group’ and the ‘Late SSC Group’. Maternal salivary cortisol and alpha-amylase levels as well as maternal wellbeing and pain did not differ between the groups. However, the rise of maternal salivary alpha-amylase directly after delivery was higher in the ‘Early SSC Group’ compared to the ‘Late SSC Group’ (p = 0.004). This study did not reveal significant risks for the newborn in terms of neonatal transition when early SSC is applied in the operating room. Maternal condition and stress marker levels did not differ either, although the rise of maternal salivary alpha-amylase directly after delivery was higher in the ‘Early SSC Group’ compared to the ‘Late SSC Group’, which may indicate a stressor sign due to intensive activation of the sympathetic-adreno-medullary-system. This needs to be further evaluated in a larger prospective randomized trial. FT, RCT, Cesarean KC, cortisol, alpha-amylase, maternal stress, infant stress. Not on charts 4-28-3017.


Koomers DR, Boseren M, Andriessen P, Oei SG, Feijis L, Bambang Oetomo S (2017-Jan). Pilot study demonstrates that salivary oxytocin can be measured unobtrusively in preterm infants. Acta Paediatr. 106(1):34-42. doi: 10.1111/apa.13606. This study assessed the feasibility and obtrusiveness of measuring salivary oxytocin in preterm infants receiving Kangaroo care. because this is a period of maximal bonding or co-regulation. We also analysed possible influential determinants, including maternal oxytocin. The

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saliva of preterm infants and their mothers was collected prior to, and during. Kangaroo care using cotton swabs and pooled into vials until sufficient volumes were obtained to measure oxytocin levels using a radioimmunoassay. The obtrusiveness of the infants’ collections was measured with a Likert scale. Saliva was collected unobtrusively prior to, and during, 30 Kangaroo care sessions in 21 preterm infants. This resulted in three vials with sufficient volumes of before-Kangaroo care saliva and three with during-Kangaroo care saliva. Oxytocin was detectable in all six vials. The Kangaroo care duration and the intensity of the mother-infant interaction before and during Kangaroo care seemed to be the most important determinants, and these should preferably be standardised in any future trials. Oxytocin was measured unobtrusively in the pooled saliva of preterm infants both before and during Kangaroo care and could therefore be investigated as a biomarker in future studies. PT, descriptive study, salivary oxytocin procedure.

Kommers DR, Joshi R, van Pul C, Atallah L, Feijs L, Oei G, Bambang Oetomo S, Andriessen P (2016-Dec). Features of Heart Rate Variability Capture Regulatory Changes During KangarooCare in Preterm Infants. J Pediatr. pii: S0022-3476(16)31365-8. doi: 10.1016/j.jpeds.2016.11.059. [Epub ahead of print] To determine whether heart rate variability (HRV) can serve as a surrogate measure to track regulatory changes during kangaroo care, a period of parental coregulation distinct from regulation within the incubator. Nurses annotated the starting and ending times of kangaroo care for 3 months. The pre-Kangaroo care, during-Kangaroo care, and post-Kangaroo care data were retrieved in infants with at least 10 accurately annotated kangaroo care sessions. Eight HRV features (5 in the time domain and 3 in the frequency domain) were used to visually and statistically compare the pre-Kangaroo care and during-Kangaroo care periods. Two of these features, capturing the percentage of heart rate decelerations and the extent of heart rate decelerations, were newly developed for preterm infants. A total of 191 kangaroo care sessions were investigated in 11 preterm infants. Despite clinically irrelevant changes in vital signs, 6 of the 8 HRV features (SD of normal-to-normal intervals, root mean square of the SD, percentage of consecutive normal-to-normal intervals that differ by >50 ms, SD of heart rate decelerations, high-frequency power, and low-frequency/high-frequency ratio) showed a visible and statistically significant difference (P < 0.01) between stable periods of kangaroo care and pre-Kangaroo care. HRV was reduced during kangaroo care owing to a decrease in the extent of transient heart rate decelerations. HRV-based features may be clinically useful for capturing the dynamic changes in autonomic regulation in response to kangaroo care and other changes in environment and state. PT, quasi-experimental between KC and pre- and post-test incubator care, co-regulation, pre-test-posttest, HRV, autonomic development BETHTS.

Kondamudi NP, Vizzi M (2017-June). Brief Resolved Unexplained Event (BRUE). StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2017.-2017 Jun 24 The American Academy of Pediatrics published a clinical practice guideline in 2016 recommending replacing the term apparent life-threatening event (ALTE) with a new term named brief resolved unexplained event (BRUE). An apparent life-threatening event was defined as any event that was frightening to the observer and consisted of a combination of apnea, color change, muscle tone change, and choking, or gagging. An apparent life-threatening event, which itself replaced the term near-miss sudden infant death syndrome (SIDS) in 1986, was regarded to be too imprecise for clinical practice and research due to its subjective and non-specific symptoms and causation by a wide range of disorders. Furthermore, this definition relied on the subjective report of the observer rather than on pathophysiology. The new label brief resolved unexplained event serves to remove the “life-threatening” label and better reflect the transient nature of the event and lack of a clear cause. The definition of a brief resolved unexplained event is an observed event occurring in an infant younger than one year of age where the observer reports a sudden, brief, yet resolved episode of one or more of the following: Cyanosis or pallor. Absent, decreased, or irregular breathing. Marked change in tone (hyper- or hypotonia). Altered level of responsiveness. The diagnosis of brief resolved unexplained event can only be made when there is no explanation for a qualifying event after an appropriate history and physical examination. Review of previous apparent life-threatening event literature reveals that a small subset of infants with a diagnosis compatible with a brief resolved unexplained event may have a serious underlying disease or are prone to recurrent episodes. High-risk infants are those younger than two months of age, those with a history of prematurity (higher in less than 32 weeks gestation), and those with more than one event. Low-risk infants were those that are: Age older than 60 days. Gestational age 32 weeks or older. Postconceptional age greater than or equal to 45 weeks. First brief resolved unexplained event (no previous brief resolved unexplained event ever and not occurring in clusters). Event lasting less than one minute. No CPR required by the trained medical provider. No concerning historical features or physical examination findings. Patients who do not meet criteria as low risk by default are considered high risk. PT, FT, ALTE, SUPC, BRUE. See also Tieder JS et al., 2016 articles and ARANE 2017. Not on Charts.


term infants ideally begins immediately after birth and continues for the first hour or the first breastfeeding as recommended by the Baby Friendly Hospital Initiative in USA. However, adoption of early skin-to-skin contact is low in many settings and the barriers that hinder its universal use are not well understood. An exploratory qualitative research design using semi-structured interviews. Eleven clinicians were interviewed, including five registered nurses and one medical doctor from the obstetrics and gynecology unit as well as four registered nurses and one medical doctor from the neonatal intensive care unit. Core topics that were discussed included perceptions on early skin-to-skin contact and facilitating factors and barriers to early skin-to-skin contact after vaginal and caesarean delivery. Interview sessions were recorded, transcribed and analysed using a thematic analysis approach. A coding framework was developed from which subthemes emerged. The overall themes were adopted from Lee et al.’s thematic framework to categorize factors into institutional, familial-level and implementation factors. Critical institutional factors included inadequate staffing and education of clinicians on early skin-to-skin contact. On a familial level, parental education and motivation were identified as important factors. Barriers to implementation included the absence of a clinical algorithm and unclear definitions for eligible mothers and infants. Various facilitating factors and barriers to early skin-to-skin contact of healthy full-term infants born via vaginal and caesarean delivery were identified. Addressing these factors can help to provide a better understanding of clinician perspectives on early skin-to-skin contact and help guide its implementation as standard of care for healthy full-term infants. FT, qualitative, Baby Friendly, Birth KC, little KC being done, nurses’ perspectives, barriers, implementation, enablers, need education. Not on charts!

Korja R, Maunu J, Kirjavainen J, Savonlahti E., Haataja L, Lapinleimu H., Manninen H., Piha J., Lehtonen L., & The PIPARI Study Group. (2008). Mother-infant interaction is influenced by the amount of holding in preterm infants. Early Human Development 84: 257-267. A correlational study examining relationships between amount of holding and infant crying and mother-infant interaction. In 30 preterm infants (<1501 g and <32 weeks) who received KC during hospitalization and then had “holding” (carrying infant in caregiver’s arm or having the infant on caregiver’s lap, pg. 259) at home and 36 fullterm infants controls. Holding and infant crying were assessed by Baby Diary at 5 months corrected age & quality of mother-infant interaction was assessed at 6 and 12 months corrected age. Longer duration of holding in home environment was associated with better quality of maternal-infant interaction at 6 and 12 months in PRETERM infants, but not in fullterm infants. Preterm infants cried more & were held more than fullterm infants (suggesting that crying is a developmental tool to elicit maternal holding and caregiving and is not a negative sign pg. 259). Separation impairs interaction. KC was routine practice in Finland hospital and 29 infants (96.7%) got KC in hospital by both parents (n=27,76%), and in 24% only maternal KC was given. 13.5% of infants got KC 5 times, 27.5% got KC 5-10 times; 34.5% got KC 10-20 times, 10.5% got KC 20-30 times, and 14.0% got KC >30 times during hospitalization (pg. 260). Duration of KC at each session was 30mins-4 hours. Frequency and duration are in line with routine KC practice at Turku University Hospital. A 60 minute increase in duration of holding (not KC) affected all interaction scales at 6 and 12 months (pg. 261) in Preterm but no differences or changes in fullterm infants. Maternal stress might have been less with increased holding of infant (pg. 263) as explanation because maternal stress was not measured in this study. KC during hospitalization in preterm infants is considered KC during the initial sensitive period, leading parents to gradually learn the preterm infant’s cues and to take an active role in infant care. “Holding by the caregiver in a natural home environment is an important protective factor for the quality of mother-infant interaction in preterm infants” (pg. 263). PT, FT, descriptive comparison study of two groups, separation, crying, holding times, interaction, diary, routine KC, duration of KC, Paternal KC, home KC. one year interaction, not about maternal infant stress at all. NOT ON CHARTS as of 8/8/09.

Korraa AA, El Naggar AA, Mohamed RA, Helmy NM. (2014-Nov). Impact of kangaroo mother care on cerebral blood flow of preterm infants. Ital J Pediatr. 40:83. doi: 10.1186/s13052-014-0083-5. Kangaroo mother care (KMC) has been widely used to improve the care of preterms and low birth weight infants. However, very little is known about cerebral hemodynamics responses in preterm infants during KMC intervention. The aim of this study is to evaluate the changes of cerebral blood flow (CBF) in middle cerebral artery, before and after a 30 minute application of KMC in stable preterm infants. It is a prospective, pre-post test without a control group study. CBF flow parameters were measured with Doppler ultrasonography in one middle cerebral artery. Sixty preterm stable infants were assessed before and after 30 min KMC. CBF indices were assessed in different positions before KMC, forty neonates in supine position and 20 in vertical suspension (baby is held vertically away from the skin of his mother). Other dependent variables heart rate and mean arterial blood pressure and SpO2 were also measured before and after KMC. The mean gestational age of the infant was (32 ± 2 weeks), and mean birth weight was (2080 ± 270 gm). Comparing CBF indices (Pulsatility index and Resistive index) before and after KMC has shown a significant decrease in both Pulsatility index (PI) and Resistive index (RI) after 30 min. KMC, the mean values were (2.0 ± 0.43 vs. 1.68 ± 0.33 & 0.81 ± 0.05 vs. 0.76 ± 0.06 respectively P < 0.05*) with mean difference (0.32 & 95% CI 0.042-0.41 & 0.03 & 95% CI 0.04 to 0.06 respectively P < 0.05*) and increase in end diastolic velocity & mean velocity 30 min of KMC (10.97 ± 4.63 vs. 15.39 ± 5.66 P < 0.05* & 25.66 ± 10.74 vs. 32.86 ± 11.47 P < 0.05*) with mean difference (4.42 & 95% CI 3.67 to -3.18 and 7.21 & 95% CI -9.41 to 5.00 respectively). These changes indicate improvement in CBF. No correlation has been found between CBF parameters and studied vital signs or SpO2. Kangaroo mother care improves cerebral blood flow, thus it might influence the structure and promote development of the premature infant's brain. PT, quasi-exp, cerebral oxygenation, HR, SaO2, BP, positions, not on charts 9-2017

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Korteweg FJ, de Boer HD, van der Ploeg JM, Buiter HD, van der Ham DP. (2017-Jan). [Skin-to-skin caesarean section: a hype or better patient care?] Ned Tijdschr Geneeskd. 2017;161(0):D582 (Dutch). A caesarean section (CS) is one of the most common surgical procedures performed in the world, for which there are minimal variations in the surgical approach. During the last few years the "skin-to-skin" CS, also coined "natural" or 'gentle' CS, is on the rise; parental participation, slow delivery and direct skin-to-skin contact are important aspects. Most Dutch hospitals offer some form of "skin-to-skin" CS but there are local differences in availability and performance of the procedure. Since 2011, the standard procedure in the Martini Hospital in Groningen is the "skin-to-skin" CS (for both elective and emergency CS, 24/7). We describe our method and share our retrospective data, and demonstrate that this procedure does not result in more complications for mother or baby. FT, Clinical report, cesarean section. Not on Charts 2-20-2017


Kostandy, R. & Anderson, GC. (2003). Kangaroo care in neonates: Effects on pain from hepatitis B vaccine injection. Abstract # 353, pg. 191 at Research ShowCASE, April 4, 2003, Case Western Reserve University, Cleveland, OH. Randomized controlled trial of 68 fullterm infants who received 30 mins of KC before Hepatitis B injection, making sure mothers felt relaxed (which supposedly takes 10-15 mins). Then moms rotated infant to supine for injection in anterior thigh. Measured baseline, injection, post-injection return to baseline. After (5 minute) injection period, infant turned prone for more KC comforting. Standard care infants lay undisturbed in crib for 10-15 mins before injection. HR, behavioral state (Anderson Behavioral State Scale), cry time measured before, during and after injection. RESULTS were KC infants stopped crying faster (KC = 24 mins vs 32 mins; also 16 mins vs. 72 mins), HR returned to baseline faster (p=0.07) in KC, actually within 2 min of injection and controls never did return to baseline HR. HR was increased by 13 bpm with injection in both groups. No difference in crying by ABSS behavioral state). Fullterm, Pain, RCT, HR, Behav State, Cry time. Also available from Dissertation Abstracts

Kostandy, R., Anderson, G.C., & Good M. (2013). Skin-to-skin contact diminishes pain from Hepatitis B vaccine injection in healthy full-term neonates. Neonatal Network, 32(4), 274-280. doi: 10.1891/A730-0832.32.4.274. This pretest-test (the injection) and posttest (recovery time) RCT study was conducted to test the hypothesis that skin-to-skin contact (SSC) would reduce hepatitis B vaccine injection pain in full-term neonates. Thirty-six mother-neonate dyads were randomly assigned to SSC or control groups. Cry time (CT), behavioral state (BS), and heat rate (HR) were measured throughout the 16-minute protocol. HR and BST were measured every 30 seconds; CT was recorded continuously. SSC neonates cried less than controls (23 vs 32 seconds during injection; 16 vs 72 seconds during recovery), reached calmer BSTs sooner (M = 2.8 vs M = 6.5 time points), and trended toward more rapid HR decrease than controls. SSC was safe and effective and merits further testing. FT, RCT, Pain, crying time, HR, state

Kostandy, R.R. & Ludington-Hoe, S.M. (2016-Feb). Kangaroo Care (Skin-to-Skin) for Clustered Pain Procedures: Case Study. World Journal of Neuroscience, 6(1), 43-51, DOI: 10.4236/wjns.2016.61006. Pain management for term newborns undergoing clustered painful procedures has not been tested. Kangaroo Care (chest-to-chest, skin-to-skin position of infant on mother) effectively reduces pain of single procedures, but its effect on pain from clustered procedures is not known. The aim was to test Kangaroo Care’s effect on pain in one term infant who received clustered painful procedures (2 heel sticks & one injection in one session in other’s postpartum room) while determining feasibility of the Kangaroo Care intervention. Heart rate and oxygen saturation (recorded from Massimo Pulse Oximeter every 30 seconds), crying time (total seconds of crying on videotape) and behavioral state (using Anderson Behavioral State Scoring system every 30 seconds) were measured before (for 5 minutes), during (for 10.5 minutes) and after (for 30 minutes) the three clustered painful procedures in a newborn who was in Kangaroo Care during all observations. One staff nurse administered the clustered procedures. Heart rate increased sequentially with each heelstick. oxygen saturation remained unchanged. sleep predominated, and crying was minimal throughout the procedures. Conclusion: Kangaroo Care appeared to reduce pain from clustered painful procedures and is feasible for further testing. FT, Case study or pretest-test-posttest design, pain, HR, crying, SaO2, state, NEW to Biblio study

Kostandy, RR, & Ludington-Hoe, S.M. (2017-Jan). Clustered pain procedures in skin-to-skin contact (SSC) position for full term newborns. World Journal of Neuroscience, 7(1), 38-47, DOI: 10.4236/wjns.2017.71004Doi: 10.4236 Description and step-by-step pictures of the position to use and have the infant’s foot in for using skin to skin contact for clustered pain procedures. As a part of their routine care, full term newborns face many painful procedures immediately after birth and during the first couple days of life. Skin-To-Skin Contact (SSC) has been recommended as a non-pharmacological pain management intervention in newborns. However, the use of SSC in labor and delivery rooms as well as in postnatal units and nurseries is limited due to the discomfort that the nurses and phlebotomists themselves experience during positioning the newborns and themselves to complete these routine procedures. The objective of this paper is to describe a step-by-step procedure that was developed and used in a randomized clinical trial to manage

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newborns pain during clustered pain procedures. The procedure worked well and no complaints of discomfort were reported by the nurses during the study. **FT, Clinical instruction article, not data-based, clustered pain, position of caregiver, pain procedures.**

Kristoffersen L., Stuen R., Rygh H., Sognnaes M., Follestad T., Mohn HS., Nissen L., Bergaas H. (2016- Dec). Early skin-to-skin contact or incubator for very preterm infants: study protocol for a randomized controlled trial. Trials. 2016 Dec 12;17(1):593. Skin-to-skin care immediately following delivery is a common practice for term infants and has been shown to improve cardiopulmonary stability, facilitate early bonding, and promote breastfeeding. Since 2007, the use of skin-to-skin care has been practiced for preterm infants from 32 weeks of gestation in the delivery room at St. Olav's University Hospital in Norway. In the present study we aim to investigate whether skin-to-skin care following delivery is safe, and how it affects early and late outcomes compared to standard care for very preterm infants. A randomized controlled trial (RCT) of skin-to-skin care in the delivery room for very preterm infants born at gestational age 28–31 weeks with birth weight >1000 grams. Infants with severe congenital

Kostandy R.R., Ludington-Hoe SM, Cong X., Abouelfettoh A., Bronson C., Stankus A., & Jarrell JR. (2008). Kangaroo Care (skin contact) reduces crying response to pain in preterm neonates: pilot results. *Pain Management Nursing*, 9(2), 55-65. Doi: 10.1016/j.pmn.2007.11.004. Randomized cross over design of 10 mother-infant pairs (30-23 wk GA preterm infants 2-9 days old) who received one heelstick in KC after a 30 minute preheelstick KC period and one heelstick the next day (or vice versa) in the incubator. Randomized cross over design and measures of inaudible and audible crying were made and crying during KC heel stick and KC recovery periods were significantly less than during incubator periods. Very little inaudible crying was present so data were collapsed and reported as just crying. Crying decreased during KC heel stick and KC recovery compared to incubator. **PT, Case study, R Cross over, pain, heelstick, crying**


Krasteva, M. (2013). Pain in the neonatal period II: Non-pharmacological and pharmacological treatment. *Akush Ginekol (Sofiia)** ([Bulgarian]), 52(6):29-37. In their postnatal development the newborns are often exposed to the influence of procedural and repetitive painful stimuli that worsen their status. This requires the implementation of non-pharmacological and pharmacological treatment. The aim was to explore the literature data on the possibilities of non-pharmacological and pharmacological treatment methods which are implemented to reduce and control pain in neonatal period. Some of the non-pharmacological strategies are the priority of the personnel who give care of newborns (swaddling, nonnutritive sucking, usage of sweet solution, etc.) The participation of mother (parent) in the care of her child's comfort and pain reduction is also presented. Breastfeeding and “kangaroo” care additionally reduce negative effects of pain. The importance of music continues to be explored. The principles of pharmacological therapy include: control of procedure pain, its treatment during mechanical ventilation and at the time and after surgical intervention which is based on analgesia. Specificities of the pharmacotherapy of newborns and premature infants require careful application of the medications and additional studies on these children. The elimination of neonatal pain and its negative effects on the newborn is achieved by applying different strategies. Non-pharmacological methods reduce pain stimuli and ensure the child's comfort and the pharmacological methods block and eliminate the pain. Most often a combination of them is used in practice. **Review, FT, PT, Pain, parental involvement in pain management.**

Kress, I.U., Minati, L., Ferraro, S., & Critchley, H.D. (2011). Direct skin-to-skin versus tapping touch modulates neural responses to stroking versus tapping. *Neuroreport*, 22(13), 646-651. Direct interpersonal contact is processed differently in the brain from similar soft touch applied through inanimate objects. Healthy volunteers had an MRI of brain to assess brain response during gentle stroking or tapping by hand versus by velvet stick. Stroking by hand elicited larger responses than the other three conditions in the contralateral primary and secondary somatosensory areas and in the posterior insular cortex. These effects originate from a combination of perceptual differences and cognitive emotional correlates of CONTACT with another person. Affective touch processing is better with direct interpersonal contact than with inanimate objects. **NOT A KC study, but has big relevance because you cannot get same response to KC when there is a cloth, bra, or any inanimate object across the chest surface rather than skin-to-skin. Just think of all the times parents carry babies in carriers rather than in their arms! Descriptive, Related KC, importance of skin-to-skin contact, MRI, massage, Brain studies, Not on Charts as of 8/19/2011. DO NOT HAVE MATERIAL ON VENTRAL SURFACE!!!**

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malformations or need of intubation in the delivery room are excluded. A detailed checklist and a flowchart were prepared for the study, and all involved professionals (neonatologists, neonatal nurses, obstetricians, anesthesiologists, midwives) participated in medical simulation training prior to study start on February 1, 2014. A consultant in neonatology and a neonatal nurse are present at all deliveries. Infants with birth weight <1500 grams receive an intravenous line with glucose, amino acids, and caffeine citrate in the delivery room. Infants with gestational age <30 weeks are routinely put on continuous positive airway pressure (CPAP). After initial stabilization, infants are randomized to skin-to-skin care or are transferred to the nursery in an incubator. Primary outcome is cognitive development at 2 years measured with the Bayley Scales of Infant Development, Third Edition. Secondary outcomes are safety defined as hypothermia, respiratory failure, and/or cardiopulmonary resuscitation, physiological stability after birth and motor, language and cognitive development at 1 year for the child, and mental health measured with the State-Trait Anxiety Inventory (STAI) at discharge, and at 3 months and 2 years after expected date of delivery for the mothers. The study may have important implications for the initial care for very preterm infants after delivery and increase our understanding of how early skin-to-skin care affects preterm infants and their mothers. Clinical Trials. NCT02024854. PT, VLBW, RCT of Birth KC, development, hypothermia, RR failure, resuscitation, stability, maternal mental health (anxiety at dc, 3 mos. 2 yrs).

Kristoffersen L, Stoen R, Hansen LF, Wilhelmsen J, Bergseng H. (2016-June). Skin-to-Skin Care After Birth for Moderately Preterm Infants. J Obstet Gynecol Neonatal Nurs. 45(3), 339-345. pii: S0884-2175(16)00165-9. doi: 10.1016/j.jogn.2016.02.007. To investigate the feasibility and safety of skin-to-skin care after birth for moderately preterm infants. Prospective cohort quasi-experimental study to determine safety of KC beginning at birth for vaginally born moderately preterm infants. Safety was defined as first body temp within 30 mins postbirth being >36.5 C and blood glucose level being >2.0 mmol/L before second meal and between 150-180 mins post-birth (pg. 340). Hypothermia was <36.5. The study was conducted at the maternity wards and NICUs of three study site (pg. 3 in Norway. Ninety preterm infants (KC = 47; incubator = 43) born vaginally with gestational ages of 32 weeks/0 days to 34 weeks/6 days were given KC according to hospital’s practice – in one hospital SSC immediately after birth was ROUTINE practice for all infants at or older than 32 weeks; at two other hospitals preterm were taken to incubator immediately after birth and mom’s visited within two hours and all infants got first feed by gavage or syringe within first hour post-birth (pg. 341). Body temp of newborn drops precipitously after birth, and “WHO recommends KC from birth for preterm infants weighing less than 2000 grams to prevent hypothermia” pg. 339 (WHO 2015 on this bib but WHO does NOT write this, only that KC begin as soon as possible). In Table 2 it shows that 19% of KC babies and 30% of incubator babies had a first body temp <36.5 (pg. 343) and that 9 babies in each group had blood glucose <2.0 mmol/L. “We found no statistical difference in first body temperature (axillary and rectal temps were taken and in general the axillary temps were lower than rectal temps (pg. 342) or blood glucose levels before the second feeding between the groups. However, more newborns in the incubator group had a lower body temperature than in the KC group.” (pg. 342). So far, SSC (KC) after birth for moderately preterm infants is NOT a standard practice, even though authors of several studies showed that it gives better thermopreservation than care in an incubator. Even for twins, it was shown that they can be 3. “Skin to skin contact after birth of moderately preterm infants was therefore implemented with no increase in personnel resources. Another challenge with SSC after birth may be the limited opportunity for clinical assessments of the newborn covered with blankets. The newborns must be monitored and frequently assessed. In our study, there were NO ADVERSE events in the KC group that challenged the safety of the newborns.” (pg. 343). “Newborns are frequently transferred to NICU immediately after birth and exposed to stressful environment that may not promote early bonding (quotes Neila-Vilen, 2013). If moderately preterm infants can be safely cared for with SSC with their mothers during the first hours after birth before transfer to the NICU, there is reason to believe that this would provide the BEST start for these newborns.” (pg 343). There were no differences in the first body temperature (p = .841) and blood glucose level (p = .539) between the groups. Early skin-to-skin contact in the delivery room for moderately preterm infants may be feasible and safe. PT, quasi-experimental, temperature, blood glucose, birth KC for moderately preterm, late preterm, duration of KC: Stress, safety.

New to bibliography


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Kuhn, K.S. & Kuhn, M.J. (2011). Kangaroo care for your premature or sick baby. Journal Human Lactation, 27(1), 66-67. This is a consumer’s summary of what KC is, who can do KC, why it is important, how the body makes milk during KC, and how to do KC for breastfeeding mothers because it is part of a series called ILCA’s INSIDE TRACK that appears in the journal. **Review, PT, FT, BF**


Kukla, A. & Ludington-Hoe, S.M. (2017). Value of specialty certification as a Kangaroo Caregiver. J. Perinatal Education, 26(4), 1-10. Doi: 10.1891/1058-1243.26.41. KC saves lives, but fewer than 50% of newborns and mothers in US hospitals receive KC because of lack of knowledge and skill competency in nurses. Because nurses can increase knowledge and skill competency through a certification course, the value of certification as a kangaroo caregiver and administrative incentives for certification as a kangaroo caregiver were evaluated in 71 nicu and mother-baby unit nurses who completed an electronic questionnaire and the Perceived Value of Certification Tool. 647 nurses have been certified as from 203-2014 and 734 nurses, doctors, IBCLC, OT, PT, RTs and Home care health care workers have been certified from 2003-2014. Nurses highly valued their certification, agreeing with 17 of 18 positive value statements. The most frequently identified values of certification were enhanced feeling of personal accomplishment, provision of evidence of professional commitment and personal satisfaction, and attainment of a practice standard. The most common employment site incentives to become certified were reimbursement for examination fee, certification credentials on name tag, advancement on the nursing clinical ladder, and reimbursement for education to obtain certification. Some comments were “KC designation has changed the focus of my teaching,” doing the KC really helped solidify all the aspects of KC so I can implement it now,” “I practiced KC, but after certification I incorporated it even more into practice,” “I feel KC is extremely important to the survival of the human race,” and “It was wonderful and I think it should be a goal of hospitals to certify a certain number of nurses and doctors every year.” (all quotes are on page 6). KC certification increased salary for a few, but institution-based incentives for KC certification are still limited and recognition of KC certification is needed because several commented that they had heard that KC certification is not valid. Accreditation of the USIRC and its subsidiary, the International Kangaroo Care Certification Board, are being sought. **Nurses, Certification, CKCers, History of USIRKC certification**

Kumar GA, Dandona R, Chaman P, Singh P, Dandona L. (2014-Oct.). A population-based study of neonatal mortality and maternal care utilization in the Indian state of Bihar. BMC Pregnancy Childbirth; 14(1):357 (pdf article is 10 pages long and it reports the pages as page 2 of 10, etc.). Doi: 10.1186/1471-2393-14-357. A substantial reduction in neonatal deaths is required in India to meet the Millennium Development Goal of a two-thirds reduction in child mortality by 2015. We report neonatal mortality estimates and utilisation of maternal care in the Indian state of Bihar. A representative population-based sample of 14,293 women who had a live birth in the last 12 months based on multistage sampling from all 38 districts of Bihar was selected for interview in early 2012. We estimated neonatal mortality rate and its associations using multiple logistic regression, assessed maternal care coverage and its inequality by wealth index, and retention of mothers in the health system for the full sequence of maternal care services. Neonatal mortality rate for Bihar was 32.2 (95% confidence interval [CI] 27.6-36.8) per 1,000 live births. Postnatal care related variables were significantly associated with neonatal deaths - no delayed bathing of new born (odds ratio [OR] 3.45, 95% CI 2.47-4.81) and no kangaroo care immediately after birth (OR 2.20, 95% CI 1.49-3.25). On page 4 there is a table that shows 2.315 (17.7%) of the 13,069 subjects did get KC immediately after birth and 10726 (82.3%) did not get KC immediately after birth. On page 4-5 it says “Not providing Kangaroo Care immediately after birth was strongly associated with neonatal death. Postnatal care or examination or kangaroo care have been reported to have protective effects on the newborn (Cites Bhandari N et al., 2012; Gogia S., et al., 2011; and Singh A et al., 2012). Both delayed bathing and kangaroo care are included in the suggested indicators for tracking newborn care (Moran C et al., 2013). A standard set of questions have been suggested to assess postnatal care of newborns (Moran C. et al., 2013). Neonatal mortality continues to be relatively high in Bihar, and the utilization of maternal care very low and inequitable. Interventions need to address these deficiencies. **3rd World, Mortality, Birth KC**

intervention group had fewer neonatal mortalities (reduced by 54%) and reduced by 52% in essential newborn care plus thermospot group.

RCT, FT, home birth, birthKC, temperature, essential care of newborn, community KC. NOT ON CHARTS YET

Kymre, I.G., (2014) NICU nurses' ambivalent attitudes in skin-to-skin care practice. Int J Qual Stud Health Well-being, 2014 Feb 20;9:23297. doi: 10.3402/qhw.v9.23297. This article illuminates the essence of Neonatal Intensive Care Unit (NICU) nurses' attitudes in skin-to-skin care (SSC) practice for preterm infants and their parents. Health care providers are in a unique position to influence the dynamic between infants and parents, and SSC affects both partners in the dyad. The design is descriptively phenomenological in terms of reflective lifeworld approach. Eighteen Swedish, Danish, and Norwegian nurses from NICUs offering varied possibilities and extents of SSC participated. NICU nurses' attitudes in SSC practice are ambivalent. The nurses consider the sensory, wellness, and mutual experiences to be primary and vital and enact SSC as much as possible. But "as much as possible" is a broad and varied concept, and their attitudes are ambivalent in terms of not always facilitating what they consider to be the optimal caring conditions. The source of NICU nurses' ambivalent attitudes in SSC practice is a complex interplay of beliefs, norms, and evidence, which have a multidisciplinary basis. The ambivalent attitudes are, to a great extent, the result of the need to balance these multidisciplinary concerns. This needs to be acknowledged in considering SSC practice, as well as acknowledging that clinical judgments concerning optimal SSC are depend on parents and infants unlimited access to each other, which NICU nurses can influence.

PT, Qualitative, staff issue, staff attitude, NICU

Kymre, I.G., & Bondas, T. (2012).Skin-to-skin care for dying preterm newborns and their parents - a phenomenological study from the perspective of NICU nurses. Scand J Caring Sci. 2012 Sep 27. doi: 10.1111/j.1471-6712.2012.01076.x. The International workshop on Kangaroo Mother Care (KMC), 2009, recommends implementation of continuous KMC as the gold standard pervading all medical and nursing care, based on empirical studies and clinical guidelines and they suggest that KMC may be used during terminal care in agreement with parents. Parents have a strong desire to be near their child and give support and emotional comfort when the condition of the child requires it, and it has been suggested that medical staff expect parents to be with the neonates, and therefore, encourages them to hold the neonate while it is dying. The practice of SSC at the end of life has been under-researched, however. The aim was to describe the phenomenon of how 18 nurses from 3 Scandinavian NICUs experienced/enact SSC for dying preterm newborns and their parents. The essential meaning was expressed as strong belief in the urgency of SSC in providing mutual proximity and comfort for dying preterm newborns and their parents. The nurses act upon this belief and upon an engagement in securing the best possible present and future experiences of being close, in which the SSC is understood as a necessary premise in achieving the intended optimal conditions. Skin-to-skin care for dying preterm newborns and their parents is the preferred caring practice among Scandinavian NICU nurses who consider it of major importance to facilitate proximity and comfort through SSC when the newborn is still alive. KC at end of life should be part of end of life discussions. Authors recommend more formal establishment of this practice. Further research is needed on parents' experiences of skin-to-skin caring in this vulnerable end of life situation of 'being with' their dying newborn. PT, Qualitative, Compassionate Care/End-of-life

Kymre, I.G., & Bondas T. (2013-July). Balancing preterm infants' developmental needs with parents' readiness for skin-to-skin care: a phenomenological study. Int J Qual Stud Health Well-being. 8:21370. doi: 10.3402/qhw.v8i0.21370. The aim of this article is to articulate the essence and constituents of neonatal intensive care unit (NICU) nurses' experiences in enacting skin-to-skin care (SSC) for preterm newborns and their parents. SSC is commonly employed in high-tech NICUs, which entails a movement from maternal-infant separation. Parents' opportunities for performing the practice have been addressed to NICU staff, with attitude and environment having crucial influence. The study was carried out with a reflective lifeworld research approach. Data were collected in Denmark, Sweden, and Norway by open-dialogue interviews with a purposive sample of 18 NICU nurses to achieve the essence of and variation within the phenomenon. 18 nurses from Denmark, Norway and Sweden were interviewed. Nurses are now learning the meaning of touch and proximity, but parents may not be ready so nurses have steady attention to signals from both parents and newborn. There is a threshold for getting started with KMC and that threshold is the catalyst for KC NICU nurses experience balancing what they consider preterm newborns' current and developmental needs, with readiness in both parents for SSC. They share an experience of a change in the history of NICU care to increased focus on the meaning of proximity and touch for the infants' development. The phenomenon of enacting SSC is characterized by a double focus with steady attention to signals from both parents and newborns. Thereby, a challenge emerges from the threshold of getting started as the catalyst to SSC. PT, qualitative phenomenology, readiness for KC, maternal feelings, staff experiences, separation, Not on charts 7-19-2016, new to biblio study

Kyololo OM, Stevens B, Gastaldo D, Gisore P. (2014, July). Procedural pain in neonatal units in Kenya. Arch Dis Child Fetal Neonatal Ed.. pii: fetalneonatal-2014-306003. doi: 10.1136/archdischild-2014-306003. [Epub ahead of print] To determine the nature and frequency of painful procedures and procedural pain management practices in neonatal units in Kenya. Cross-sectional survey. Level I and II neonatal units in Kenya. Ninety-five term and preterm neonates from seven neonatal units. Medical records of neonates admitted for at least 24 h were reviewed to determine the nature and frequency of painful procedures performed in the 24 h period preceding data collection (6:00 to 6:00) as well as the pain management interventions (eg, morphine, breastfeeding, skin-to-skin contact, containment, non-nutritive sucking) that accompanied each procedure. Neonates experienced a total of 404 painful

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procedures over a 24 h period (mean=4.3, SD 2.0; range 1-12); 270 tissue-damaging (mean=2.85, SD 1.1; range 1-6) and 134 non-tissue-damaging procedures (mean=1.41, SD 1.2; range 0-6). Peripheral cannula insertion (27%) and intramuscular injections (22%) were the most common painful procedures. Ventilated neonates and neonates admitted in level II neonatal units had a higher number of painful procedures than those admitted in level I units (mean 4.76 vs 2.96). Only one procedure had a pain intensity score documented; and none had been performed with any form of analgesia. Neonates in Kenya were exposed to numerous tissue-damaging and non-tissue-damaging procedures without any form of analgesia. Our findings suggest that education is needed on how to assess and manage procedural pain in neonatal units in Kenya. PT, FT, Descriptive cross over, 3rd world, pain, # of painful procedures

Labardee RM (2018-Feb). Initiation of Term Newborn Skin-to-Skin Contact in the Operating Room Following Scheduled Cesarean Section: A DNP Capstone Project. Worldviews Evid Based Nurs. 2018 Feb 27. doi: 10.1111/wen.12281. [Epub ahead of print. This column shares the best evidence-based strategies and innovative ideas on how to facilitate the learning and implementation of EBP principles and processes by clinicians as well as nursing and interprofessional students. FT, cesarean, birth KC. Not on Charts 3-25-2018. GET THIS

Lago P, Garetti E, Merazzi D, Pieragosin L, Ancora G, Pirelli A, Bellienne CV, & Pain Study Group of the Italian Society of Neonatology. (2009). Guidelines for procedural pain in the newborn. Acta Paediatrica 98: 932-939. Review article of evidence-based guidelines for pharmacological, non-pharmacological, behavioural and environmental measures for each invasive procedure. States literature that says repeated pain in neonatal period is associated with smaller brain volume (Peterson BS, Vohr B, Staub LH et al., 2000. Regional brain volume abnormalities and long-term cognitive outcome in preterm infants. JAMA, 284: 139-1947). Used the A, B, C, D levels of evidence as defined by the Scottish Intercollegiate Guidelines Network (SIGN) and are on page 933. Says that quiet awake is the optimal behavioural state for planned invasive procedures (pg. 933) and don’t interrupt sleep for a painful procedure. Maternal and Paternal Kangaroo Care and KMC are listed in Table 2 as an intervention with B rating (“A body of evidence including good quality systematic reviews of case-control or cohort studies directly applicable to the target population, or good quality case-control or cohort studies with a very low risk of confounders or bias and a high probability of the relationship being causal. Evidence extrapolated from good-quality meta-analyses, systematic reviews of RCTs or RCTs with a very low or low risk of bias”). On page 935 under the heading “heel lancing” and environmental measures it says “Consider involving the mother in procedures whenever possible, using skin-to-skin contact or breastfeeding during non-routine sampling.” Then in the section for venipuncture, arterial puncture and percutaneous central venous catheter insertion it says to adopt all the environmental measures recommended for heel lancing. It also says on page 935 that the efficacy of BF (and other interventions) during multiple pain procedures has not been documented “ and cites the Cochrane meta-analysis of Shah PS, Aliwalas LI and Shah V, 20

Lago MG & Stekelburg J. (2006). The Millenium Project of the United Nations, focusing on adequate postpartum care to reduce maternal and neonatal mortality world-wide. Ned Tijdschr Geneesk 150(20), 1143-1147. (Dutch). Review article. Reduction in maternal and infant mortality by 2/3 is one goal (goal #4 of Millenium Project. Neonatal mortality needs to be reduced by half. KC can reduce morbidity in premature infants. Mothers and infants should be checked closely postbirth during the following periods: the first 6 hours, the first 6 days, the first 6 weeks, and the first 6 months according to World Health Organization. Preterm, review, morbidity, millennium project. Not on charts yet

Lai H-L, Chen C-J, Peng T-C, Chang F-M, Hsieh M-L, Huang H-Y, & Chang SC. (2006). Randomized controlled trial of music during kangaroo care on maternal state anxiety and preterm infants’ responses. International Journal of Nursing Studies, 43(2),139-146. Pretest-posttest RCT of 15 KMC + music preterms compared to 15 incubator care preterms (no music, no KMC) RCT. KMC and music (maternal choice of lullaby) was for 60 min/section/day for 3 consecutive days. Infant HR, infant RR, infant SAO2 were within normal limits and no differences between groups. KMC + music group had more occurrence of Quiet sleep state and less crying. KMC + music resulted in lower maternal anxiety. Maternal state anxiety improved daily, indicating cumulative effect. PT, RCT, Maternal stress, maternal anxiety, cumulative effect, HR, RR, SaO2, behavioral state, crying, Quiet sleep, music + KC (See also Schlez et al., 2011 for live harp music and infant/mother stress (KC & music only reduced maternal anxiety). Check if on all charts 8/19/2011.


1990s and a diagnostic shift from sudden infant death syndrome (SIDS) to unknown cause and accidental suffocation and strangulation in bed (ASSB) in 1999-2001 have been documented. We examined trends in SUID and SIDS, unknown cause, and ASSB from 1990 to 2015 and compared state-specific SUID rates to identify significant trends that may be used to inform SUID prevention efforts. We used data from US mortality files to evaluate national and state-specific SUID rates (deaths per 100,000 live births) for 1990-2015. SUID included infants with an underlying cause of death, SIDS, unknown cause, or ASSB. To examine overall US rates for SUID and SUID subtypes, we calculated the percent change by fitting Poisson regression models. We report state differences in SUID and compared state-specific rates from 2002-2003 to 2013-2015 by calculating the percent change. SUID rates declined from 154.6 per 100,000 live births in 1990 to 92.4 in 2015, declining 44.6% from 1990 to 1998 and 7% from 1999 to 2015. From 1999 to 2015, SIDS rates decreased 35.8%, ASSB rates increased 183.8%, and there was no significant change in unknown cause rates. SUID trends among states varied widely from 41.5 to 184.3 in 2000-2002 and from 33.2 to 202.2 in 2013-2015. Reductions in SUID rates since 1999 have been minimal, and wide variations in state-specific rates remain. States with significant declines in SUID rates might have SUID risk-reduction programs that could serve as models for other states. See also Bass et al., 2018 and Carlin & Moon 2018 and Simpson 2017, Simpson 2018.

Lamp J, & Zadvinski I. (2009). Hop into evidence-based practice to promote quality care. Kangaroo care in the healthy newborn. Unpublished, but it is a poster at Riverside Methodist Hospital of OhioHealth in Columbus, OH. This is a flow sheet of application of the IOWA model for integrating evidence-based practices into care. The bold prints on the poster says “Hold me, feed me, love me;” “Never separate mom & baby;” “A dyad is not separable,” and “avoid protest despair.” They have a Quick Reference Pocket Card for nurses to use in their pockets and it contains the following: “Definition: skin to skin (mother-baby) care, also called Kangaroo Care: Infants are placed belly-down, directly on the mother’s chest. Purpose: To provide parents with an established option of skin-to-skin mother-baby (Kangaroo) care that supports newborn physiologic balance in transition and extrauterine life. SSC is readily available, accessible to all infants, inexpensive to initiate, and cost effective to continue. Evidence supports SSC beginning at birth for all healthy full term infant and continuing until the first suckling at the breast, and thereafter as much as possible. 2005 AAP Guidelines: “Healthy infants should be placed and remain in direct skin-to-skin contact with their mothers immediately after delivery until the first feeding is accomplished.” World Health Organization (WHO): a powerful, easy-to-use method to promote the health and well-being of infants. Riverside Methodist Hospital Criteria for SSC in Healthy Babies: include all stable babies who can remain with their mothers/quality for well baby care; a mother who desires SSC and is alert.” The Recommended Practices as: Do not separate mother from infant at birth-dry newborn on mother’s chest, then place a warm, dry blanket across the infant’s back. If immediate SSC is not possible, return infant to his mother within 30 minutes, if possible. Continue SSC as much as possible. Guidelines for SSC (Skin to Skin Mother-Baby Care, #6181-R): 1. Explain to mother (and significant others) the value and guidelines for SSC. Encourage SSC for at least one hour per event. 2. Assess both parent and infant for readiness prior to skin-to-skin experience. 3. Dress infant in diaper and hat (hat optional, based on policy and care provider discretion). 4. Offer a reclining chair with arms or adjust the head of bed to 45-60 degree angle. 5. Place infant upright skin-to-skin against the mother’s chest. 6. Cover infant and mother with a blanket, across infant’s back (not over neck and head). 7. All infants must have their temperature monitored after 30 minutes of SSC. 8. If infant’s temperature is >/=99°F (37.5°C), be sure cap is removed, and only one blanket covers infant. Monitor temperature every 30 minutes until within normal limits. 9. If infant’s temperature is < 97.5°F (36.4°C), place hat on baby, check maternal environmental temperatures, continue SSC, measure temperature every 30 minutes until WNL. 10. Document infant and parent’s responses. Document time of SSC initiation and duration. “ The poster is available from Jane Lamp, MS, RN-BC, CNS, Riverside Methodist Hospital 3535 Olentangy River Road, Columbus, OH 43214-3998. Tel: 614-566-3991, pager 614-229-8874 and fax 614-566-6702 and email is jlamp@ohiohealth.com. Her pager may be 614-503-8274. Or you can get it from Inga M. Zadvinski, MSN, APRN, BC, Research Advanced Practice Nurse, Riverside Methodist Hospital, same address as above and same phone numbers, but her email is izadvinski@ohiohealth.com. FT, VEKC, Birth KC, duration, separation, guidelines, implementation.

antibiotics is necessary to control outbreaks of multidrug-resistant bacterial infection in the Neonatal Intensive Care Unit (NICU), but can trigger bacterial resistance. The objective of this study was to determine whether skin-to-skin contact of newborns colonized with Methicillin-oxacillin resistant Staphylococcus aureus or Methicillin-oxacillin-Resistant Coagulase-Negative Staphylococcus aureus (MRSA/MRSSE) with their mothers could be an effective alternative to promote bacterial decolonization of newborns’ nostrils. We performed a randomized clinical trial with 102 newborns admitted to the NICU in three hospitals in São Luís, Brazil. Inclusion criteria were birth weight of 1300 to 1800 g, more than 4 days of hospitalization, newborns with positive nostril cultures for MRSA and/or multidrug-resistant coagulase-negative Staphylococcus and mothers not colonized by these bacteria. We used a random number algorithm for randomization. Allocation was performed using sealed opaque envelopes. Skin-to-skin contact was given twice a day for 60 minutes for seven consecutive days. The control group received routine care without skin-to-skin contact. There was no masking of newborns’ mothers or researchers but the individuals who carried out bacterial cultures and assessed results were kept blind to group allocation. The primary outcome was colonization status of newborns’ nostrils after 7 days of intervention. The directional hypothesis was that more newborns who receive skin-to-skin holding 2 hours/day for 7 days than those who receive normal care will be decolonized. Decolonization of MRSA/MRSE was greater in the intervention group (Risk Ratio = 2.27; 95% CI 1.27-4.07, p-value = 0.003). Number Needed to Treat (NNT) was 4.0 (95% CI 2.2 - 9.4). After adjustment for the possible confounding effects of small for gestational age birth, antibiotic use, need for resuscitation, sex and cesarean delivery, skin-to-skin contact remained strongly associated with decolonization of newborns’ nostrils from MRSA/MRSE bacteria (p = 0.007). There was no need to interrupt the trial for safety reasons. Skin-to-skin contact might be an effective and safe method for promoting decolonization of newborns’ nostrils colonized by MRSA/MRSE. PT, RCT, infection/decolonization, MRSA, 3rd world, duration, NOT ON CHARTS

Lamy Filho F, Silva A.A., Lamy ZC, Gomes MAS, Moreira ME, Grupo de Avaliacão do Metodo Canguru, & Rede Brasileira de Pesquisas Neonatais. (2008). Evaluation of the neonatal outcomes of the kangaroo mother method in Brazil. Jornal de Pediatria (Rio Jornal), 84(5), 428-435. Clinical evaluation study of 16 units (8 had 2nd phase KMC [1st phase KMC is KMC upon admission to the NICU, 2nd phase is KMC in a kangaroo care unit, and 3rd phase is outpatient KMC until infant is 2500 grams], 8 did not). 985 newborns with Birthweights 500-1749g. 2nd phase KMC began when infants were >1250 g, full enteral nutrition by NG, breathing room air with no apneas needed oxygen resuscitation or positive pressure for previous 5 days. Length of stay was same between both groups of units (KMC=18.8 vs 24.1, n=102 newborns, p=0.067), KMC units had lower 36-wk pma weights (KMC=13.2g/kg/d vs 15.3g/kg/d), length (KMC=41 vs 41.8cms no KMC), and head circumference (KMC=30.2 vs 30.7 no KMC), but more exclusive breastfeeders (69.2% vs 23.5%). No differences in ROP, hyperthermia, hyperthermia, apnea, infections/sepsis, IVH, BPD, death, nec, readmissions to NICU, no difference in after discharge morbidity or mortality. PT, Comparative clinical evaluation, length of stay, weight gain/day, weight, length, head circumference, hypothermia, hyperthermia episodes, apnea, infection, readmissions, ROP retinopathy of prematurity, exclusive BF, mortality.

Lamy-Filho, F., Souza, S.H.C., Freitas, I.J.S., Lamy, Z.C., Simoes, V.M.F., Silva, A.A.M., & Barbieri, M.A., (2014). Is skin-to-skin contact of preterm newborns with their mothers associated with decolonization of methicillin-oxacillin resistant staphylococcus in neonatal intensive care units? A randomized, single-blind, controlled trial. BMC Pregnancy and Childbirth, Epub ahead of print. Article on KMC to decolonize MRSA/MRSA positive infants over 7 days. More infants in KMC group than control conventional care group, were decolonized of MRSA bacteria after 7 days of KMC for about 12 hours/day. Control group decolonized too, but only half as many as in KMC group. PT, Infection, RCT.

Landers S. (2003). Maximizing the benefits of human milk feeding for the preterm infant. Pediatric Annals, 32(5), 298-306. This article summarizes current knowledge of short and long term benefits of human milk feedings for preterm infants and challenges in providing adequate nutrition, along with strategies to assist in providing human milk feedings. Infection risk of human milk are related too. On page 303 is a full section on Skin-to-skin holding that even talks about the entero-mammary pathway for protection of preterm infants from nosocomial infection. Very positive review of KC. Preterm, BF, entero-mammary pathway, nosocomial infections, Review.

Laptop, A. & Jackson, G.L. (2006). Cold stress and hypoglycemia in the late-preterm (“near term”) infants: Impact on nursery of admission. Seminars in Perinatology, 30(1), 24-27. Doi: 10.1053/j.semperi.2006.01.014. Not a KC article, but clinical article about cold stress in late preterms and it lists KC as an intervention to prevent cold stress and maintaining temperature is a preventive measure to protect against hypoglycemia. (I got this reference from the Munson article in 2012) Late preterm infants (34-37 weeks gestation) pose unique challenges to physicians and nurses involved in their care after birth. They may be cared for in different units within hospitals after birth, including Neonatal Intensive Care Units, Newborn Nurseries, or rooming in with the mother. As a result of their gestational age and birth weight, the late preterm infant is often assessed quickly and triaged identical to term infants. Such practice can potentially result in a lack of attention to important components for successful transition after birth. Cold stress and hypoglycemia are the two important problems in late preterm infants which require immediate treatment. Thus, surveillance of these and other

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physiological variables is needed to insure that they do not affect successful adaptation during the early hours and days after birth. PT, clinical review, temperature, hypoglycemia, late preterm

Lasik, G.C., Comeau, T., & Newborn-Cook, C. (2013). Unexpected: an interpretive description of parental traumas associated with preterm birth. BMc Pregnancy Childbirth, 13(Suppl 1): S13-S22 doi: 10.1186/1471-2393-13-S1-S13. From Canada. PT, Qualitative Study. Preterm birth (PTB) places a considerable emotional, psychological, and financial burden on parents, families, health care resources, and society as a whole. There are non-financial costs associated with PTB such as adverse psychosocial and emotional effects, family disruption, strain on relationships, alterations in self-esteem, and deterioration in physical and mental health. The study highlights the traumatic nature of having a child born preterm. Interviews of focus groups were audiorecorded, transcribed, and analyzed for themes. PTB is a traumatic event that shattered parents' expectations of parenthood. The trauma they experienced was not related to infant characteristics (e.g., gestational age, birth weight, Apgar scores, or length of stay in the NICU), but rather to prolonged uncertainty, lack of agency, disruptions in meaning systems, and alterations in parental role expectations. Our findings help to explain why things like breastfeeding, kangaroo care, and family centered practices are so meaningful to parents in the NICU. As well as helping to (re)construct their role as parents, these activities afford parents a sense of agency, thereby moderating their own helplessness. These findings underscore the traumatic nature and resultant psychological distress related to PTB. PT, maternal feelings, parental feelings, maternal stress.

Lassi ZS, Middleton PF, Crowther C, Bhutta ZA. (2015-May). Interventions to Improve Neonatal Health and Later Survival: An Overview of Systematic Reviews, EBiOMedicine, 2(8):983-98. doi: 10.1016/j.ebiom.2015.05.023. eCollection 2015.Evidence-based interventions and strategies are needed to improve child survival in countries with a high burden of neonatal and child mortality. An overview of systematic reviews can focus implementation on the most effective ways to increase child survival. In this overview we included published Cochrane and other systematic reviews of experimental and observational studies on antenatal, childbirth, postnatal and child health interventions aiming to prevent perinatal/neonatal and child mortality using the WHO list of essential interventions. We assessed the methodological quality of the reviews using the AMSTAR criteria and assessed the quality of the outcomes using the GRADE approach. On page 984, in “Table 1: Interventions Reviewed, it lists Kangaroo Care for Low Birth Weight Babies.” Based on the findings from GRADE criteria listed in Panel 2 on page 986, interventions were summarized as effective (and Kangaroo Mother Care is listed under EFFECTIVE Interventions), promising or ineffective. On page 985-986 it says “Kangaroo Mother Care (KMC) for Preterm Infants.” The overview identified two reviews (Lawn et al., 2010; Conde-Agudelo and Díaz-Rossello, 2014) that assessed the impact of kangaroo mother care (KMC) on preterm and low birth weight infants (n2000 g) and reported mortality outcome. Pooled analysis of 11 studies from 2167 infants reported a significant 33% reduction in mortality (moderate GRADE quality) at the latest follow up (RR 0.67; 95% CI: 0.48, 0.95) (Conde-Agudelo and Díaz-Rossello, 2014). The meta-analysis of three randomized controlled trials (RCTs) (n = 1075) — a subset of those pooled in the latest Cochrane review (Conde-Agudelo and DíazRossello, 2014) — that provided KMC to infants in the first week of life showed a significant 51% reduction in neonatal mortality (RR 0.49; 95% CI: 0.29, 0.82 — high GRADE quality) when compared to standard care (Lawn et al., 2010). This review also pooled three observational studies and found a similar beneficial impact on neonatal mortality (RR 0.68; 95% CI: 0.58, 0.79) (Lawn et al., 2010). PT, Review of meta-analyses, infant mortality

The overview identified 148 Cochrane and other systematic reviews on 61 reproductive, maternal, newborn and child health interventions. Of these, only 57 reviews reported mortality outcomes. Using the GRADE approach, antenatal corticosteroids for preventing neonatal respiratory distress syndrome in preterm infants; early initiation of breastfeeding; hygienic cord care, kangaroo care for preterm infants; provision and promotion of use of insecticide treated bed nets (ITNs) for children; and vitamin A supplementation for infants from six months of age, were identified as clearly effective interventions for reducing neonatal, infant or child mortality. Antenatal care, tetanus immunization in pregnancy, prophylactic antimalarials during pregnancy, induction of labour for prolonged pregnancy, case management of neonatal sepsis, meningitis and pneumonia, prophylactic and therapeutic use of surfactant, continuous positive airway pressure for neonatal resuscitation, case management of childhood malaria and pneumonia, vitamin A as part of treatment for measles associated pneumonia for children above 6 months, and home visits across the continuum of care, were identified as promising interventions for reducing neonatal, infant, child or perinatal mortality. Comprehensive adoption of the above six effective and 11 promising interventions can improve neonatal and child survival around the world. Choice of intervention and degree of implementation currently depends on resources available and policies in individual countries and geographical settings. PT, PT, Review of meta-analyses, mortality,
Lau, C., Hurst, NM, Smith, EO, & Schanler, RJ (2007). Ethnic/racial diversity, maternal stress, lactation and very low birth weight infants. *Journal of Perinatology* 27(7), 399-408. Breastfeeding, frequency of milk expression. KC, and lactation performance (maternal drive to express milk and milk production) were evaluated by self-report questionnaire every 2 weeks x 10 weeks after delivery of very low birth weight infants in three groups: African American, Caucasian, and Hispanic. Birthweight, education, and milk expression differed among groups. Traint anxiety, depression, parental stress (PSS; NICU) were similar. African American moms had lowest score in state anxiety; Caucasian had lowest score in social desirability. Birthweight and KC correlated positively with maternal drive to express milk (measured by maintenance of milk expression. Milk volume correlated negatively with depression, and positively with milk expression frequency and KC. Lactation performance can best be enhanced with a multi-faceted intervention program, incorporating parent involvement in infant care, close awareness and management of maternal mental health, and encouragement of frequent milk expression and KC. Preterm, Descriptive, breastfeeding, maternal stress, depression, maternal anxiety, BF

Laudert, S., Liu WF, Blackington S, Perkins B, Martin S, Macmillan-York E, Graven S., Handsyde J, & NIC/Q 2005 Physical Environment Exploratory Group. (2007). *Journal of Perinatology*, 27(Suppl 2): S275-S293. The Vermont Oxford Network Neonatal Quality Improvement Collaborative 2005 explored ways to improve the physical environment of the NICU to optimize neonatal interventions within current maternal and child health programs, (for example ensuring tetanus immunization in antenatal care, …. And provision of simple immediate newborn care, resuscitation and extra care of small babies (e.g. Kangaroo mother care involves caring for small particularly preterm babies. But what is KC and what’s in it that helps both full term and premature babies? Is it like holding a baby in a pouch, but you position the baby on your chest near the middle of your bosoms, Holding your newborn baby in this kangaroo position makes it possible for skin to skin physical contact and breast feeding, the two essential components that make KC work wonders for your full term or premature baby. Skin to skin physical contact and breastfeeding in KC is beneficial for your baby as it hastens your baby’s growth and development by 1) Regulating your premature baby’s bodily temperature (With KC, your own bodily temperature helps keep your baby warm or will also cool them down. Your temperature adjusts to what your baby needs. Thus your temperature could drop and adjust to those of your baby’s. This is known as thermal synchronicity. With this, his/her condition will stabilize and his/her breathing and heart rate are more regular.2) Promoting the special bond between you and your newborn baby (feelings of safety and security are promoted through KC, making him/her less stressed and promotes sleep. 3)Giving your baby the right nutrients from your breast milk. Your breast milk has all the right nutrients to meet your newborn’s needs. Your breast milk protect your baby helping them to ward off infections. Breast milk is loaded with nucleotides athat are crucial for your baby’s brain development while colostrums provides antibodies that help boost your baby’s immune system.” (page 2)) Because you position your infant between your bosoms, he/she can smell your milk and this triggers an instinctive feeding and self-latching.Breeding your baby breast milk give his/her the nourishments they need and this hastens weight gain to almost 30 grams per day as compared to preemies cared for in incubators.Remember, KMC is for every baby and every MOM and DAD no matter what your location in the world. 

Lawn J. (2011). Kangaroo Mother Care: The Benefits for Your Full Term and Premature Baby. Washington, DC: Save the Children. Available from www.themiracleofkangoomothercare.com. This is a 2 page pamphlet sort of thing available from the SAVE THE CHILDREN organization in Washington DC and it relates how KMC works for a premature baby (KMC will help him grow and develop faster compared to other premature babies who do not receive any KMC. Both what is KMC and what’s in it that helps both full term and premature babies? It’s like holding a baby in a pouch, but you position the baby on your chest near the middle of your bosoms, Holding your newborn baby in this kangaroo position makes it possible for skin to skin physical contact and breast feeding, the two essential components that make KC work wonders for your full term or premature baby. Skin to skin physical contact and breastfeeding in KC is beneficial for your baby as it hastens your baby’s growth and development by 1) Regulating your premature baby’s bodily temperature (With KC, your own bodily temperature helps keep your baby warm or will also cool them down. Your temperature adjusts to what your baby needs. Thus your temperature could drop and adjust to those of your baby’s. This is known as thermal synchronicity. With this, his/her condition will stabilize and his/her breathing and heart rate are more regular.2) Promoting the special bond between you and your newborn baby (feelings of safety and security are promoted through KC, making him/her less stressed and promotes sleep. 3)Giving your baby the right nutrients from your breast milk. Your breast milk has all the right nutrients to meet your newborn’s needs. Your breast milk protect your baby helping them to ward off infections. Breast milk is loaded with nucleotides athat are crucial for your baby’s brain development while colostrums provides antibodies that help boost your baby’s immune system.” (page 2)) Because you position your infant between your bosoms, he/she can smell your milk and this triggers an instinctive feeding and self-latching. Freedding your baby breast milk give his/her the nourishments they need and this hastens weight gain to almost 30 grams per day as compared to preemies cared for in incubators.Remember, KMC is for every baby and every MOM and DAD no matter what your location in the world. 

Pamphlet.PT, FT. NOT on Charts See also pamphlets, Lawn citation.

Lawn J., Kerber, K., Enweronu-Laryea, C., & Bateman O.M. (2009). Newborn survival in low resources settings – are we delivering? *British J. of Obstetrics & Gynaecology* (BJOG), 116 (Suppl 1), 49-59. This is a big review. On page 4 it states “If possible, these very small babies should receive care in a referral hospital. Kangaroo Mother care involves caring for small particularly preterm babies by having them strapped skin to skin to the mother’s front. KMC is simple, effective, and empowers mothers and can be feasibly introduced in most facilities in low income settings where care for small babies is provided. Extra care of small babies at home care, is skin to skin care and additional support for breastfeeding has great potential but requires more evaluations at scale (meaning big epidemiological studies)” In panel #4 entitled WHAT TO DO TO SAVE NEWBORN LIVES, it says “Immediate opportunities to add or strengthen high impact neonatal interventions within current maternal and child health programs, (for example ensuring tetanus immunization in antenatal care, …. And provision of simple immediate newborn care, resuscitation and extra care of small babies (e.g. Kangaroo mother care) linked to childbirth care, and case management of neonatal illness linked to IMCI” (pg. 58). Review, recommends KMC, mortality. Need more research. PT. GET FROM BARB, not on charts

Lawn J. & Kerber (2009). Worth a thousand words: Kangaroo Mother Care (KMC). *British J Obstetrics & Gynecology, 116* (Suppl 1), 60. The is a one page treatise on NEOnatal care written by two SAVE THE CHILDREN authors in which they show a picture of pretermers, 3 in one incubator, and then another picture of one preterm in KC. There is a whole section on KC, “KC is widely considered to be equivalent to conventional neonatal care for stable preterm babies and is more parent-and baby-friendly in all settings. Mothers in over 100 facilities in South Africa are caring for their small babies using KMC.” Review, PT, KC is good care. NOT on charts Get from BARB.

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Lawn, J., Mwansa-Kambafwile J., Horta BL., Barros FC & Cousens S. (2010). ‘Kangaroo Mother Care’ to prevent neonatal deaths due to preterm birth complications. *International Journal of Epidemiology,* 39(Suppl 1), 1144-1154. Meta-analysis after a Cochrane review (Conde-Agudelo et al, 2003) failed to show that KC reduced mortality. 9 RCTs in 15 studies of mortality. This is a systematic review of KMC (24/7) in infants <2000 g who started KC in the first postnatal week in low and middle income countries (988 infants enrolled in 3 RCTs) and found a significant reduction (51%) in neonatal mortality (relative risk:0.49 [95% confidence interval: 0.29-0.82]) when KMC was started in first week of life. This meta-analysis showing that KMC substantially reduces mortality among preterm babies of Birthweight <2000 gram in hospital and is highly effective in reducing severe morbidity, particularly from infection. KC remains unavailable in most low income countries. PT, Meta-analysis, continuous 24/7 KMC, infection, mortality, morbidity. See Sloan et al., 2011 in same journal that questions these reults.

Lawn, J.E., Mwansa-Kambafwile J., Barros, F.C., Horta, B.L., & Cousens, S. (2011). Author’s response. ‘Kangaroo mother care’ to prevent neonatal deaths due to pre-term birth complications. *International Journal of Epidemiology,* 40(2), 525-527. Nov. 2. This is Lawn’s reply to Nancy Sloan’s critique of the original article and she says her meta analysis was not an easy and quick one, many people were involved and it stated that it was not a Cochrane meta-analysis. NEED TO GET REST OF IT TO FINISH READING. PT, PT, meta-analysis, morbidity, mortality. Not on Charts

Lazarov, M. (1994). Barriers and Solutions to the Global Ten Steps to Successful Breastfeeding: A Summary of in-depth interviews with hospitals participating in the WHO/UNICEF Baby-Friendly Hospital Initiative Interim Program in the United States. Committee for UNICEF. April 1994. New York: UNICEF. Interviews revealed several barriers to implementing STEP FOUR (Skin contact should begin within 30 minutes of vaginal Birth and within 30 minutes of mom being able to respond in cesarean birth). Barriers were: lack of staff time in general, need to finish newborn procedures, mother may drop the infant, need for episiotomy repair, mother must be cleaned first, need to move the mother from delivery room, delivery room is too cold, and others. Full term, qualitative, guidelines, implementation, barriers, BirthKC, VEKC, BF

**Lazarazo, et al, 2012. GET THIS TIt's about length of stay in KC infants. I can’t find this on pbumed**

Leder, D. & Krcoff, M.W. (2008). The touch that heals: the uses and meanings of touch in the clinical encounter. *Journal of Alternative and Complementary Medicine,* 14(3), 321-327. NOT a KC article per se. Though intended to deal with “healing touch” of “touch therapists”, the article actually reviews the clinical efficacy of touch (depends on patient’s active receptivity and touch provider’s attention, compassion, and skill). This paper explores the unique properties of touch as medium of perception, action, and expression that can render touch a healing force within the clinical encounter. Clinical Review of physiology of touch. See Olausson, Feldman and Bystrova 2009 & Uvans-Moberg, Magnusson et al. 2005 for similarly focused content.

Lee, H.C., Martin-Anderson, S. & Dudley, R.A. (2012). Clinician perspectives on barriers to and opportunities for skin-to-skin contact for premature infants in neonatal intensive care units. *Breastfeeding Medicine,* 7(2), 79-84. DOI: 10.1089/btm.2011.0004. This is a qualitative study in which 10 hospitals of the California Perinatal Quality Care Collaborative/California Children’s Services Breastmilk Nutrition Quality Improvement Collaborative met to increase the proportion of very low birth weight infants (<1500g) being fed breastmilk. They taped discussions in meetings of barriors and how to get KC practiced more widely in the NICU so that breastfeading of prematures and infant nutrition are improved. On page 1 it says “Despite these clinical benefits, KC is not uniformly practiced.” There were 128 NICUs that are in the group, and those 128 represent over 90 of the NICUs in CA. Eleven NICUs participated and all were level III NICUs with five considered Regional NICUS by Calif Children’s Services and 6 were community NICUs. # of NICU beds ranged from 16 to 104 (mean of 47 and median of 53 beds). At the fourth meeting, KC was a “best practice” (p. 2) and key component of the Collaborative’s work. 5 monthly discussions were analyzed by thematic analysis with software. Regarding PROMOTION of KC, ideas were importance of clinical stability, staff education and buy-in, and parental motivation. These ideas yielded 3 themes: 1) Patient Implementation Factors (infants need to be clinically stable for KC but clinical stable definition varied greatly by providers and institutions. Factors determining clinical stability were age, current weight, respiratory distress, blood pressure, temperature, apnea, bradyardia, oxygen desat events. One institution’s definition of stability was <3 apnea/brady events per hour that self-resolve within 15-20 seconds; another insitution’s was absence of apnea or brady, but instability was decided by attending physician. Equipment was a barrier too and impacted definition of clinically stable: needing moderate amount of O2 and on high ventilator settings meant less clinically stable. Intubation, catheterization, and devices may limit eligibility. Some policies said ventilated infants not eligible, others routine allow ventilated infants, or with a certain fraction of inspired O2 or setting limits and others were less stringent in their restrictions and allowing high frequency ventilation, transfer is problematic because it needs extra assistance. These NICUs nonetheless (allow ventilated KC – SML’s input, not part of quote) reported success with their approach” (pg. 3) “Similarly the presence of umbilical catheters was a prohibiting factors for KC in some NICUs but not in others. For most NICUs that allowed KC with umbilical catheters there was an exception for those infants with hypotension requiring pressor support.” (pg. 3) Policies for implementation was last part of theme #1: “Policies differed in who was authorized to permit KC. Some required an attending physician to sign a specific KC order, whereas others incorporated KC as part of routine care and required a specific order to avoid KC if patient was unstable. Having policies in place to KC
address eligibility and procedures may benefit NICUs in which KC is not consistently performed.” (p.3) 2) Institutional Level Factors yielded three areas: documentation (many are responsible, but no consistency in reporting and moms may forget to chart that they did KC, and electronic records may not include KC. Literacy and language are issues with parental reporting for reliable documentation. Staff want reliable documentation so they can intervene with moms who need it the most. Staff education related that there is a lack of adequate staff education about the importance of KC and techniques for KC (pg. 3). Turn over, new staff and loss of “champion” of KC may make educating staff more difficult. Staff buy-in, motivation, and interdepartmental communication are barriers (pg. 3). Not all staff believe in benefits of KC nor are motivated. A push for KC may be seen as contradictory to existing structures of care, i.e. KC may interrupt clustered care. Communicating changes in standards for quality care was a barrier for these different units. Staff motivation is difficult to sustain over time and lack of manpower was key determinant of this barrier. Staff burnout may negatively impact motivation. Creative strategies to increase motivation were: a. visual presentation of progress (putting graphs up each month of # of patients getting KC, etc.), making shared goals, hold meetings, have team slogans, and t-shirts to motivate. Physician support and management support and good leadership at different staff levels may help. “Have request for KC to become routine may make more impact coming from an established, respected colleague rather than from ‘above’” (pg. 4), and 3) Maternal or Familial level factors. Lack of visitation was most frequently cited issue, as is lack of transportation and incarceration and maternal illness. Parking, food, sleeping, and lack of childcare are barriers too. Another maternal factor was waning motivation of the mothers – they need periodic reminders of KC’s importance and follow-up by nurses. Asian moms are expected to stay home for a month after birth, so they won’t be visiting. Lack of language competency and understanding should be dealt with by having interpreters. Have physician talk with parents (he has authoritative position) and can increase parental motivation. Some suggested using mirrors so mom can see baby and others suggested paternal KC. Education should be for staff and for Parents (pg. 5). Authors mention the possibility of included KC orders in the standard admission orders, just like they do for sepsis screening. (pg. 5). PT. Qualitative, barriers, implementation, Apnea, Bradycardia, desaturations, ventilated KC, catheters, blood pressure, low visitation, respiratory distress, policies, documentation, staff education, staff buy-in, staff motivation, survey, See also Mallet et al., 2007; Johnson 2007 for eligibility criteria and also for noting LACK OF EDUCATION. Not on charts Author of record is Henry C Lee, M.D. Div. of Neonatology, Dept. Peds, UCSF; Lee HZC@peds.ucsf.edu

Lee, S.B. & Shin, H.S. (2007). Effects of Kangaroo Care on anxiety, maternal role confidence, and maternal infant attachment of mothers who delivered preterm infants. Taehan Kanho Hakhoe Chiense.37(6), 949-956. Preterms in non-equivalent control group pretest-posttest design had 22 KC moms and 21 controls. Ke given3 times/day for a total of 10 times in 4 days. Maternal anxiety significantly less in KCers, but no difference in maternal role confidence and maternal-infant attachment. PT. pretest-posttest controlled trial, (NOT RCT), attachment, confidence, maternal anxiety.

Legault, M. & Goulet C. (1993-Winter). Comparative study of two methods of holding premature infants: the kangaroo method versus the traditional method. Canadian J. Nursing Research 25(4), 67-80. This study compared two methods of holding preterm infants: 1) the kangaroo, or skin-to-skin method (K) and 2) the traditional method, or normal handling (T). Skin temperature, heart rate, respiratory rate and oxygen saturation were monitored during both the kangaroo and the traditional handling methods. After testing with the two methods, the mothers indicated their satisfaction and preference. Sixty-one pairs of mothers and babies were tested once with the K method and once with the T method. The first method tested was determined at random: 50% began with K and 50% with T. Skin temperature, heart rate and respiratory rate were similar with both K and T methods. Whereas oxygen saturation was significantly lower (92.8% vs 90.5%, p < 0.0003) under the T method, time of testing was longer (29.5 min vs 25.3 min, p = 0.02) for the K method than for T method. In summary, the findings suggested that mothers preferred the K method because the cold stress factor was avoided, oxygenation was better maintained, and mothers felt closer to their infants. PreTerm. Swaddled holding

Legault M, & Goulet C. (1994). Removing the premature from the incubator. From the traditional method to the kangaroo method (Sortir le premature de l’incubateur de la méthode traditionnelle à la méthode kangourou). L’Infirmiere du Quebec 2(2), 34-41. Preterm Swaddled holding.

Legault, M. & Goulet, C. (1994). My little Amelie, in my arms at last! Infirmiere du Quebec, 2(2): 36-38. Case study of a preterm mom who finally got to hold her little daughter in skin-to-skin contact. PT GET THIS

Legault, M. & Goulet, C. (1995-Aug). Comparison of kangaroo and traditional methods of removing preterm infants from incubators. J. Obstetric, Gynecologic, and Neonatal Nursing 24(6), 501-506. To compare the kangaroo and traditional methods of removing an infant from an incubator in terms of four physiologic parameters, mother’s satisfaction, and mother’s preference. Time-series design (quasi-experimental), with infant-mother dyads subjected to both methods. Setting was Intermediate neonatal care unit in a tertiary hospital in Canada. A convenience sample of 71 infant-mother dyads. INTERVENTION AND MEASURES: The intervention was use of the kangaroo or traditional method of maintaining body temperature of preterm infants. The dependent variables were physiologic parameters (skin temperature, heart rate, respiratory rate, and oxygen saturation) measured five times with each method. Mother’s satisfaction was measured at the end of each testing period and mother’s preference at the end of the experiment. The kangaroo method produced less variation in oxygen saturation and longer duration of testing, and it was preferred

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by most of the mothers. The kangaroo method is safe for the preterm infant and allows for early contact between parents and infants. RCT, Preterm, swaddled holding, transfer

Lehtonen L, Gimeno A, Parra-Llorca A, Vento M. (2017 Feb). Early neonatal death: A challenge worldwide. Semin Fetal Neonatal Med. 2017 Feb 23; pii: S1744-165X(17)30021-5. doi: 10.1016/j.siny.2017.02.006. [Epub ahead of print]. Early neonatal death (ENND), defined as the death of a newborn between zero and seven days after birth, represents 73% of all postnatal deaths worldwide. Despite a 50% reduction in childhood mortality, reduction of ENND has significantly lagged behind other Millennium Developmental Goal achievements and is a growing contributor to overall mortality in children aged <5 years. The etiology of ENND is closely related to the level of a country's industrialization. Hence, prematurity and congenital anomalies are the leading causes in high-income countries. Furthermore, sudden unexpected early neonatal deaths (SUEND) and collapse have only recently been identified as relevant and often preventable causes of death. Concomitantly, perinatal-related events such as asphyxia and infections are extremely relevant in Africa, South East Asia, and Latin America and, together with prematurity, are the principal contributors to ENND. In high-income countries, according to current research evidence, survival may be improved by applying antenatal and perinatal therapies and immediate newborn resuscitation, as well as by centralizing at-risk deliveries to centers with appropriate expertise available around the clock. In addition, resources should be allocated to the close surveillance of newborn infants, especially during the first hours of life. Many of the conditions leading to ENND in low-income countries are preventable with relatively easy and cost-effective interventions such as contraception, vaccination of pregnant women, hygienic delivery at a hospital, training health care workers in resuscitation practices, simplified algorithms that allow for early detection of perinatal infections, and early initiation of breastfeeding and skin-to-skin care. The future is promising. As initiatives undertaken in previous decades have led to substantial reduction in childhood mortality, it is expected that new initiatives targeting the perinatal periods are bound to reduce ENND and provide these babies with a better future. KC is a preventative for SUPC. PT, FT, Review, life-threatening, SUPC.

Lehtonen, L., & Martin, R.J. (2004). Ontogeny of sleep and awake states in relation to breathing in preterm infants. Semin Neonatol 9(3), 229-238. Not an article about KC, but it states on page 335 that “KC has been shown to improve the integrity of sleep” and that more studies of KC and sleep cyclicity are needed. States that although behavioral states are immature during preterm period, their cyclicity is clearly seen with large proportion of indeterminate sleep and small amount of wakefulness. Oxygenation is stable during active and quiet sleep in ventilated preterm infants, but indeterminate sleep and arousals are associated with hypoxic episodes. Arousals have also been linked to apnea in spontaneously breathing infants. Well-defined sleep cycles are beneficial to the oxygenation of preterm infants. Well-defined sleep cycles are beneficial to the oxygenation of preterm infants, ways to promote natural sleep are needed. Kangaroo care and optimal positioning have been shown to improve the integrity of sleep. Optimizing sleep cycling might improve long-term outcome of preterm infants. Review. PT, sleep, cycles, arousals, apnea, Not a KC article but explains why less apnea during KC.

Lemay DG, Pollard KS, Martin WF, Freeman Zadrowski C, Hernandez J, Korf I, German JB, Rijnkels M. (2013). From genes to milk: genomic organization and epigenetic regulation of the mammary transcriptome. PLoS One. 2013 Sep 26;8(9):e75030. doi: 10.1371/journal.pone.0075030. eCollection 2013. Author information Even in genomes lacking operons, a gene's position in the genome influences its potential for expression. The mechanisms by which adjacent genes are co-expressed are still not completely understood. Using lactation and the mammary gland as a model system, we explore the hypothesis that chromatin state contributes to the co-regulation of gene neighborhoods. The mammary gland represents a unique evolutionary model, due to its recent appearance, in the context of vertebrate genomes. An understanding of how the mammary gland is regulated to produce milk is also of biomedical and agricultural importance for human lactation and dairying. Here, we integrate epigenomic and transcriptomic data to develop a comprehensive regulatory model. Neighborhoods of mammary-expressed genes were determined using expression data derived from pregnant and lactating mice and a neighborhood scoring tool, G-NEST. Regions of open and closed chromatin were identified by ChiP-Seq of histone modifications H3K36me3, H3K4me2, and H3K27me3 in the mouse mammary gland and liver tissue during lactation. We found that neighborhoods of genes in regions of uniquely active chromatin in the lactating mammary gland, compared with liver tissue, were extremely rare. Rather, genes in most neighborhoods were suppressed during lactation as reflected in their expression levels and their location in regions of silenced chromatin. Chromatin silencing was largely shared between the liver and mammary gland during lactation, and what distinguished the mammary gland was mainly a small tissue-specific repertoire of isolated, expressed genes. These findings suggest that an advantage of the neighborhood organization is in the collective repression of groups of genes via a shared mechanism of chromatin repression. Genes essential to the mammary gland's uniqueness are isolated from neighbors, and likely have less tolerance for variation in expression, properties they share with genes responsible for an organism's survival. Breast milk, epigenetics, non-separation from mother. Not on charts.

benefits for infants and parents. The purpose of this study was to describe parents' experience of information and communication mediated by staff nurses before and during KC at neonatal wards. A qualitative study with semi-structured interviews was performed. The sample consisted of 20 parents. The results show that the information and communication from the staff nurses encouraged and motivated the parents to practice KC, in a sense that it was a natural way to get to know the infant, when the staff nurses were well versed in the method and coherent and supportive. Conflicting emotions emerged when staff nurses practised KC as a routine without deeper knowledge and skills of the method and its advantages as well as without sensitivity to parents’ vulnerable situation. A study, NICU, Qualitative study, staff issues, parental perceptions, implementation.

Leonard A, & Mayers P. (2008). Parents’ lived experience of providing kangaroo care to their preterm infants. Health SA Gesondheid 13(4), 16-28. Qualitative study of interviews with 6 parents (4 mothers, 2 father) who provided KC to their infants in the NICU in Western Cape, South Africa. KC is a phased process, each phase bringing a unique set of experiences. Eight themes emerged: unforeseen, unprepared, and uncertain – the experience of birth anxiety and barriers; an intimate connection; adjustments, roles, responsibilities; measuring success (wgt gain is big measure because all mom can do is hold and feed her baby and they remember exact wgt gain each day); network of encouragement and support – just to survive another NICU day and to connect with other parents (not about support for KC specifically); living-in challenges (do 24/7 KC in a room with 7 other mother/infant dyads, and the challenges are back ache (sit at 45° upright), boredom, loneliness, fatigue, anxiety, infant’s constant presence impacts relationships, social support, employment and leisure, tension between wanting to care for her infant and wanting to be at home, isolated from family support; living with infant outside hospital. Mothers felt need to touch infant to make them feel like the infant was theirs, but medical rules often prohibit touching right away. Because KC is not a set of hard rules or step by step events, they think KC is a process, an evolving way of allowing parents to regain confidence in their own ability to care for their infant (pg. 26). Fathers were not allowed to do KC in hospital and felt left out and that that was HARSH. PT, qualitative, parental feelings. 24/7 KMC, support needs. THIS IS GREAT ARTICLE, has good content on fathering.

Leow, J.Y., & Platt, M.P. (2011). Sudden, unexpected and unexplained early neonatal deaths in the North of England. Archives of Disease in Childhood Fetal Neonatal Edition, 96(6), F440-F442. doi: 10.1136/adc.2010.206649. THIS ARTICLE MENTIONS SKIN-TO-SKIN DEATHS. Early neonatal sudden death is rare (they studied 828,648 live births) and maternity practices over the last 25 years haven not impacted the incidence of sudden unexpected death which is 1.2 deaths per 10,000 live births for deaths between 6 and 100 hours postbirth, and this study found 30 cases of unexplained sudden infant death (rate is 0.35/10,000 live births). Infants with good condition had APGARS of 7 or more at 5 minutes postbirth. Babies may SHOW NO WARNING SIGNS before being found dead, or they may show BRADYCARDIA, Turning pale, Apneic spells, even while witnessed by their mothers. This study found 30 infants with unexplained sudden infant death. (Pg. F2 of 3) 13 died at home; 17 died in hospital particularly of the deaths (pg. F3 of 3). Others (Gatti, Toker-Maimon) suggest that acute respiratory obstruction may have caused deaths during skin-to-skin contact with primiparous mothers with infant’s at the breast. Foran reported severe neuronal damage in six infants who suffered collapse on their mother’s breast and suggested that unrecognized asphyxia may have resulted in brainstem or basal ganglia damage which could have impaired coordination of breathing and swallowing. Enhanced supervision has been recommended but these data (Leow & Platt’s) suggest that across the north of England around 25,000 breastfeeding women would have to receive the extra intrusive supervision, mostly at night, to possibly PREVENT ONE DEATH (Pg. F3 of 3). When death occurs, encourage postmortem exams to ascertain the cause because three may be implications for future pregnancies, and all families deserve to have an explanation of these parts which occurred in the hospital on the breast occurred in the early hours of the morning. PRIMIPS are over-represented among women whose babies die at the breast, and that deaths occur in EVENING and NIGHT HOURS suggests that both maternal inexperience and reduced professional supervision and support may be factors in a proportion of the deaths (pg. F3 of 3). Others (Gatti, Toker-Maimon) suggest that acute respiratory obstruction may have caused deaths during skin-to-skin contact with primiparous mothers with infant’s at the breast. Foran reported severe neuronal damage in six infants who suffered collapse on their mother’s breast and suggested that unrecognized asphyxia may have resulted in brainstem or basal ganglia damage which could have impaired coordination of breathing and swallowing. Enhanced supervision has been recommended but these data (Leow & Platt’s) suggest that across the north of England around 25,000 breastfeeding women would have to receive the extra intrusive supervision, mostly at night, to possibly PREVENT ONE DEATH (Pg. F3 of 3). When death occurs, encourage postmortem exams to ascertain the cause because three may be implications for future pregnancies, and all families deserve to have an explanation of these particularly distressing deaths if possible. Early neonatal sudden unexpected unexplained deaths (for which we use the term ENSUD) have not been subject to detailed study. The authors investigated the incidence from 1983 to 2007 in the population of the North East of England and North Cumbria. The authors found 30 cases of unexplained ENSUD, giving an overall rate of 0.35/10 000 live births, with no significant change in incidence over this time, and they identified a further 19 deaths of abandoned babies. The authors
conclude that unexplained ENSUD is even more rare than has been appreciated and its incidence has not been altered by the considerable changes in maternity care over the last 25 years.

Lepage, J.F. & Théoret, H. (2007). The mirror neuron system: grasping other’s actions from birth? Developmental Science, 10(5), 513-523. Not a KC article per se, but this talks about imitation that is learned at birth and how in the first hours and few days of life having the mother be seen well by the infant helps the infant imitate maternal sound. This information along with the Velandia studies of infants vocalizing more during birth KC than when not in Birth KC suggest that KC activates the mirror neuron system which is functional at birth. This review makes a strong case for early programming of the mirror neuron system and support of a birth sensitive period (something that Bystrova et al. 2009 believes exists in her antecedent about parental interactions). Physiologic review, FT, PT, Birth KC, sensitive period, speech sounds, development. Not on Charts 3/26/2012.


Levin, A. (1999). Humane neonatal care initiative. Acta Paediatrica 88, 353-355. This is an 11 step program to humanize neonatal care. The eleven steps are: 1. The mother should be able to stay with her sick baby for 24 h a day, 2. every staff member should care for mother and infant and should be able to cope with psychological aspects. 3. Staff should promote breastfeeding to every mother and learn the techniques of expressing breast milk. 4. The psychological stress of the mothers should be decreased during the whole treatment period. 5. Unless medically indicated, newborns should not be given anything other than breast milk. 6. If the infant cannot suckle, breast milk should be reduced to a minimum. 7. The number of tests and examinations should be reduced to a minimum. 8. Mother-and-child skin-to-skin and air-to-air contact should be used as much as possible, and the use of technical equipment in childcare should be reduced. 9. Aggressive therapy should be reduced to a minimum. 10. The mother and infant should be considered as a closed psychosomatic system. Everyday ward rounds should focus not only on the infant but also on the needs of the mothers (include a gynecologists and other specialists). 11. Healthy family members (father, grandparents, helpers) should be allowed to visit the mother and the baby during a prolonged stay at the hospital.” (pg. 334). He says that the mother is the biological incubator for the infant (p. 354).

Review, policy, perterm, guidelines, humane care

Leslie, J.A. (2012). Toward Evidence-Based Practice. Review of Special Report-Part 15: Neonatal Resuscitation: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation, 122, S909-S919. Doi: 10:1542/peds.2010-2972E. This article presents the latest guidelines for neonatal resuscitation. Although fewer than 1% require extensive resuscitation efforts, about 10% of newborns require some assistance at birth to begin breathing. Identify infants who do NOT require resuscitation by assessing these variables: term gestation, spontaneous crying or breathing, and good muscle tone. Infants who do not meet one or more of these criteria may need: provision of warmth, clearing the airway if indicated, drying, stimulation, ventilation, chest compressions, and administration of epinephrine and/or volume expansion. Assess infant during the GOLDEN MINUTE – the first minute of life.Guidelines recommend that at every birth, at least one person be designated as primarily responsible for the newborn, that this person is capable of initiating newborn resuscitation, environment should include person capable of complete resuscitation including intubation. The guidelines state that term infants who have good muscle tone and cry or breathe spontaneously should not be separated from the mother, but should be dried and placed in skin-to-skin contact with the mother, with both of them covered with dry linen. These infants may continue to be observed for breathing, activity, and color while in contact with the mother. FT, Guidelines, BIRTH KC, NRP, separation, life threatening events (See Kattwinkel et al., 2010 which is original article, too)

Light, E. (2012). Baby-Friendly practices: more than just breastfeeding. Neonatal Network, 31(6), 427-428. Relates that the Baby Friendly initiative is more than just starting breastfeeding, that it is encouraging mother infant bonding, providing education, support, and encouragement and that these elements are one of the important practices that are essential and required. Encouraging skin to skin contact, educating families and assisting them in breastfeeding is required. Refers to Smith BP et al., 2012 in MCN as excellent source. Baby Friendly, BF.

Lima G, Quintero-Romero S, & Cattaneo A (2000). Feasibility, acceptability, and cost of kangaroo mother care in Recife, Brazil. Annals Tropical Paediatrics, 20(1), 22-26. 114 LBWs got 24 hr/7 days a week KMC up to discharge. No hospital deaths, no mod/severe hypothermia but 30 episodes/100 infant days of mild hypothermia (36-36.4) occurred mainly due to maternal separation. Babies get cold when skin separation occurs, 88% exclusively BF at discharge; daily wgt gain was 15 g during KMC. KCbib 2018
87% BF at 1 month; 63% BF at 3 months; KMC cost $20.00/day vs $66/day conventional care. 24/7 KMC, preterm, IMPLEMENTATION, breastfeeding, weight gain, mortality, temperature, skin separation

Limo, R., & Kohler, K. (2010). The tie that binds: Relationships in perinatal bereavement. MCN, Am J Mat Child Nurs, 35(6): 316-323. This is a review article about bereavement with end of life newborns. On the cover of the issue is a picture from 2007 of two black parents holding their dying or dead infant almost in KC (mother has a bra on) and the father has his hand across the back of the infant and the mother is wiping away a tear. It says on pg. 318 “Gold recommends encouraging ‘parents to see and hold their infants for extended periods and at multiple sittings, and offer parents who initially decline additional chances later ‘(p. 1162) and says that such contact could result in more intense experiences of grief later. Also on page 318 the following about HOLDING, not KC per se, is related “Having parents see and hold their baby before or after death is controversial. Hughes et al cite an association between seeing and holding their baby with negative psychological sequelae during the next pregnancy. Other longitudinal data differ from Hughes et al., Radestad et al., 2009 found that mothers of still born babies >37 wks GA who did not hold their babies had an increased risk of headache and sleep disturbance. In another study bereaved mothers who had not spent as much time with their baby after stillbirth as they wished experienced a seven times greater risk of developing depressive symptoms. Cacciatori et al., 2008 interviewed women pregnant after experiencing a stillbirth and mothers who had not seen or held their stillborn babies showed lower levels of anxiety than their pregnant counterparts. Does not really speak to KC, but has the picture of near KC and does encourage HOLDING and SEEING the baby. Review, FT, PT, end-of-life. Not on Charts.

Linares AM¹, Wambach K, Rayens MK, Wiggins A, Coleman E, Dignan MB. (2016-Mar) Modeling the Influence of Early Skin-to-Skin Contact on Exclusive Breastfeeding in a Sample of Hispanic Immigrant Women. J Immigr Minor Health. [Full text available online] Author information/College of Nursing, University of Kentucky, 315 College of Nursing Building, Lexington, KY, 40536-0230, USA. aqu222@uky.edu. Using data from a longitudinal study of breastfeeding in Hispanics, this study evaluated the influence of early skin-to-skin contact (SSC) on initiation and sustained exclusive breastfeeding (EBF) at 1 month postpartum. Two-thirds of the women in the sample participated in early SSC. At discharge, over half of the women were EBF; this proportion decreased to one-third at 1 month postpartum. Controlling for demographic and clinical variables in the model, participation in early SSC was associated with a greater than sevenfold increase in the odds of EBF at discharge (p = .005) but was not predictive of EBF at 1 month post-discharge (p = .7). Younger maternal age and increased prenatal infant feeding intention were associated with an increased likelihood of EBF across both timepoints. Promoting early SSC may help with initiation of EBF, while further breastfeeding support may be needed to maintain breastfeeding discharge for this vulnerable population. Need to know what definition of early BF was and study design. Have written to author FT, regression analysis, Birth KC? Early KC? BF, BF initiation, Exclusive BF, 1 month postpartum. Not on charts 3-015-16, New to Biblio study


Lindenberg CS, Cabrera-Artola R, & Jimenez V. (1990). The effect of early postpartum mother-infant contact and breastfeeding promotion on the incidence and continuation of breastfeeding. International J Nursing Studies 27 (3), 179-186. 375 urban poor Nicaraguan primip women from 3 hospitals were asked about their infant feeding practices at 1 week and 4 months postpartum. Some mothers got 45 minutes of infant contact (KC?) after birth (WHEN after birth?) and there was a significant relationship between KC and INITIATION of breastfeeding (p < 0.05). Says that “infant contact practice may influence early choice to breastfeed, but the practice alone is not enough to prolong breastfeeding” (pg. 179). RCY, Fullterm, BF, BF initiation. 3rd World, VEKC? Is this a KC study?? Not on charts yet

Lindgren, L., Westling, G, Bruun, C, Lehtipalo, S., Andersson, M. & Nyberg, L. (2011). Pleasant human touch is represented in pregenual anterior cingulate cortex. NeuroImage, 59(4), 3427-3432. A descriptive study of adults who were exposed to human touch (skin-to-skin contact) with or without movement and a rubber glove with or without movement. Functional MRI (fMRI) was conducted to determine which touch elicits a specific response in the brain areas coding for pleasant sensations. Force (2.5N) and velocity (1.5cms/sec) were held constant across all four conditions. The pleasantness of the four different stimulation was rated on a visual analog scale and human touch was rated as most pleasant, particularly in combination with movement. fMRI revealed that human touch stimulation most strongly activated the pregenual anterior cingulated cortex (pgACC). The pgACC is activated during various rewarding pleasant stimulations (i.e gambling, drugs, etc). The pgACC area is also known to be activated by both opioid analgesia and placebo. Thus, human touch massage is effective as a treatment in clinical settings to improve well-being, decrease anxiety, stress, and pain. This is the mechanism underlying emotional responses to massage. NOT KC per se, but related. Descriptive, brain mechanisms, anxiety, stress, pain, well-being.

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Lindroth M (1990). The kangaroo method is a good complement to traditional incubator care. *Lakartidningen*, 87(6), 368. PT

Lipka, D.V., & Schulz, M.K. (2012). “Wait for Eight”: Improvement of newborn outcomes by the implementation of newborn bath delay. *Journal of Obstetric Gynecologic and Neonatal Nursing*, 41(Suppl), S46-S47.doi:10.1111/j.1552-6909.2012.01360.x. This is an abstract of a study to reduce incidence of hypothermia and hypoglycemia by delaying the baby bath to allow for skin-to-skin contact. They created scripts for nurses to use with parents, changed newborn orders, developed crib cards to facilitate hands-on education about the benefits of delaying the bath so skin to skin care could be given, emphasizing the value of skin to skin care on transitioning from intrauterine life, bonding, and breastfeeding. They say that nursing has shown to place priorities on the completion of nursing tasks over the outcomes related to the newborn transitional period. The research on KC directly correlated to the need to review newborn care and practices. Recognition of the importance of an uninterrupted newborn transition with skin to skin resulted in positive newborn outcome (reduction in incidence of hypothermia and hypoglycemia during the transitional period) and patient satisfaction. **FT, quality improvement, hypoglycemia, hypothermia, temperature birth KC, implementation. Nurses do little KC Not on Charts**

Lisle-Porter M.D. & Podruchny, A.M. (2009). The dying neonate: Family-centered end-of-life care. *Neonatal Network*, 28(2), 75-83. This review article of how to help parents whose infant is dying has Table 1 on page 76 entitled “Guidelines for End-of-Life Care of the Neonate” and item 1V.8b is “kangaroo care holding” as a strategy to keep the family involved. There is no other mention of KC, even in the section on pain relief and the importance of relaxing the infant. **Review, fullterm and preterm, compassionate KC, end of life, pain**

Liu, D., Diorio, J., Day, J.C., Frantisi, D.D., & Meaney, M. (2000). Maternal care, hippocampal synaptogenesis and cognitive development in rats. *Nature Neuroscience*, 3(8), 799-806. Not a KC study. A direct relationship between maternal behavior and hippocampal development was present; rat pups who had high levels of licking, grooming, and nursing showed increased expression of NMDA receptor subunits and brain-derived neurotrophic factor (BDNF) mRNA for increased cholinergic innervations of the hippocampus and enhanced spatial learning and memory. **RAT study, development, brain, maternal care**

Lizarazo-Medina, J.P., Osipina-Diaz, J.M., & Ariza-Raño, N.E. (2012). The kangaroo mothers’ programme: a simple and cost effective alternative for preventing the premature newborn or low-birth-weight babies. *Review Salud Publica (Bogota)*, 14(Suppl 2), 32-45. Retrospective observational cohort study in Colombia of 374 infants born prematurely or of Low Birth Weight studied from 2007-2009 who received 24/7 KMC. Looked at prenatal records and did follow-up at 40 wks post conceptional age. High prevalence of term pregnancy (17.5%) and women older than 35 yrs (12.6%) Unwanted pregnancy (40.6%) and low quality/poor nutrition in families, complications such as preeclampsia, infection, premature rupture of membranes. Average birth weight was 1969 g, 2742.9 g discharge weight, average weight gain was 22 g/day (non KMC group had 11.2 g/day weight gain). KMC substantially improved mother’s psychological aspects and health status and led to stabilizing body temperature and weight gain while decreasing risks of complications and nosocomial infections and lowered health care costs and shortened hospital stay. 3<sup>rd</sup> world, PT, length of stay, cost, infection, weight, stability, temperature, maternal feelings.

Lloyd, D.M., McGlone, F.P., & Yossipovitch, G. (2015 -March 9). Somatosensory pleasure circuit: from skin to brain and back. *Experimental Dermatology*, 24(5), 321-324. doi: 10.1111/exd.12639. This is a review of the unmyelinated slow conducting C-fibre afferents that are typically associated with coding emotional properties of pain, itch, and now pleasure. These are the C-tactile (CT) afferents. Massage stimulates CTs as does interpersonal touch (skin-to-skin) and interpersonal touch is critical in physical and cognitive development, grooming, relief of itch by scratching. This does not speak to Kangaroo Care skin-to-skin nerve stimulation per se, but general skin-to-skin interpersonal contact and how it stimulates pleasure. There are three touch neuroses: 1) myelinated A-beta and A-delta afferents (throughout the body), 2) c-fibre afferent nerves that are slow conducting and unmyelinated that pick up pain and itch, and 3) c-tactile afferents that pick up pleasant touch (pg. 321). This is a report that indicates that c afferent nerves are active throughout one’s life in different places. Good current (2015) article about c-afferent nerves from a dermatology perspective (i.e how to cure itch). Not a KC article per se, but a cafferent nerve physiology. **PT, FT, Adult, c-afferent nerves and pleasure**

Long W. (2010). Combining oral 25% dextrose with skin-to-skin contact may provide b etter pain relief for term newborns. *J Pediatrics* 156(5), 859. This is commentary on Chernont’s 2009 study. **Fullterm, pain, sucrose water, GET THIS AND READ AND PUT ON CHARTS**


López Maestro M, Melgar Bonis A, de la Cruz-Bertojo J, Perapoch López J, Mosqueda Peña R, Pallás Alonso C (2013, Nov 28) Developmental centered care. Situation in Spanish neonatal units. Annals of Pediatrics (Barcelona) pii: S1695-4033(13)00447-5. doi: 10.1016/j.anpedi.2013.10.043. mariamaestro@gmail.com. National survey of KC. Developmental centered care (DC) is focused on sensorineural and emotional development of the newborns. In Spain we have had information on the application of DC since 1999, but the extent of actual implementation is unknown. To determine the level of implementation of DC in Spanish neonatal units where more than 50 infants weighing under 1500g were cared for in 2012. A comparison was made with previous data published in 2006. A descriptive observational cross-sectional study was performed using a survey with seven questions as in the 2006 questionnaire. The survey was sent to 27 units. The response rate was 81% in 2012 versus 96% in 2006. Noise control measures were introduced in 73% of units in 2012 versus 11% in 2006 (P<.01). The use of saccharose was 50% in 2012 versus 46% in 2006 (P=.6). Parents free entry was 82% in 2012 versus 11% in 2006 (P<.01). Kangaroo care was used without restriction by 82% in 2012 compared to 31% in 2006 (P<.01). The implementation of the DC in Spain has improved. There is still room for improvement in areas, such as the use of saccharose or noise control. However, it is important to highlight the positive change that has occurred in relation to unrestricted parental visits. National Survey, 3rd world, PT KC. Not on charts 1/8/2014

Lorenz L, Dawson JA, Jones H, Jacobs SE, Cheong JL, Donath SM, Davis PG, Kamlín COF (2017-July). Skin-to-skin care in preterm infants receiving respiratory support does not lead to physiological instability. Arch Dis Child Fetal Neonatal Ed. 2017 Jul;102(4):F339-F344. doi: 10.1136/archdischild-2016-311752. pii: fetalneonatal 2017-07-15. Skin-to-skin care (SSC) to preterm infants is standard practice in many neonatal intensive care units. There are conflicting reports on the stability of oxygen saturation (SpO2) during SSC, which may create a barrier to a wider implementation of SSC to infants receiving respiratory support. Regional cerebral oxygenation (rcO2) measured using near-infrared spectroscopy can serve as a surrogate parameter for cerebral oxygen delivery and consumption. We hypothesised that rcO2 during SSC would be similar to standard care in preterm infants receiving respiratory support. Prospective observational non-inferiority study. Single tertiary perinatal centre in Australia. Forty preterm infants (median (IQR) of 27.6 (26.0-28.9) weeks’ gestation) receiving respiratory support were studied on day 8 (5-18). Ninety minutes of SSC, with infants in incubators acting as their own control in a single tertiary perinatal center in Australia. Parents and caregivers were blinded to the measurements. Mean difference in rcO2 between SSC and incubator care; as well as heart rate (HR), SpO2, fraction of inspired oxygen (FiO2) and temperature, were compared using a paired t-test. rcO2 was similar during SSC (mean (SD): 74.9 (6.5)% vs incubator care (74.7 (6.1)%), mean difference (95% CI) 0.2 (-0.8 to 1.1)%; p=.71). No clinically important differences in HR, SpO2, FiO2 or temperature were observed in the whole cohort and by mode of respiratory support (endotracheal tube mechanical ventilation, continuous positive airway pressure and high-flow nasal canulae). Cerebral oxygenation and other physiological measurements in ventilated preterm infants did not differ between SSC and incubator care. PT, quasi-experiment, pretest in incubator vs 90 mins in KC with respiratory support, ventilator support, CPAP, hi flow nasal cannula, cerebral oxygenation, HR, SpO2,FiO2, temperature, duration of KC. Not on charts 9-9-2017

Lorenz L, Marulli A, Dawson JA, Owen LS, Manley BJ, Donath SM, Davis PG, Kamlín COF (2017-July). Cerebral oxygenation during skin-to-skin care in preterm infants not receiving respiratory support. Arch Dis Child Fetal Neonatal Ed. 2017 Jul 26. pii: fetalneonatal-2016-312471. doi: 10.1136/archdischild-2016-312471. Epub ahead of print. Skin-to-skin care (SSC) has proven benefits in preterm infants, but increased hypoxic and bradycardic events have been reported. This may make clinicians hesitant to recommend SSC as standard care. We hypothesised that regional cerebral oxygenation (rStO2) measured with near infrared spectroscopy is not worse during SSC compared with standard incubator care. In a single tertiary perinatal centre in Australia, 40 preterm infants (median (IQR) 30.6 (29.1-31.7) weeks’ gestation) not receiving respiratory support were studied on day 14 (8-38) in a prospective, observational, non-inferiority study. Recordings were made during 90 min of incubator care, followed by 90 min of SSC. Each infant acted as their own control and caregivers were blinded to the rStO2 measurements. The primary outcome was the mean difference in rStO2 between SSC and incubator care. The prespecified margin of non-inferiority was 1.5%. Secondary outcomes included heart rate (HR), peripheral oxygen saturation (SpO2), time in quiet sleep, temperature and hypoxic (SpO2 <80% for >5 s) or bradycardic events (HR <55 bpm for >5 s) and time spent in cerebral hypoxia (rStO2<55%) and hyperoxia (rStO2>85%). Mean (SD) rStO2 was lower during SSC compared with incubator care: 73.6 (6.0)% vs 74.8 (4.6)%, mean difference (95% CI) 1.3 (2.2 to 0.4)%. HR was 5 bpm higher. SpO2 1% lower and time in quiet sleep 24% longer during SSC. Little evidence of a difference was observed in temperature. The number of hypoxic or bradycardic events as well as the proportion of time spent in cerebral hypoxia and hyperoxia was very low in both periods. Mean rStO2 was marginally lower during SSC without observed differences in hypoxic or bradycardic events but an increase in time spent in quiet sleep. PT, quasi-experimental comparison between preKC and KC periods on cerebral oxygenation, HR, SaO2, hypoxia, bradycardia, temperature. Quiet sleep duration,cerebral hypoxia, cerebral hyperoxia, infant stress. Not on charts 9-4-2017

STUDY PER SE, only mentions KC as a possible future study. Inths study they found that late preterm infants lose less body heat with an immersion tub bath than with a sponge bath (Tub bath went from 98.76 ten mins before bath to 98.32 ten mins after bath and then 98.60 at 30 mins after bath; sponge bath was 98.79 to 98.16 to 98.41) nd then on page 178 it says “A future study on bathing the late preterm infant could incorporate measures of maternal/infant interaction during the bathing experience. Another intervention, which is significant for temperature regulation, is skin-to-skin positioning of the infant on the mother. Because skin-to-skin care in term and preterm infant is an accepted method of providing an external heat source, a future study might also examine this practice as a variable for enhancing thermoregulation in late preterm infants following the initial bath.” Late PT, bathing, temperature, Not on charts because not a KC study


Louis, D., Kumar, P., & Gupta, A. (2013). Knowledge and practices of healthcare providers about essential newborn care and resuscitation in a district of Haryana. J Indian Med Assoc. 2013 Feb;111(2):114-7. In India, institutionalisation of deliveries is happening at a fast pace. Evaluating the knowledge and practices of healthcare providers in these institutions is a priority in this current scenario. The objective of this study was to assess the knowledge and practices regarding essential newborn care and resuscitation among healthcare providers in Panchkula district of Haryana. A cross-sectional questionnaire based survey of healthcare personnel working in one district hospital, 2 community health centres, 5 primary health centres and 2 subcentres, each with at least 100 deliveries per year, was done. Fifty-eight medical personnel comprising of 27 staff nurses, 11 auxiliary nurse midwives, 15 doctors and 5 multipurpose health workers were interviewed. Of them, 33 (57%) had received training in newborn care, but only 9 (16%) knew all the initial steps of resuscitation. Twenty-eight (48%) had knowledge of positive pressure ventilation while 8 (13%) could provide chest compression or drugs during resuscitation. Thirty-three (57%) practiced holding the baby upside down after delivery. Early and exclusive breastfeeding including colostrum was advised by all. All practiced hand washing prior to delivery and kept the cord clean anddry. At least one danger sign was told to the mother at the time of discharge by 48 (83%). However, kangaroo mother care was rarely advised to mothers of preterm babies. It was found that majority of healthcare personnel had good awareness about breastfeeding and clean practices while conducting delivery. In contrast, knowledge about neonatal resuscitation and some aspects of essential newborn care was poor. FT, PT, 3rd World, descriptive, essential newborn care, birth KC. Not on Charts 9/13/2013

Lowson, K, Offer, C., Watson, J., McGuire B, & Renfrew, M.J. (2015-Mar). The economic benefits of increasing kangaroo skin-to-skin care and breastfeeding in neonatal units: analysis of a pragmatic intervention in clinical practice. International Breastfeeding Journal. 10:11 pages total. doi: 10.1186/s13006-015-0035-8 Author information York Health Economics Consortium, Enterprise House, University of York, York, YO10 5NQ UK. A number of significant recent research studies have used techniques of economic modelling to demonstrate the potential benefits of increasing breastfeeding rates in the UK overall, and specifically in neonatal care. This paper complements this growing body of evidence by presenting an economic analysis of data from an actual intervention, the 'Getting It Right From the Start' programme, which took place in the north of the UK during 2011-12, with the aim of increasing breastfeeding and kangaroo skin-to-skin care rates in neonatal units. 'Getting It Right from the Start' was a pragmatic, multifaceted programme of change delivered under the auspices of the regional Health Innovation and Education Cluster, of which 17 were established in the UK in 2010. It engaged with 18 neonatal units in two Neonatal Networks with the aim of increasing kangaroo skin-to-skin care and breastfeeding rates. As part of the evaluation of the programme, we conducted an economic study comparing the overall costs and benefits of the intervention. Overall, the economic analysis demonstrated that for every £1 invested in the intervention to increase kangaroo skin-to-skin care and breastfeeding rates, between £4.00 and £13.82 of benefit was generated. This was spread across different healthcare settings and the timescale for the realisation of benefits will vary. The increases in kangaroo skin-to-skin care generated the greatest cost savings, with potential cost savings ranging between £568,000 (minimum cost assumptions) to more than £2 m (maximum cost assumptions). Increases in breastfeeding associated with the project generated between £68,486 and £582,432. The majority of the cost savings generated were associated with reductions in cases of gastroenteritis and necrotising enterocolitis. This was one of the first economic evaluations of an actual intervention to increase breastfeeding and kangaroo skin-to-skin care in neonatal units. It complements the existing economic models by demonstrating that a real intervention in clinical practice was both cost effective as well as clinically beneficial. Future interventions with similar methodology should be supported and considered likely to generate significant cost savings compared to outlay. Economic evaluation should be more frequently included in studies of practical interventions in clinical settings to increase breastfeeding. PT, NICU, Evaluative Cost Analysis, KC, BF, New to biblio study. Not on charts

dating back to 750BCE, showed few mothers and newborns in the early societies participated in immediate KC due to almost universal practice of immediate infant bathing. Although KC was rare, 98% of the societies encouraged extended contact, with mother and baby resting together for a week or more after birth. The phenomenon of close maternal infant contact after birth and for many weeks is universal and is seen in many mammal species (Vetulani J. 2013. Early maternal separation; A RODENT model of depression and a prevailing human condition. Pharmacology Reports, 65: 1451-1361). Review, bonding, birth KC, separation. Not on charts

Lu, H., Li, H., Ma, S., Xia, L., & Christenson, K. (2011). Perceived family perceptions of breastfeeding and Chinese new mothers’ breastfeeding behaviors. Sexual and Reproductive Healthcare. 2(4), 143-147. This is a descriptive study of 200 Chinese mothers who returned a questionnaires about their breastfeeding perceptions and behaviors when their infants were 4 months old. Inadequate milk supply was the most common reason given for stopping BF, and most had positive family perception and support for BF; all were first time moms with out previous BF experience because of China’s “one family, one child” rule. Moms who breastfed reported stronger family support than mothers who used mixed feedings or artificial feeding. On page 146 it says “Although Baby Friendly Hospital Initiative is strongly recommended to hospitals, it is true that actual measures are not conducted probably due to lack of strict supervisions and evaluation, as well as qualified health staff. For example, midwives just told mothers to have skin-to-skin with their babies and breastfeed their babies within one hour of birth rather than strongly encouraging and helping them.” Also the high cesarean rate contributed to delay of breastfeeding initiation. China has highest c/s rate in Asia (46.2%), because mothers like to choose a “good” day for the birth of the baby (Pg. 146). Descriptive, not about KC, just referral to Birth KC and BF.

Ludington, S. (2012). Early Early skin contact in cesarean section birth. Practical experiences and aspects of continuous mother-child skin contact during cesarean section and the first hours of life/. Kinderkrankenschwestern. 31(4):154-8. FT, Birth KC, Cesarean. This is a german report of how well KC beginning within two minutes of cesarean birth and continuing throughout post-op recovery is working in Germany. Breastfeeding and maternal attachment are enhanced with KC. FT, Birth KC, Cesarean section, BF, Attachment.

Ludington, S.M. (1990). Energy conservation during skin-to-skin contact between preterm infants and their mothers. Heart and Lung, 19(5 Pt1), 445-451. Descriptive of 8 healthy, stable preterm infants given one 3 hr session of KC to compare to comparable sessions undisturbed in an incubator before (pretest) and after (posttest) KC. Reports HR and behavioral state (ABSS) during pretest, test, and posttest periods. Quiet sleep increased, activity level decreased during KC. Longer QS in KC than in incubator. HR increased with increasing activity (increasing level of behavioral state) but stayed within clinically acceptable limits and increase was not statistically significant (148 in pretest to 156 in KC). The states that were measured were quiet regular sleep, quiet irregular sleep, active sleep, very active sleep, drowsy, quiet alert, quite awake, active awake, very active awake, fussy, cry, hard cry (ABSS or Anderson Behavioral State Scoring System). The effects of skin-to-skin contact on three indexes of energy expenditure: heart rate, activity level, and behavioral state, were examined in a pilot study. It was hypothesized that skin-to-skin contact, because of its soothing effects, would increase sleep, lower activity level, and reduce heart rate. Eight healthy preterm infants in a neonatal intensive care unit, who had reached 34 to 36 weeks gestation, experienced one session of skin-to-skin contact for an interfeeding interval. Observations were made once each minute using continuous videotape throughout three consecutive interfering intervals (before, during, and after skin-to-skin contact). Significant treatment effects were found by repeated-measures analysis of variance for behavioral state and activity level; pair-wise comparisons showed that quiet sleep frequency was significantly increased and activity level reduced during skin-to-skin contact. Infants had longer durations of quiet sleep during skin-to-skin contact. The Pearson product-moment correlation between heart rate and behavioral state was robust and generally linear, supporting use of heart rate as a measure of energy expenditure in these subjects. The findings suggest that skin-to-skin contact is a simple, cost-effective intervention that reduces activity and state-related energy expenditure. PT, Descriptive, HR, abdominal temperature. Behav state, quiet sleep, activity. ADD DATA ON TEMP RESULTS


Ludington, S.M. (2003). Preterm skin contact effects on electrophysiologic sleep. Abstract # 354, pg. 192 of Research ShowCASE, CWRU. April 4, 2003, Cleveland, OH. Randomized controlled trial of 1st 8 subjects, cycling of sleep during KC is evident, but not prior to KC and not for two days before KC. RCT, PT, sleep, sleep cycles.

Ludington, S.M. (2003). Father-Infant Bonding: Susan Ludington. USA Today. Talk Today. Available from http://www.usatoday.com/community/chat_03/2003/06-13/ludington.htm. Accessed 4/26/2011. This is a report of questions and answers related to fathering and how Kangaroo Care can help. Dr. Ludington relates that any kind of contact between infant and father benefits father-infant attachment, that daddies should hold the infant after maternal breastfeeding so infants get into a good sleep, that daddies have been kangarooing for centuries, babies sleep well on fathers (based on 1992 publication), that babies are reassured by father’s scent and

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that more information can be obtained from www.jjpi.com. MEDIA. Paternal KC, BF, development, sleep. NOT ON CHARTS YET 5/2/2011.


Ludington-Hoe, S.M. (2011a). Evidence-based review of physiologic effects of Kangaroo Care. *Current Women's Health Reviews*, 7(3), 243-253. A comprehensive review of the evidence documenting preterm infant physiologic responses to Kangaroo Care (intermittent skin-to-skin contact) and Kangaroo Mother Care (24/7 skin-to-skin contact) has been conducted. Kangaroo Care’s effects on preterm infant heart rate, bradycardia, respiratory rate, apnea, oxygen saturation, cerebral oxygenation, supplemental oxygen needs, oxygen consumption, desaturation episodes, temperature, rewarming, blood glucose, serum bilirubin, cholecystokinin, gastrin, somatostatin, weight gain or change, sleep and crying, brain maturation, brain complexity, infection, stress, and pain are reviewed as are KC’s effects with congenital heart defect infants. Documented effects of Kangaroo Care on prevention and amelioration of maternal depression, swifter delivery of the placenta and involution, and decreased likelihood of postpartal anaemia are presented. Guidelines based on dosage (duration and frequency) of KC are provided , as is a summary of actual and potential benefits of Kangaroo Care, including use at end-of-life with an explanation for the revival from death of a 27 week preterm infant that occurred August 30, 2010. Kangaroo Care’s role in moving to the new paradigms of non-separation of the infant and mother during hospitalization and parents as primary providers of neonatal care rather than health staff concludes the manuscript. Review, PT (has a few refs to full term studies), separation, pain, parents as primary providers, benefits, neonatal abstinence syndrome, congenital heart defects, compassionate care/end of life, micropreemie KC

Ludington-Hoe, S.M. (2011b). Thirty years of Kangaroo care science and practice. *Neonatal Network*, 30(5), 357-362. This review article, starting with a correction that KC has been around for 41 years, not 30 as asked for to celebrate the 30th anniversary of Neonatal Network Journal, reflects on the evolution of KC, progress made in establishing the evidence base for Kangaroo care and how the practice of KC has progressed. Table 1 (pg. 359,360) provides a summary of the effects of KC on preterm and full term infants and their parents and the article concludes with 9 goals for the future which will guarantee optimal KC practice if achieved. The goals are 1) KC begins immediately after birth for healthy infants and as swiftly as possible thereafter for infants needing resuscitation. 2) All neonates experience KC, ideally 24/7 KC or as near to that as possible, 3) Swaddled holding is replaced by KC holding. 4) Infant is in KC for sleep, feedings, periods of alertness, and for procedural pain and recovery from pain experiences. 5) Education content on KC and KC at birth and beyond is in every nursing, obstetric, and pediatric (especially neonatal) text to promote routine KC in the next generation of healthcare providers, 6) Neonatal, newborn, obstetric orientation programs include routine KC, 7) Routine KC practice is part of the health professional’s performance review. 8) Position statements from professional associations endorse routine use of KC for all infants, and 9) KC continues throughout hospitalization and the first three months post-discharge. Time to move to new paradigm of Parents as Primary Providers. Review, FT, PT, pain, benefits, goals, Parents as Primary Providers. Not on Charts as of 7/21/2011.


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Sao2 and finally by RR. All changes remained within clinically acceptable ranges, and KC had statistically significant effect on

PT, FT, Review, stress, pain, sleep, BF. Not on Charts 2/2/2016

Ludington-Hoe, S.M. & Abouelfettoh, A. (2015-Aug). Can Kangaroo Care help newborns with Neonatal Abstinence Syndrome? Case reports. Clinical Nursing Studies 3(4), 44-52 (DB). One infant who had Finnegane Severity of NAS Score >8 had no change with one hour of KC, but another infant who had Finnegane Scores of 11.12, and 14 prior to KC, had scores drop to 2, 3, or 4, within one hour of onset of KC and the scores stayed in the 2-4 range during 7-11 hours of continuous KC over 3 days. When KC ended, Finnegane scores rose to >10. PT, Case study, NAS. Not on charts as of 5/31/2015


Reports that infants kept in KC for first 6 hours after birth did well, were discharged at 48 hours postbirth without need for NICU admission. No respiratory distress. Descriptive, preterm, Very Early KC, HR, RR, temperature, state, BIRTH KC


Ludington-Hoe, S.M., Anderson, G.C., Swinth, J.Y., Thompson, C., & Hadeed, A.J. (2004). Randomized controlled trial of Kangaroo Care: Cardiorespiratory and thermal effects on healthy preterm infants. Neonatal Network, 23(3), 39-48. 24 healthy preterms 33-35 weeks gestation given 3 hours KC in randomized pretest-postest design. KC (11) vs. control (13) in open air crib. All measures were taken each minute and means remained in normal clinical range showing safety. HR approached tachy and brady in pretest and posttest period, but not in KC. HR rose 8 bpm in KC and was significantly higher in KC than in control. (More stable physiology in KC). RR no sig change. Mean Sao2 dropped 1.0% in KC (significantly dropped). Apnea, brady, and periodic breathing recorded continuously on pneumogram and no apnea/brady occurred during KC. Only one KC infant had one episode of PB during KC and many controls had lots of PB in all periods. Significantly less PB in KC and between groups. More regular breathing in KC during KC period than in control group. Abdominal temp rose significantly (almost 1.0C) in KC and then dropped .05C in postKC. PT, RCT, HR, RR, Sao2, abd.temp, apnea, brady, periodic breathing


Ludington-Hoe, S.M., & Dorsey, S.G. (1998). Meta-analysis of Kangaroo Care Effects. J. Investigative Medicine 46 (1): p. 175A. Meta-analysis of pretest-postest-studies and randomized controlled trials with pretest-postest data were included. HR, RR, Sao2, and Temp results showing that temperature increased across all the studies. 161 subjects and 8 randomized controlled trials were included in the meta-analysis. Effect sizes were homogenous (Q = 2.43, p >0.05). Weighted effects sizes for preKC vs KC was 0.11, Confidence interval = 0.01-0.22, and p >0.05. Weighted mean effect size for HR was 0.35 (CI = 0.33-0.38, Q = 4.03, p>0.05), showing that HR increased during KC; RR weighted mean effect size was 0.10 (CI=0.07-0.13; Q=0.31, p>0.05) showing a very slight increase, Sao2 weighted mean effect size was 0.21(CI=0.19-0.24; Q=1.60, p>0.05), and skin temperature increased by almost as much as heart rate (weighted mean effect size was -0.31, CI = 0.33-0.28, Q=7.02, p<0.05). The greatest increase was in temperature followed by heart rate than then Sao2 and finally by RR. All changes remained within clinically acceptable ranges, and KC had statistically significant effect on KCBib 2018
all variable. All rose in relation to KC as compared to undisturbed in an incubator. Duration of KC was not considered. Pretest-posttest studies were not considered either, had to be randomized controlled trials. PT, meta-analysis, HR, RR, SaO2, SkinTemp.

Ludington-Hoe SM, & Engler A. (1999). Kangaroo Care Congress Report. Neonatal Network, 18(40), 55-56. This is a report of all the meetings at the First US Congress of Kangaroo Care held in October 1998 in Baltimore, WA. A lady who cares for baby kangaroos when their mothers have been killed came to give the dinner speech and there are many similarities between real kangaroos and premature infants who are kangarooed. Dr. Humberto Rey presented the data on infants having transient respiratory distress and cared for in KC for the first six hours post-birth. Dr. Dieter Sontheimer reported the use of KC to prevent intubation in Germany and how the doctors there carry the babies in KC as they make rounds if mothers are not available. PT, review of presentations: respiratory distress, Birth KC for preterms.


Ludington-Hoe, S.M., Hadeed, A.J., & Anderson, G.C. (1991). Physiologic responses to skin-to-skin contact in hospitalized premature infants. Journal of Perinatology, 11(1), 19-24. 12 infants from 34-36 weeks studied. HR increased by 9 bpm (145 in pretest, 155 in KC, 148.9 in posttest), RR did not change significantly, nor did SaO2 from pretest to test. Skin temp went from 36.1 to 36.9 to 36.5 and rectal temps went from 36.6 to 37.2 to 36.7. Skin and rectal temps showed statistically significant increase during KC as compared to pretest and to posttest values but remained within clinical acceptable limits. Quasi-Exp, Pretest-test-posttest, PT, HR, RR, temperature, oxygenation, SaO2, Apnea. Not an RCT.


Ludington-Hoe, S.M., Hashemi, M.S., Argote, L.A., Medellin, G., & Rey, H. (1992). Selected physiologic measures and behavior during paternal skin contact with Colombian preterm infants. Journal of Developmental Physiology, 18(5), 223-232. Descriptive study of 11 preterms who got 2 hours of PKC immediately after breastfeeding by mom within the first 17 hours post-birth after neonatologist attending the delivery determined the preterm did not have to go to the NICU for care and could stay with mother in KC on the post-partum ward, so these preterms (Mean gest= 35.81 SD=0.77 weeks at time of testing) were healthy preterms at birth with mean APGARS at 1;0. All three temps (below right costal margin, and tympanic & rectal) went from 36.6 to 37.2 to 36.7. Skin and rectal temps showed statistically significant increase during KC as compared to undisturbed in an incubator. APGARS at 1;0. All rose in relation to KC as compared to undisturbed in an incubator. Duration of KC was not considered. Pretest-posttest studies were not considered either, had to be randomized controlled trials. PT, meta-analysis, HR, RR, SaO2, SkinTemp.

Ludington-Hoe, S.M., Hosseini, R.B. & Torowicz D.L. (2005). Skin-to-skin contact (Kangaroo Care) analgesia for preterm infant heel stick. AACN Clinical Issues, 16(3), 373-387. 23 preterms about 32 weeks PCA received 3 hrs of KC and heelstick in KC and 3 hours in incubator with heel stick in incubator—all on one day. Heel stick was for dextrostick. HR rose significantly less in KC heelstick than in incubator heelstick. Crying length was significantly less in KC heelstick (5.0 sec vs. 45 seconds) and three infants did not cry at all! 15 minutes of KC baseline state and post-heal stick state showed significantly more time in deep sleep than when in incubator. No differences in RR, oxygen saturation between groups and periods. Experimental cross-over, PT, HR, RR, SaO2, crying time, behavioral state, pain, sleep.
Ludington-Hoe, S.M., Johnson, M., Morgan, K., Lewis, T., Gutman, J., Wilson, D., & Scher, M.S. (2006). Neurophysiologic assessment of neonatal sleep: preliminary results of a randomized controlled trial of skin contact with preterm infants. *Pediatrics, 112*, e909-e923. 28 preterms (at32 wks +/- 7 days) were tested for sleep in pretest (in hooded incubator, undisturbed, from one feeding to next ~2-3 hrs duration) and then in test (for KC group this was in KC at bedside in lounge chair; controls remained in incubator for interfering interval). Sleep, sound, and light measured by EEG. Arousal from active sleep and quiet sleep were lower in KC over entire study period and during test-pretest matched segments of quiet and active sleep. Rapid eye movements, and indeterminate sleep were lower in SSC and active sleep segments. When high lighting was removed from regression analysis, quiet sleep increased during SSC. Sleep patterns during SSC are analogous to more mature sleep organization. **RCT, PT, Sleep, arousals, transitions**

Ludington-Hoe, S.M., Johnson, M.W., Morgan, K., Lewis, T., Gutman, J., Wilson, D., & Scher, M.S. (2018??) Randomized controlled trial of Skintoskin contact (Kangaroo Care) effects on infant sleep. Early Human Dev in press. 90 complete data sets of pretest (incubator) and test (KC or in incubator if in control group) EEG/polysomnographic data of 2-3 hours interfingering intervals of sleep. Sig. Fewer arousals in SSC than incubator and in quiet sleep and active sleep segments in SSC than in controls, and fewer REMS in active sleep in SSC, increase (4.5 breaths) HR and increased RR (9 breaths per minute) in SSC than controls. No diff in quantity of sleep, but in quality. No diff in # of state transitions, % time in indeterminate sleep, active and quiet sleep, SAO2, but respiratory and cardiac stability (sig. Decreased standard deviation) was present in SSC group. All SSC changes were sameas seen in better sleep organization and suggest brain maturation is occurring during SSC. SSC sleep is better than incubator sleep. **RCT, PT, Sleep, arousals, HR, RR, SaO2, stability**


Ludington-Hoe, S.M., & Morgan, K.L. (2013). Kangaroo Care in the NICU: Part 1. Understanding the Impact of Kangaroo Care on Neonatal Vital Signs, pgs. 1-21. White Plains, NY: March of Dimes. Available to read for free on March of Dimes website, [www.marchofdimes.com/catalog](http://www.marchofdimes.com/catalog). This article is listed on page 46 of the March of Dimes 2014Product Catalog, is free to read, and yields 3.1 contacthours for completing it through 11/30/16 and says “Presents clinical scenarios related to kangaroo care that require critical thinking and clinical expertise to assess. Provides evidence-based rational and biobehavioral mechanisms of Kangaroo Care that support practice decisions, along with directions for applying the knowledge gained from the clinical scenarios.” Part 2 is under first author Morgan, K. & Ludington-Hoe, S.M. 2014. In part 1, we relate origins of KC and national and Canadian recommendations for KC practice and in Table 1 (pg. 2) a list of the benefits of KC to preterm infants. It also has a section on the Bogota Declaration and the Humane Neonatal Care Initiative (pg. 3). Scenario 1 is about variable HR (pg.3), #2 is about low RR (pg.4), #3 is about apneas/bradycardias (pg.5-6), #4 is about potential hypothermia during KC in ELBW infant (pg.7), #5 is about how brain matures during KC in ELBW infant (pg.7), #6 is about respiratory and cardiac stability (pg.6), #7 is about oxygen saturation (pg.11), and #8 is about physiologic stability (pg.11-12). On pg 13 begins the section on what to do now (1=) Stay current with Kangaroo Care research findings; 2= Change the attitude of your NICU staff about KC from “a nice thing to do” to something that is “necessary to maximize development” of the preterm infant.3= Use KC more often, for more hours, with more families. Developing a consistent culture of KC: 4= Try innovative and unique applications or KC; 5= Recognize that KC can and will help promote exclusive breast milk feeds; 6= Administer KC safely with good positioning and monitoring as needed) and then there is the TOXICC mnemonic (T=take away, O= Other place, X=anxiety is produced, E needs to be IN touch, C=chest to chest, please). **PT, review, and directions for future. TOXICC mnemonic is in here, separation, parents as primary providers, NOToncharts 2/12/2014**

Box 2: Components of Safe Positioning for the Newborn While Skin-to-Skin

1. Infant’s face can be seen
2. Infant’s head is in “sniffing” position
3. Infant’s nose and mouth are not covered
4. Infant’s head is turned to one side
5. Infant’s neck is straight, not bent
6. Infant’s shoulders and chest face mother
7. Infant’s legs are flexed
8. Infant’s back is covered with blankets
9. Mother-infant dyad is monitored continuously by staff in the delivery environment and regularly on the postpartum unit
10. When mother wants to sleep, infant is placed in bassinet or with another support person who is awake and alert


Ludington-Hoe SM, Morgan K, & Abouelfettoh A. (2008). National evidence-based guidelines for Kangaroo Care with preterm infants ≥30 weeks postmenstrual age. Advances in Neonatal Care 8 (3 Suppl): S3-S23. A review article of the evidence of KC on physiologic (cardiovascular – HR, blood pressure, bradycardia), respiratory –RR, apnea, tachypnea, periodic breathing, desaturation events, S/Ao2 - temperature – hypo & hyper thermia, rewarming – pain and brain maturation), behavioral (crying, state, breastfeeding), and psychosocial (maternal feelings, maternal-infant interaction, paternal attachment, recovery from maternal stress) effects of KC. A sample protocol is included as is a Readiness for Kangaroo Care assessment guide that assesses infant, parent, staff, and institutional readiness for KC. Guidelines for monitoring and documenting the KC sessions are provided. Review, FT, guidelines, protocol, readiness for KC, pain, sleep

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Ludington-Hoe, S.M., Nguyen, N, Swithin, J., & Satyshur, R. (2009). Kangaroo Care compared to incubators in maintaining body warmth in preterm infants. *Biologic Research for Nursing, 2(1)*, 60-73. RCT. 16 KC and 13 control infants in a protest (in incubator)-test (in KC or incubator)-posttest (in incubator) design of three consecutive 3-hour interfering intervals were given 3 hrs of KC. Abdominal temperatures were not different between periods and groups; toe temp was sig higher during KC than incubator periods; Maternal breast temp met neutral thermal zone within 5 minutes of onset of KC. Similar preterm infants can maintain body warmth with 3 hrs of KC. Temperature synchrony appears possible. Preterm, RCT, Abdominal temp, toe temp, breast temp, stability, temp synchrony.

Ludington-Hoe, S.M., & Swithin, J. (2001). Kangaroo mother care during Phototherapy: Effect on bilirubin profile. *Neonatal Network, 20(5)*. 41-48. Randomized controlled trail of 3 groups of infants with 10 in each group and all had physiologic jaundice (no one had hemolysis associated jaundice): one with 1 hour of KC per day with bibblanket over back, one with bibblanket and under lights without KC and one with KC alone. No significant differences in bilirubin reduction over 4 days and no difference in rebound. RCT, PT, Bilirubin.


Ludington-Hoe, S.M, & Wagner, N. (2013). Can KC help infants with neonatal abstinence syndrome? Advances in Neonatal Care, January 2013; 118. 2 Case studies are reported in which one hour of KC did not help one infant with NAS scores >8 and then did help another infant when the mother did 8-11 hours of continuous KC at night for 3 nights. During KC the Finnegan scores were 2, 3, or 4, and went up and passed 8 within one hour of cessation of KC. Case results support definitive testing. PT, Case study, Neonatal abstinence scores. Not on Charts 11/3/2012

Lambanera, S.N. (2016-Sept). Influence of maternal factors on the successful outcome of kangaroo mother care in low birth-weight infants: A randomized controlled trial. *J Neonatal Perinatal Med. 9(4):385-392, doi: 10.3233/NPM-161628*. Kangaroo mother care (KMC) is associated with positive neonatal outcomes. Studies demonstrated significant influence of maternal factors on the success of applying KMC. Purpose was to determine maternal factors that influence on anthropometric parameters in low birth weight babies that received kangaroo mother care in a randomized controlled study. We randomly assigned newborns into two groups; a group who received KMC and a group who received conventional (incubator based) care. Maternal factors were recorded. We followed weight, length, and head circumferences of newborns for thirty days. A total of 40 newborns were included. Weight parameters were significantly higher in the KMC group than the conventional group. From maternal characteristics, only gestational age was found to influence increased head circumference in KMC group (p=0.035); however, it did not affect the increase in weight or length. Maternal age, parity, education, mode of delivery, fetal sex, and initial Apgar score did not influence growth parameters in either groups. KMC was associated with increased weight gain in LBW infants. Gestational age influences head growth in infants who received KMC. PT, LBW, RCT, weight gain, length, head circumference. Duration of KMC = 30 days.

Lundberg, G.D. (2009). Skin-to-skin contact provides analgesia to neonates. *Medscape Journal of Medicine, 1(1): 8 “This is the Medscape Medical Minute. I’m Dr. George Lundberg. Neonates experience pain. Interventions may be pharmacologic or non-pharmacologic. Three investigators (Friere, Garcia and Lamy, 2008) in Brazil report in the journal Pain in 2008[1] on a randomized, controlled, single-blind trial of 95 preterm neonates of postmenstrual age of 28 to 36 weeks. The painful event was lancing of the heel. Pain measurement was by heart rate change, oxygen saturation, and observed facial activity. Group 1 received no anesthesia; group 2 was held skin-to-skin for 10 minutes before and during the lancing; group 3 was given oral glucose 2 minutes prior to lancing. Group 2, the skin-to-skin group, demonstrated significantly less objective evidence of pain than either group 1 or 3. Conclusion: skin-to-skin contact provides analgesia to neonates.”

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contact exerts an analgesic effect in neonates. This article is selected from Medscape Best Evidence. [2] Dr. George Lundberg” Pain, Review article


Luong K. C. (2006) presentation at Cleveland KMC Workshop and at Quebec KMC workshop. Get and add to bib... preterm infants who received KC + daily massage during hospitalization had better growth and motor activity at 40 weeks and 6 months corrected age than KC alone. PT, growth, motor dev. Nils Bergman did this study with her

Luong, K. C., Nguyen, T.L., Thi, D.H. H., Carrara, H.P.O., & Bergman, N. (2015). Newly born low birthweight infants stabilize better in skin-to-skin contact than when separated from their mothers: a randomized controlled trial. Acta Paediatrica, 105(4), 329-344 or e1432-e180. Doi: 10.1111/apa.13164. Routine care of low birthweight (LBW) neonates relies on incubators for stabilisation. An earlier study suggested that skin-to-skin contact achieves better physiological stability in the transition period when compared to incubator care.(Referring to Bergman et al., 2004). The aim of this study was to replicate that study with a larger sample. A randomised controlled trial with LBW infants (1500-2500 g) randomised at birth, 50 to routine care and 50 to skin-to-skin contact, with stabilisation using the Stability of Cardio-Respiratory system In Preterms (SCRIP) score measured repeatedly over the first six hours of life as the primary outcome. Newly born infants in skin-to-skin contact showed better transition to extra-uterine life (p < 0.02), with the SCRIP score at 360 minutes in skin-to-skin contact being 5.82 (SD 0.66) and in maternal infant separation 5.24 (SD 0.72), p < 0.0001. In extended skin-to-skin contact care, infants had significantly less need for respiratory support, intravenous fluids and antibiotic use during the remainder of the hospital stay. Skin-to-skin contact was likely to be an optimal environment for neonates without life-threatening conditions who weighed 1500-2500 g at birth. Table 5 on page 337 reports the following clinical outcomes: SCRIP at 120 and 360 minutes post-birth as 5.66 and 5.82 in KC, 4.72 an 5.25 in Controls respectively; SCRIP HR at 120 and 360 minutes in KC = 1.86 and 1.88; SCRIP HR in controls at 120 and 360 mins= 1.46 and 148; SCRIP RR at 120 and 360 mins in KC=1.80 and 1.94 and in controls Scirp RR=1.26 &1.76. SCRIP sits were 2 at both time for both groups. SRIL (late preterm) scores at 120 and 360 mins were 5.50 & 5.72 in KC & 4.50 & 4.82 in controls. Hypothermia (<36.5) at 180 & 360 mins in KC were1/50 and 0/50; in controls there were 35/50 and 30/50 respectively. Median BL glucose at 180 and 360 mins in KC = 62.0 and 73.0 and in controls =48.6 and 66.5; Hypoglycemia (<45mg %) @ 180 and 360 mins for KC = 2/50 and 0/50 and for controls = 12/50 and 2/50; # of infants with 02 cannual in first 6 hours was 6/50 for KC and 14/60 for controls; # with nasal CPAP in first 6 hours was 2500 KC and 3/50 controls; 1/50 infants in both groups required mechanical ventilation in first 2 hours; # of infants receiving IV fluids in first 6 hours was 5/50 KC and 21/50 controls; # of infants receiving IV fluids during admission was 6/50 KC and 24/50 controls; antibiotics were given during admission to 9/50 KC and 26/50 controls; median time of Breastfeeding initiation was 0.8 (R=0.00- 36.0) in KC and 48.0 (R=12.0- 72.0) in controls (do not know the measure and paper does not say), and median days in hospital (LOS) was 7.0 or KC (R= 0.0-20.0) and 8.0 for controls (R=2.0-22.0). SCRIP scores, SCRIP HR and SCRIP RR were significantly different in favor of KCers. Stability was achieved with KC within one hour. “Smaller and younger infants in skin to skin contact are considerably more stable than larger and older infants in maternal-infant separation” (pg. 8 or page 337 depending on the version of the article that you have). By preventing instability that requires subsequent medical treatment, it may be life-saving in low-income countries. PT, late preterms, RCT. Stability by SCRIP score, hypothermia, blood glucose, CPAP, mechanical ventilation, O2 cannula, IV fluids, Antibiotics (infection), BF time, length of stay (LOS), separation. Not on charts and New to Biblio study (3-2-2016)


Lutsch, N. (2009). Basic principles of promoting the development of premature and newborn infants. Kinderkrankenschwester, 28(7), 287. Review of developmental care practice in Germany and they say that Kangaroo Care is a basic principle of promoting development, as is non-separation. See also Kinderkrankenschwester, 2009, 28(11), 472-473 for commentary and author’s reply. PT, FT, separation., Not On Chats yet 11/2010

Lutter CK & Chaparro CM (2009). Neonatal period: linking best nutrition practices at birth to optimize maternal and infant health and survival. Food & Nutrition Bulletin 30(2 Suppl), S215-S224. Review. One purpose was to “examine evidence base for short and long term benefits to the newborn and/or mother from delayed umbilical cord clamping, immediate skin toskin contact, early initiation of BF and neonatal vitamin A supplementation.” (pg. S215). KC at birth is simple, safe, effective and should be implemented in all deliveries, with very few exceptions, and should be integrated with other standard life saving practices such as delayed cord clamping and initiation of breastfeeding within one hour of birth.” Says that Vitamin A supplementation in Asia is still controversial and provides evidence. “dissemination of the evidence base for the practice is necessary and should underlie all clinical practice, medical and nursing school curricula, and public health policy. The knowledge must be accompanied by training and practice in the skills necessary for implementation. Although the skills are not new nor highly technical, training and practice will be needed by many practitioners.

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The contained by the Coroner in two states (NSW and QLD). The newborn occurrence is a procedure performed several times daily during diaper change in preterm infants? Early Human Development, 90(4):169-172. doi: 10.1016/j.earlhumdev.2014.01.011 Available on line 2/16/2014 http://dx.doi.org/10.1016/j.earlhumdev.2014.01.011 Skin-to-skin contact reduces pain response in preterm infants subjected to minor painful procedures, such as heel lance. Diaper change is a procedure performed several times daily in hospitalized preterm infants. Routine care giving tasks such as diaper change may be stressful for the infant. The purpose of this study was to investigate whether diaper change induces stress and if skin-to-skin contact could reduce such stress, measured by changes in skin conductance.

Therefore, training materials that address HOW to deliver each practice and WHY each practice is important and answer concerns and questions related to implementation are essential.”(pg. S220) To increase the impact and coverage of the recommended practice, implementation must be coordinated with the efforts of already established global initiatives for improving maternal and neonatal health, like Saving Newborn Lives, Prevention of Postpartum Hemorrhage Initiative, and Partnership for Maternal, Newborn, and Child Health.” Pg. S220). “Ideally the mother aned newborn will stay together in the quiet of the delivery room in skin-to-skin contact for at least the first hour after birth. This setting provides the cocoonlike atmosphere that probably best fosters maternal-newborn bonding. It also avoids any disruption during the critical period when the newborn is alert and awake and is most likely to initiate breastfeeding with little or no assistance. The next best option is to initiate skin to skin contact in the delivery room and to cover the mother and infant while they are moved to the general maternity ward. All routine newborn procedures such as bathing, weighing, and clinical examinations should be delayed for at least the first hour.” (S220–S221). “In conclusion, delayed cord clamping, immediate skin-to-skin contact and early initiation of breastfeeding have been shown to be simple, safe, and effective for decreasing neonatal mortality, with benefits for maternal and child health going well beyond survival.” (Pg. S221).

Lutz K.F., Anderson, L.S., Riesch, S.K., Pradham, K.A., & Becker, P.T. (2009). Furthering the understanding of parent-child relationships: A nursing scholarship review series. Part 2: Grasping the early parenting experience – The insider view. J of Society of Pediatric Nurses, 14(4), 262-283. This is a systematic review of parent’s perspective of early parenting. KC is on page 268 inTable 1 listing Johnson 2007’s article on maternal experience of holding infants in KC in the NICU, and then on page 270 citing Neu’s 2002 about mother’s choice of KC or standard holding of healthy preterm infants “Five investigations studied specific aspects of parent infant interaction in the NICU –breastfeeding, and skin-to-skin or kangaroo holding (and she cites Neu, 1999,20004, Johnson 2007). Common themes that emerged included the parent child relationship as a process, vacillating emotions, the NICU as stressful environment, and influences of interpersonal relationships and interaction” (pg. 272) Page 274 it states “Neu (2004) discovered that mothers who switched form KC holding to blanket holding postdischarge experienced more anxiety about hold their fragile infant than those who continued KC holding at home. The main factor that influenced mothers who chose to use the Kangaroo hold both in the hospital and at home was the perceived benefit of close contact with the infant.” On Pg 281 in the box entitled “How do I apply this evidence to nursing practice?” it states “Thus, emphasis on providing instruction and guiding regarding routine infant caregiving activities like feeding, bathing, diapering, and Kangaroo Care, as well as providing information about infant growth and development continue to be important nursing interventions for new parents.” PT, systematic review, Maternal feelings, stress, interaction, NOT ON CHARTS YET

Lutz TL, Elliott EJ, Jeffery HE. (2016-Oct). Sudden unexplained early neonatal death or collapse: a national surveillance study. Pediatr Res. 80(4): 493–498. doi: 10.1038/pr.2016.110 Department of Public Health, University of Sydney, Sydney, Australia. The incidence of sudden unexplained early neonatal death (SUEND) or acute life-threatening events (ALTEs) is reported as 0.05/1,000 to 0.38/1,000 live births. There is currently no national system in Australia for reporting and investigating such cases. A 3-y prospective, national surveillance study, run in collaboration with the Australian Pediatric Surveillance Unit (APSU) was conducted. Data were provided by pediatricians reporting to APSU; and independently ascertained by the Coroner in two states (NSW and QLD) and the Newborn Early Transport Network in NSW. A detailed deidentified questionnaire was created. In NS and QLD, the incidence was 0.1 and 0.08/1,000 live births, respectively. 48 definitive cases were identified. Common causes included accidental asphyxia, cardiac disease, persistent pulmonary hypertension of the newborn, and sudden infant death syndrome. 26 babies collapsed on day 1 and 19 were found on the carer’s chest. The incidence in NSW and QLD is higher (THIS IS WRONG. THE INCIDENCE IS ONLY HIGHER IN NSW TERRITORY) than previously published and one publication they cited for incidence reported incidence as 0.38/1000 live births. The first postnatal day is a vulnerable period for newborns, who require close observation particularly during skin-to-skin contact. Development and implementation of guidelines for safe sleeping in hospital are needed. Collaboration between obstetricians, midwives, and pediatricians is essential to ensure safety of the newborn. FT, PT, SUPC, prospective survey. Not on charts 8-9-16. New to biblio study.


Lyngstad, L.T., Tandberg, B.S., Storm, H., Ekeberg, B.L., & Moen, A. (2014-April) Does skin-to-skin contact reduce stress during diaper change in preterm infants? Early Human Development, 90(4):169-172. doi: 10.1016/j.earlhumdev.2014.01.011 Available on line 2/16/2014 http://dx.doi.org/10.1016/j.earlhumdev.2014.01.011 Skin-to-skin contact reduces pain response in preterm infants subjected to minor painful procedures, such as heel lance. Diaper change is a procedure performed several times daily in hospitalized preterm infants. Routine care giving tasks such as diaper change may be stressful for the infant. The purpose of this study was to investigate whether diaper change induces stress and if skin-to-skin contact could reduce such stress, measured by changes in skin conductance. This was a randomized crossover pilot study in 19 preterm infants with gestational age between 28 and 34 weeks. The diaper change procedure was done twice in each infant, once during skin-to-skin contact, and once in incubator or bed with the mother present. During diaper change heart rate (HR), peripheral oxygen saturation (SpO2), and changes in skin conductance

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(SC) peaks per sec, using the Skin Conductance Algesimeter (SCA), were registered. The mean SC peaks/sec increased/decreased significantly under/after change of diapers which thereby underpins that this is a stressful procedure for the preterm infant. Skin-to-skin contact (SSC) entails significantly lower stress levels (p < 0.05) compared to diaper changed in an incubator/bed measured by the SCA. Diaper change is a stressful procedure for preterm infants and may be ameliorated by skin-to-skin contact, PT, randomized cross-over, maternal presence vs KC, stress, HR, SaO2, skin conductance, diaper change

Maastrup, R., Bojesen, S.N., Kronborg, H., & Hallstrom, I. (2012-Aug). Breastfeeding support in neonatal intensive care: A national survey. Journal of Human Lactation, 28(3):370-379. doi: 10.1177/0890334412440846 The incidence of breastfeeding of preterm infants is affected by the support provided at the hospital and in the neonatal intensive care unit (NICU). However, policies and guidelines promoting breastfeeding vary both nationally and internationally. Objective: The aim of this survey was to describe breastfeeding support in Danish NICUs, where approximately 98% of mothers initiate lactation. Methods: A national survey of all 19 Danish NICUs was conducted in 2009. Four NICUs were at designated Baby-Friendly hospitals, and 5 had a lactation consultant. In all NICUs, it was possible for some parents to stay overnight; 2 units had short restrictions on parents’ presence. Five NICUs had integrated postpartum care for mothers. Breastfeeding policies, written guidelines, and systematic breastfeeding training for the staff were common in most NICUs. Seventeen NICUs recommended starting breast milk expression within 6 hours after birth, and mothers were encouraged to double pump. Most NICUs aimed to initiate skin-to-skin contact the first time the parents were in the NICU, and daily skin-to-skin contact was estimated to last for 2-4 hours in 63% and 4-8 hours in 37% of the units. The use of bottle-feeding was restricted. Conclusions: The Danish NICUs described the support of breastfeeding as a high priority, which was reflected in the recommended policies for breast milk pumping, skin-to-skin contact, and the parents’ presence in the NICU, as well as in the restricted use of bottle-feeding. However, support varied between units, and not all units supported optimal breastfeeding. PT, descriptive, BF, duration of KC.

Maastrup, R., & Greisen, G. (2010). Extremely preterm infants tolerate skin-to-skin contact during the first weeks of life. Acta Paediatrica, 99(8), 1145-1149. doi: 10.1111/j.1651-2227.2010.01906.x 22 stable extremely preterm infants of mean GA of 25 weeks +4 days, mean postnatal age of 8 days, pmna 26 wks +6 days and were clinically stable, mean actual weight of 702g. Mean duration of KC was 98 min, 16 were kced by mom, five with father, one with older sister. No sig differences in mean skin temp (means for pretest-test-posttest were: 37.1-37.4, HR (M=160-160-161), RR M=47-47-48, SaO2=95-96-95; FiO2M=0.25-0.24-0.24; apneas requiring stimulation 12-5-6 before, during and after KC. One infant had to be removed from KC due to instability and in the other the mother wore a bra so they were retested the next day. While staying in normal range, mean skin temp rose 0.1 C during KC with mom, decreased 0.3 C during paternal KC. Clinically stable, extremely preterm infants can keep adequate skin temp and adequate physiologic stability during KC with parents. PT, prétest-test-posttest quasi experimental, paternal KC , surrogate KC, HR, RR, SaO2, FiO2, apneas, and temp, stability, micropreemie, Temp decreased during PATERNAL KC. NOT on CHARTS Yet.

Maastrup R., Hansen BM², Kronborg H¹, Bojesen SN¹, Hallum K¹, Frandsen A³, Kynnaebe A¹, Svarer P¹, Hallstrom I¹. (2014a-Feb). Factors associated with exclusive breastfeeding of preterm infants. Results from a prospective national cohort study. PLoS One. 2014 Feb 19;9(2):e89077. doi: 10.1371/journal.pone.0089077. eCollection 2014. This is a national Danish study of Breastfeeding in NICUs and has been followed by the next citation in the same year, 2014, thus this first pub is 2014a and the second pub (below) is 2014b. Evidence-based knowledge of how to guide the mothers of preterm infants in breastfeeding establishment is contradictory or sparse. The aim was to investigate the associations between pre-specified clinical practices for facilitating breastfeeding, and exclusive breastfeeding at discharge as well as adequate duration thereof. Page 3 states “Primary aim was to investigate the association between early initiation of skin to skin contact (in the first six hours postbirth) and the establishment of exclusive breastfeeding at discharge.” They also measured if mothers were ADMITTED to NICU WITH THEIR INFANTS DIRECTLY AFTER BIRTH. Mothers completed three questionnaires and questionnaire 2 had questions about mother’s perceived level of breastfeeding support. A prospective survey based on questionnaires was conducted with a Danish national cohort, comprised of 1,221 mothers and their 1,488 preterm infants with a gestational age of 24-36 weeks. Adjusted for covarates, the pre-specified clinical practices were analysed by multiple logistic regression analyses. On page 4 it says “Almost all (98%) of infants had skin to skin contact with the mother within the first week of life.” On page 5 it says that all variables (which would include early initiation of skin to skin contact), were associated with EXCLUSIVE BF at discharge but on page 7 it clearly states that “the timing of initiation of skin to skin contact did not show a significant association with breastfeeding. . . Skin to skin contact has previously been shown to be positively associated with breastfeeding preterm and non preterm infants (Hake-Brooks et al., 2008; Flacking et al., 2011; Ramamurthi et al., 2001; Moore et al., 2012) but only one study of preterm infants demonstrated that the initiation of continuous skin to skin contact before 24 hours postpartum was positively associated with EXCLUSIVE breastfeeding at six months of age (Peclhivani F, 2005 in Acta Paediatrica, 94(7), 928-934). Most of the infants in the present study had skin to skin contact during the NICU stay, and it seems that even if 42% of the mothers were not able to have early skin to skin contact with their preterm infants, this was not an essential barrier to the establishment of breastfeeding. On the other hand, it has previously been shown that it is possible to establish skin to skin contact even with extremely preterm infants (44) and although here is no evidence that this promotes breastfeeding, we of mothers were admitted to the NICU directly from delivery, and then “A Swedish study found that mothers separated from their newborn infants experienced emotional strain and anxiety; they KC Bib 2018
eCollection 2014 This survey reports many milestones in the progression towards EXCLUSIVE BREASTFEEDING in preterm infants and is important for Neo-BFHL Many preterm infants are not capable of exclusive breastfeeding from birth. To guide mothers in breastfeeding, it is important to know when preterm infants can initiate breastfeeding and progress. The aim was to analyse postmenstrual age (PMA) at breastfeeding milestones in different preterm gestational age (GA) groups, to describe rates of breastfeeding duration at pre-defined times, as well as analyse factors associated with PMA at the establishment of exclusive breastfeeding. The study was part of a prospective survey of a national Danish cohort of preterm infants based on questionnaires and structured telephone interviews, including 1,221 mothers and their 1,488 preterm infants with GA of 24-36 weeks. Of the preterm infants, 99% initiated breastfeeding and 68% were discharged exclusively breastfed. Breastfeeding milestones were generally reached at different PMAs for different GA groups, but preterm infants were able to initiate breastfeeding at early times, with some delay in infants less than GA 32 weeks. Very preterm infants had lowest mean PMA (35.5 weeks) at first complete breastfeed, and moderate preterm infants had lowest mean PMA at the establishment of exclusive breastfeeding (36.4 weeks). Admitting mothers to the NICU together with the infant and minimising the use of a pacifier during breastfeeding transition were associated with 1.9 (95% CI 1.1-3.0) vs. before six hours postpartum, and the use of nipple shields (OR 2.3 (95% CI 1.0-2.4)) and 24-48 hours (OR 1.8 (95% CI 1.0-3.1)) vs. before six hours postpartum, and the use of nipple shields (OR 1.4 (95% CI 1.1-1.9)). Early initiation of breast milk pumping before 12 hours postpartum may increase breastfeeding rates, and it seems that the use of nipple shields should be restricted. On page two it says “Skin to skin contact between preterm infant and its mother’s/parents has been shown to promote breastfeeding (15-18). However, the effect of timing of intermittent skin to skin contact has not been studied.” The use of test-weighing and minimizing the use of a pacifier may promote the establishment of exclusive breastfeeding, but more research is needed regarding adequate support to the mother when test-weighing is ceased, as more of these mothers ceased exclusive breastfeeding at an early stage after discharge. Descriptive, Exclusive BF, Micropreemies, Mother admitted to NICU, early initiation of KC. family centered NICU care, rooming in, nipple shields, expressing milk, NOT ON CHARTS. Jan. 7 2015
Early initiation of BF by preterm infant, duration of KC. Admit mother to NICU with infant directly after delivery, NOT ON CHARTS Jan. 7, 2015. Send to Spatz before Mar 2015 meeting.

MacDonald A. (2005). The pan-European approach to breastfeeding. Maternal & Child Nutrition 1, pp.121-122. This is a report of the goals of the Protection, Promotion and Support of Breastfeeding in Europe: A Blueprint for Action document that was published June 18, 2004. Though KC is not directly mentioned, under the goal of “Protection, promotion and support” it states on page 122 “…commitment to meeting best standard practices in all maternity and child care services; and clearly KC at birth is one of the best practices for initiating BF (See American association statements in bbb and European Commission Guidelines in this bbb)” FT, PT, BF, guidelines.

Macfarlane AJ1, Rocca-Ihenacho L2, Turner LR1 (2014, May). Survey of women's experiences of care in a new freestanding midwifery unit in an inner city area of London, England: 2. Specific aspects of care. Midwifery. 30(9):1009-1020. doi: 10.1016/j.midw.2014.05.008. pii: S0266-6147(14)00146-6. Purpose was to describe and compare women's experiences of specific aspects of maternity care before and after the opening of the Barkantine Birth Centre, a new freestanding midwifery unit in an inner city area. Telephone surveys undertaken in late pregnancy and about six weeks after birth. Two separate waves of interviews were conducted, Phase 1 before the birth centre opened and Phase 2 after it had opened. Tower Hamlets, a deprived inner city borough in east London, 2007-2010. 620 women who were resident in Tower Hamlets and who satisfied the Barts and the London Trust's eligibility criteria for using the birth centre. Of these, 259 women were recruited to Phase 1 and 361 to Phase 2. The replies women gave show marked differences between the model of care in the birth centre and that at the obstetric unit at the Royal London Hospital with respect to experiences of care and specific practices. Women who initially booked for birth centre care were more likely to attend antenatal classes and find them useful and were less likely to be induced. Women who started labour care at the birth centre at spontaneous labour were more likely to use non-pharmacological methods of pain relief, most notably water and less likely to use pethidine than women who started care at the hospital. They were more likely to be able to move around in labour and less likely to have their membranes ruptured or have continuous CTG. They were more likely to be told to push spontaneously when they needed to rather than under directed pushing and more likely to report that they had been able to choose their position for birth and deliver in places other than the bed, in contrast to the situation at the hospital. The majority of women who had a spontaneous onset of labour delivered vaginally, with 28.6 per cent of women at the birth centre but no one at the hospital delivering in water. Primiparous women who delivered at the birth centre were less likely to have an episiotomy. Most women who delivered at the birth centre reported that they had chosen whether or not to have a physiological third stage, whereas a worrying proportion at the hospital reported that they had not had a choice. A higher proportion of women at the birth centre reported skin to skin contact with their baby in the first two hours after birth. Significant differences were reported between the hospital and the birth centre in practices and information given to the women, with lower rates of intervention, more choice and significant differences in women's experiences. This case study of a single inner-city freestanding midwifery unit, linked to the Birthplace in England Research Programme, indicates that this model of care also leads to greater choice and a better experience for women who opted for it. Descriptive evaluative study. Full term, birthing center KC, birth KC. Not on charts 7/8/2014.

Magill-Evans J., Harrison MJ., Rempel G., & Slater L. (2006). Interventions with fathers of young children: systematic literature review. Journal of Advanced Nursing. 55(2), 248-264. A meta-analytic review of literature that includes Feldman et al.'s 2002 study (pp. 254 & 258). Authors conclude that though number of intervention studies is limited, if interventions involve active participation of the father with his own child, enhanced interactions with the child will result and fathers will have positive perception of child. More research is needed to determine effect of fathers interactions on child development. Review. FT, PT, Paternal KC, not KC study, just refers to one.

Magri, E.P., & Hylton-McGuire, K. (2013). Transforming a care delivery model to increase breastfeeding. MCN: American J. Maternal Child Nursing. 38(3), 177-184. FT. Quality improvement project using PDSA model to increase breastfeeding among 12 NY hospitals that joined together to call themselves the NY State Breastfeeding Quality Improvement in Hospitals Learning Collaborative. Doing the project increased exclusive breastfeeding from 6% to 44%. “Skin-to-skin contact and successful latch to the breast by the newborn during the first two hours after birth influence a mother’s ability to breastfeed successfully. The usual way so far has been to separate mothers and infants at one hour post birth (separation means not in the same room in this article, babies were in the DR with MOM and they called this non-separation), transfer baby to nursery for transition care, resulting in separation of mother and infant for > hours on average and now they transfer mom and baby together to postpartum room and both are admitted there together. The changes they decided they had to make were: 1) establish birth KC in all births including formula fed babies, 2) increase time spent in mom’s rooms 3) reassign nursery RNs to LD to assist in care of newborn. First thing they did was educate staff about birth KC. OBatining birthweight was big BARRIER because needed this for admission and to generate the medical record needed (pg. 179). They worked with admissions Dept and medical records so that admission did hot have to be based on weight and they could take weight later. Mothers were taught about birth KC upon admission to labor, did well, staff acclimated quickly and spread it to cesarean section mothers too – all within one month! Newborn admit orders were changed and a separate MD order for formula now has to be written. They stopped taking babies to nursery at night and only did this if mother specifically asked for it. L/D nurses were eager to separate the mother and infant by sending the baby to the

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transition nursery. Instead, the reassigned nursery nurses to LD – this change was the most challenging as it took 6 months to educate nurses, and complete the change. **Infants were then transferred in their mother’s arm to postpartum (pg. 181).** By month 24 after beginning the changes, birth KC, or putting babies in KC within one hour of birth for NSVD and within 2 hours for CS reached 90% and has been sustained (pg. 181). Staff completed the Ten Steps to Successful Breastfeeding On-Line Course. **FT, Quality improvement, implementation, BF, EXCLUSIVE BF, barriers.**

Maguire D. (2014-sept). Care of the infant with neonatal abstinence syndrome: strength of the evidence. J Perinat Neonatal Nurs. 28(3):204-11. doi: 10.1097/JPN.0000000000000042. There is little empirical evidence that guides management of infants with neonatal abstinence syndrome. The standard of care first described in the 1970s is still prevalent today, although it has never been tested in this population. Standard of care interventions include decreasing external stimulation, holding, nonnutritive sucking, swaddling, pressure/rubbing, and rocking. These interventions meet the goals of nonpharmacologic interventions, which are to facilitate parental attachment and decrease external stimuli. Many nursing interventions used in infants with neonatal abstinence syndrome have been tested in low-birth-weight infants, whose treatment often includes the same goals. Those interventions include music therapy, **kangaroo care**, massage, and use of nonososcillating water beds. Nursing attitude has also been shown to be impactful on parental attachment. So, on page 205 she relates “The author implemented skin to skin care for one hour after feedings in newborn infants with NAS to promote infant comfort and sleep, based on the neurobehavorial characteristics of preterm infants, and reported improvement in continuous quiet sleep (Hiles, 2011). The intervention not only enabled the infants to sleep better, the mothers felt good about their unique contribution to provide the intimate contact that comforted their infants exhibiting signs of withdrawal. Kangaroo care has been found to be safe and effective in many studies of low birth weight infants, with results including decreasing length of stay and improving measures of growth, breast-feeding and maternal-infant bonding (Conde-Agudelo et al., 2011). Although Kangaroo care has not been specifically investigated in infants with NAS, evidence from studies on low birth weight infants may support the use of Kangaroo Care in less vulnerable populations, such as those with NAS, through an evidence-based practice project.” Pg. 205. “Although further evidence is needed to establish its potential strength, there are no contraindications to providing skin-to-skin contact, especially when breast-feeding is contraindicated.”(pg. 210). The NICU is a source of stress Pg. 205 The American Academy of Pediatrics recommends breast-feeding in infants whose mothers are on methadone who do not have any other contraindication. It also provides guidelines for pharmacologic management but cannot provide specific recommendations about a standard first dose, escalation, or weaning schedule. Buprenorphine has some evidence about its safety in newborns with neonatal abstinence syndrome, but high-powered studies on its efficacy are currently lacking. There are many opportunities for both evidence-based projects and nursing research projects in this population. **FT, PT, Review, KC has been used with preterms, nas. Abstinence syndrome, NICU environment is source of stress, massage, music therapy, water beds, rocking beds, buprenorphine. Not on charts.**

Mahmood, I, Jamal, M. & Khan, N. (2011). Effect of mother-infant early skin-to-skin contact on breastfeeding status: A randomized controlled trial. *Journal of the College of Physicians and Surgeons of Pakistan*, 21(10), 601-605. 92 Full term moms got early KC (don’t know when or how much they got because this article is not available in the USA but it sounds like this is at delivery because they measured time till first feed and say early KC at the end of the abstract) and 91 did not. The first breastfed was 26.25% more successful (as measured by IBFAT) in KC group (58.8% in KC vs. 32.5% in controls, p<0.001) **KC mean time to initiate first breastfeed was 61.6 mins shorter than controls (40.62 vs. 101.88 mins, p<0.001). Mean time to achieve effective breastfeeding was 207 minutes earlier in KC group (149.69 vs 357.70).** Level of satisfaction in the mothers of KC group was significantly high as compared to controls (56% vs 6.2%)(abstract) but SML does not know if this means level of satisfaction was higher or % of women reporting satisfaction was higher?). 53.8% of mothers of KC group showed preference for similar care in future and only 5% of control group had preference for similar care in future. IN KC group, 85.3% infants were exclusively breastfed at one month vs. 65.7% of control infants. “Maternal-infant early skin to skin contact significantly enhanced the success of first breastfeed and continuation of breastfeeding till one month of age and it also reduced the time to initiate the first feed and time to effective breastfeeding. **FT, RCT, Birth KC, Breastfeeding, initiation, exclusivity, success, satisfaction with care, maternal desire for same care, BF success, effective breastfeeding, 3rd world, BF duration.** Not on charts 11/3/2011.**

Maia, C., Brandao, R., Roncalli, A., & Maranhao, H. (2011). Length of stay in a neonatal intensive care unit and its association with low rates of exclusive breastfeeding in very low birth weight infants. *Journal of Maternal, Fetal, and Neonatal Medicine*, 24(6), 774-777. NO DOI. 119 very low birth weight infants (~1500 g) were watched from July 2005 through August 3006 from birth to first ambulatory visit post-discharge from a unit that used 24/7 KMC and Baby Friendly in Brazil. 88 of the 119 (75%) returned fro visit, 22 (25%) were EXCLUSIVELEY breastfeeding, and 66 (75%) were weaned. The longer the hospital stay, the lower the birth weight, the more prolonged the enteral feedings, and the longer the postnatal recovery period, the greater the likelihood of being weaned by first postdischarge visit even in the presence of KMC. The length of NICU stay was best predictor of early weaning. **PT, Descriptive, Breastfeeding, exclusive BF. Not on Charts 5/2/2011. GET THIS WHEN OUR.**

Maia, F.D., Azevedo, V.M., & Gontijo, F.D. (2011). Effects of kangaroo care during painful procedures in preterm infants: a review. Revista Brasileira de Terapia Intensiva. 23(3), 370-373. A review article that says that pain control is needed but is still limited. KCBib 2018
Topical anesthetic effects are not known, repeated sucrose still needs more investigation, non-nutritive sucking has beneficial effects, breastfeeding is effective for pain control but it is not always feasible, so KC appears to be effective way to improve the response to pain in Preterm neonates, allowing the mother the opportunity to soothe her baby.’ P. 370. On page 371 it says”The kangaroo position itself consists in maintaining the lightly dressed low birth newborn in a prone vertical position against the adult’s chest”(pg. 371. Then it reviews Kostandy and Ferber/Mahboud work and Akcan saying KC should be given for 30 minutes Before pain and ten minutes after and that this reduced pain response (pg. 371). And then it goes into listing the mechanisms by which KC works as discussed in Ludington-Hoe et al 2005; Kostandy & Ludington-Hoe, 2008, Freire et al., (2008). Concludes with “KC is a low cost strategy and can be recommended as a non-pharmacological methods that can be a method of choice for preterm neonatal pain control because it acts as a physiological response mediator and determines better autonomic stability.”Pg. 373. Review, preterm, fullterm, pain, mechanisms. Not on Charts 8/22/2013

Mail Foreign Service (2010, August 27). Miracle Mum brings premature baby son back to life with two hours of loving cuddles after doctors pronounce him dead. Mail Online, 8 pages. Available from http://www.dailymail.co.uk/health/article-1306283/Miracle-pregnant-baby-declared-dead-doctor-. This is the story of Kate Ogg and how she kangarooed her 27 week preterm son who weighed 2 lbs after the doctor told her that Jamie had not made it after 20 minutes of battling to get him to breathe. She kangarooed the baby for two hours and then he started showing signs of life. See also James, R., and then Roos R and Roos N book for the same story in that book and also CNN and NBC reports of this death and restoration. PT, End of life, Compassionate Care. Not on Charts 7/25/2011

Malik GK, Das V., & Hasan MU. (2004). Some observations on Kangaroo Mother Care in Neonates. Presentation at “Workshops on KMC at Neonicon 2004. XXIV NNF Annual Convention at Chandigarh, 28 October, 2004” Available from file:///E:/KangarooMotherCareInitiativeKMCi.htm. Randomized controlled trial of KMC (78 infants with birthweight <2000 gm medically stable) (KC=41 got “continuous KMC every day during hospital stay and at home; incubator care = 37).In two hospitals on low birth weight infant growth (at 40 weeks postmenstrual age KCers had greater mean daily weight gain than controls; at 6 months no differences in weight, head circumference,and body length), health (more episodes of hypothermia, hyperthermia, apnea in controls;at 3 months KCers had more episodes of upper respiratory tract infections; more episodes of serious infections in controls at 40 weeks and 3 months), breastfeeding (more infants exclusively BF at discharge, 3 months), length of hospital stay (KCers had shorter hospital stay than controls), motor-mental development (no differences between groups) at 6 months postconceptional age (3 months corrected age). Higher incidence of breastfeeding and low incidence of serious infections are advantages of KMC. Preterm, RCT, 3rd world, weight, temperature, apnea, BF, length of stay, development, home KC, head circumference, length, infections. (Not yet on charts)

Mallet I, Bomy H, Govaert N, Goudal I, Brasme C, Dubois A, Boudringhien, S & Pierrat, V. (2007). Skin to skin contact in neonatal care: knowledge and expectations of health professionals in 2 neonatal intensive care units. Archives de Pediatric, 14(7), 881-886 (FRENCH). A descriptive evaluation of the barriers, knowledge, and expectations of physicians (one questionnaire), nurses (another questionnaire), and auxiliary personnel in 2 level III NICUs (N=69 at Lille; N=31 at Calais) that differed in their level of implementation of KC. 80% of physicians and 71.4% of nurses answered questionnaires. Difficulties with KC were linked to technical and architectural constraints. No diffs between hospitals, 90% consider KC “fully fledged care”, positive effects of KC were not all known, ie. “attachment” was noted by 96% of respondents, but sleep benefits (2%), Breastfeeding (5%), and pain (0%) effects were not known well. Barriers centered on infant safety (Aptone/bradycardia, hypothermia, poor sleep, increased nosocomial infection risk, source of parental stress (pg. 884 in Table 5), majority of health professionals wanted education and wanted parents to be educated too. Medical and nursing staff still do not know enough about KC. Descriptive, implementation, barriers, difficulties, knowledge of staff, A/B, infections, stress, hypothermia, sleep, PT.

Mance MJ. (2008). Keeping infants warm. Challenges of hypothermia. Advances in Neonatal Care 8(1): 6-12. The is a clinical review article of the causes of heat loss, normothermia range is 36.5-37.5; hypothermia is <36.5; hyperthermia is >37.5. Contains big section on Routine Care in the Delivery Room (pg. 8-9) and on pg. 9 it states: “Routine thermal care includes…. Paying careful attention to drying the head. Wet linens should be removed quickly, and the head should be covered with a hat.” In Table 3 on page 9, she has a step 12 in her “Competency checklist for Maintaining Infant’s Temperature in the Delivery Room”. “12. Skin-to-skin care can be initiated once infant and mother have breathed and a hat has been placed on the infant’s head (This can be accomplished on the mother’s abdomen.) Once skin-to-skin care is initiated, a warm blanket should be placed over the infant, cocooning the infant with the mother.” But she never addresses KC in the body of the manuscript, and drying and head cap placement can occur after skin-to-skin has been initiated. Review, PT, Preterm somewhat, temp, hypothermia, Birth KC.

Mangan, S., & Mosher, S., (2012). Challenges to Skin-to-Skin Kangaroo Care: Cesarean Delivery and Critically Ill NICU Patients. Neonatal Netw. 31(4):259-261. Review: Skin-to-skin contact (SSC) between mother and newborn immediately following birth has been shown to be beneficial in assisting newborn transition to extrauterine life and promoting maternal-infant attachment. The practice of immediate SSC also optimizes breastfeeding outcomes for women and their babies. SSC is known to facilitate initiation of breastfeeding within the first hour and has been determined to prolong the duration of successful breastfeeding. FT, PT, Review, birth KC, BF, physiologie, birth transition, cesarean section, critically ill micropreemies.

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Marchant T, Bryce J, Victora C, Moran AC, Claeson M, Requejo J, Amouzou A, Walker N, Boerna T, Grove J. (2016-June). Improved measurement for mothers, newborns and children in the era of the Sustainable Development Goals. J Glob Health 6(1):010506. doi: 10.7189/jogh.06.010506. An urgent priority in maternal, newborn and child health is to accelerate the scale-up of cost-effective essential interventions, especially during labor, the immediate postnatal period and for the treatment of serious infectious diseases and acute malnutrition. Tracking intervention coverage is a key activity to support scale-up and in this paper we examine priorities in coverage measurement, distinguishing between essential interventions that can be measured now and those that require methodological development. We conceptualized a typology of indicators related to intervention coverage that distinguishes access to care from receipt of an intervention by the population in need. We then built on documented evidence on coverage measurement to determine the status of indicators for essential interventions (KC is an essential intervention as listed on page three of article and it states in Table 1 that KC could avert 158,853 neonatal deaths using the LiST (LIVES SAVED TOOL). [Johns Hopkins Bloomberg School of Public Health, The Lives Saved Tool. Available: http://www.livesavedtool.org/]

And on page 5 in Figure 2, KC is identified as a HIGH IMPACT INTERVENTION for saving lives in the Newborn domain.) and to identify areas for development. Contact indicators from pregnancy to childhood were identified as current indicators for immediate use, but indicators reflecting the quality of care provided during these contacts need development. At each contact point, some essential interventions can be measured now, but the need for development of indicators predominates around interventions at the time of birth and interventions to treat infections. Addressing this need requires improvements in routine facility based data capture, methods for linking provider and community-based data, and improved guidance for effective coverage measurement that reflects the provision of high-quality care. Coverage indicators for some essential interventions can be measured through household surveys and be used to track progress in maternal, newborn and child health. Other essential interventions currently rely on contact indicators as proxies for coverage but urgent attention is needed to identify new measurement approaches that directly and reliably measure their effective coverage. FT, PT, policy paper, neonatal mortality, essential care

March L. (2004). Kangaroo habitat, a home care experience. Souns Gerontol. March-April (46), 27-28. French article and I am not sure it is about infant Kangaroo Care as it is in a gerontology journal. Unavailable to me in the U.S. KC? Gerontology. NEED TO GET THIS


May 12, 2013. Marín Gabriel MA, Del Rey Hurtado de Mendoza B, Jiménez Figueroa L, Medina V, Iglesias Fernández B, Vázquez Rodríguez M, Escudero Huelo V, Medina Malagón L.(2013). Analgesia with breastfeeding in addition to skin-to-skin contact during heel prick. Arch Dis Child Fetal Neonatal Ed. 98(6):F499-503. doi: 10.1136/archdischild-2012-302921. To investigate the analgesic effect (measured with Neonatal Infant Pain Scale (NIPS)) of breastfeeding (BF) in addition to skin-to-skin contact (SSC) versus other methods of non-pharmacological analgesia during blood sampling through heel lance in healthy term neonates. Randomised controlled trial in Tertiary level maternity ward.One hundred thirty-six healthy term newborns, wish to breastfeed, and absence of feeding during the previous 60 min.Neonates were randomly assigned to four groups: Group breastfed with SSC (BF+SSC Group) (n=35); Group sucrose with SSC (Sucrose+SSC Group) (n=35); SSC Group (n=33); or Sucrose Group (n=33). Babes were recorded with a video camera. Three observers watched the videos and measured NIPS score at three time points (t1: 2 min before heel prick; t2: During heel prick; and t3: 2 min after the heel prick). The influences of non-pharmacological methods on crying time, percentage of crying while sampling, heart rate, number of attempts and duration of sampling were also studied. BF+SSC Group achieved a significant lower median NIPS score (value=1) compared with other groups (value=2, 4 and 4, respectively). The percentage of neonates with moderate-to-severe pain was also lower in the BF+SSC Group. Both groups BF+SSC and Sucrose+SSC achieved a significant lower percentage of crying compared with SSC Group. This study suggests that BF in addition to SSC provides superior analgesia to other kinds of non-pharmacological analgesia in healthy term neonates during heel prick better tha KC alone, sucrose alone, or Sucrose + KC. Crying was lower in KC+BF and KC+Sucrose groups than in KC alone and Sucrose alone. FT, RCT, compared to Sucrose, crying, NIPS PAIN score, HR, # attempts, duration of sampling. GET THIS ARTICLE TO GET DURATION OF SAMPLING INFO

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doi: 10.1111/j.1651-2227.2009.01597.x. Randomized controlled trial of pediatricians (6 did Birth KC, 7 did not do Birth KC) with 137 patients (in Birth KC group = 137 and patients in NO BIRTH KC group = 137) at hospital in Spain. Mothers were 35-42 wks gestation, no fetal distress, no cesarean, no resuscitation, no meconium in amniotic fluid and no respiratory problems. In SSC group cord was clamped 10-15 sec after birth, infant put on mom’s abdomen, dried, put diaper and cap on, then moved to be held upright between maternal breasts, covered with warm blanket. Infant ID conducted during KC and KC continued uninterrupted for 2 hours. Then baby separated from mother for routine care (weighing, eye, hepatitis B vaccine, Vitamin K shots). Babies then dressed and given to mother. Same routine for control group, but babies were immediately placed on radiant warmer receiving unit for 2 hours and had been wrapped by 10 minute post birth. Axillary temp taken at 1 min, 5 mins, and 2 hours old (hypothermia was temp <36; recovery from hypothermia was when temp was >36 which occurred in SSC at 5 minutes postbirth). Placental delivery was totally expelled placenta. Visual analog scale for pain was completed while suturing episiotomy (women without episiotomy and who had perineal lacerations were excluded). 95% of moms had epidural anesthesia. Hospital Anxiety and Depression Scale (HADS) was assessed at hospital discharge – it is 4 point likert scale of 7 items for maternal anxiety and 7 items for maternal depression. IF score was 7 or less, there was not a problem, problem was doubtful if score was 8-10, it was a problem if >= 11. Follow-up calls at one month to determine duration of BF and exclusivity (infant only breastfed) of BF. Partial BF was infant who got BF at least once a day. Infant birthweight was lower in KC group. 

More thermal stability during KC (temp rose a Mean of 0.07 degreesC in KC; -0.22 degree drop in controls. Mean temp at one minute was 36.6 KC and 36.9 in controls. No temp differences at 5 minutes nor at 2 hours of life. 30 KC infants and 11 control infants had hypothermia at 1 minute of life. 80% of KCers and 54.5% of controls had recovered by 5 minutes. KC moms exclusively breastfed more frequently at discharge but no diffs at one month. 5 KC infants and 12 control infants were admitted to NICU in first two hours of life. Placental expulsion was shorter in KC group (408.7 sec) than in controls (475.2 seconds), but no difference in episiotomy pain (KC= 1.4 vs. 13 controls). No differences in mean anxiety score (KC=4.7; controls = 5.2) and no differences in depression (2.1 KC vs. 2.4 controls) FT quasi-experiment (docs were randomized, not subjects), Temp, Exclusive BF, episiotomy pain, placenta expulsion. VEKC Birth K. hypothermia, REWARMING, maternal anxiety, maternal depression. (NOT On CHARTS 2/17/2013).


doi: 10.1111/j.1651-2227.2009.01597.x. RCT (obstetricians randomized, not the subjects who were mothers) of 137 KC subjects (got KC within 1 minute of birth and continued for 2 hours) vs. 137 controls (no KC at all, under warmer for 10 minutes postbirth then given, wrapped and swaddled to mom to hold for rest of 2 first two hours postbirth – all newborn care and identification done after first two hours of birth and cords were clamped 10-15 seconds after birth of infants, and 95% of mothers had epidural) in SPAIN that is based on oxytocin effects induced by KC. Goal was to determine if KC improved recovery from hypothermia, increased BF at discharge and one month post discharge, determine KC effects on # of infants admitted to NICU, reduction of pain during suturing episiotomy by 10 cm visual analog scale and decrease of placental expulsion time, and effect of KC on maternal anxiety and depression using the Hospital Anxiety and Depression Scale (HADS) likert scale not published before (a analog scale and Likert scale not published before (a 4 item for maternal anxiety and 7 items for maternal depression. IF score was 7 or less, there was not a problem, problem was doubtful if score was 8-10, it was a problem if >= 11. Follow-up calls at one month to determine duration of BF and exclusivity (infant only breastfed) of BF. Partial BF was infant who got BF at least once a day. Infant birthweight was lower in KC group. More thermal stability during KC (temp rose a Mean of 0.07 degreesC in KC; -0.22 degree drop in controls. Mean temp at one minute was 36.6 KC and 36.9 in controls. No temp differences at 5 minutes nor at 2 hours of life. 30 KC infants and 11 control infants had hypothermia at 1 minute of life. 80% of KCers and 54.5% of controls had recovered by 5 minutes. KC moms exclusively breastfed more frequently at discharge but no diffs at one month. 5 KC infants and 12 control infants were admitted to NICU in first two hours of life. Placental expulsion was shorter in KC group (408.7 sec) than in controls (475.2 seconds), but no difference in episiotomy pain (KC= 1.4 vs. 13 controls). No differences in mean anxiety score (KC=4.7; controls = 5.2) and no differences in depression (2.1 KC vs. 2.4 controls) FT quasi-experiment (docs were randomized, not subjects), Temp, Exclusive BF, episiotomy pain, placenta expulsion. VEKC Birth K. hypothermia, REWARMING, maternal anxiety, maternal depression. (NOT On CHARTS 2/17/2013).

Marini MG, Chesi P, Brusacagnin M, Cecchetali M, & Ruzzon E (2017-June). Digits and narratives of the experience of Italian families facing premature births. J Matern Fetal Neonatal Med. 2017 Jun 7:1. doi: 10.1080/14767058.2017.1339272. [Epub ahead of print]. The objective of the research was to understand the experience of families living a premature birth and to outline the current care plan in Italy. The survey was addressed to 150 parents of children born under the 34th week of pregnancy. Topics of the
investigation were the implications on their family, social and working contexts, determined through a questionnaire enriched by a collection of narratives. Written testimonies were clustered through a Narrative Medicine method and matched with quantitative information. The main respondents were mothers of severe and moderate preterm children. Except for the Kangaroo Care, services were not uniformed amongst the centres and few home care supports resulted available for families. Sixty-seven per cent of mothers could not obtain a prolonged maternity leave and described the impacts on their working activities. Narratives revealed a low level of prevention, information and awareness on the risks of prematurity amongst families. Few local networks among Neonatal Intensive Care Unit (NICU) teams, gynaecologists and paediatricians, and the shortage of support for parents at work; these actions were collected in a Position Paper. Findings showed the integration between families' coping strategies and the offered care services for preterm births. Narrative tools could represent the bridge between families and health care teams. PT, descriptive survey, KC routine, NICU aspects of care. Italy. Not on Chart 6-19-2019.


Martin, J. B. & Ludington-Hoe S.M. (2010). Effect of KC on Cerebral Oxygenation. Presentation at 8th Biannual Meeting of the International Network of Kangaroo Mother Care, Quebec, CANADA. See the citation below. It is the same study, same results.

Martin, J.B., & Ludington-Hoe, S.M. (2010). Near infrared spectroscopy measure of brain activation in premature infants in an incubator and during kangaroo care. Advances in Neonatal Care, 19(4), 214-215. No doi. Randomized cross over trial of 10 preemies (5 male, 5 female) with Mean birth weight of 1487.5 g (R=1076-2219g), mean GA of 30 weeks +4 days (R=27wk+5days-33wks+1day), mean entry weight of 1764.9g (R=1380-2341g), and mean postconceptional age at entry of 33 wk+4days (R=31wk+1day – 34 wk+6 days) participated when no oxygen support needed. After vital signs and feeding. Near infrared spectroscopy sensor (Somanetics, Inc. Troy, MI) placed on left forehead and pulse on left foot. Sequence A was KC for first 90 minutes of data recording then left (data not recorded) until the next feeding and after that then prone in incubator for next 90 minutes of data recording; Sequence B was incubator for first 90 minutes after feeding with data recording, then left in incubator til next VS and feeding and then in KC for 90 minutes of data recording, but left in KC after that until next vital signs and feeding. This was noisy, busy multibed unit and infants were separated only by curtain. During KC periods, Respiratory Rate, regional cerebral oxygenation (rSO2), and % time in quiet sleep decreased in comparison to incubator time. % of time in agitated state increased as did the number of loud noises (overhead paging and alerts, telephone, loud talking) were present. No changes between periods (incubator vs KC) nor difference s between sequence groups occurred in HR, saO2. There were no residual or cross-over effects of KC on rSO2 and rSO2 remained within clinically acceptable range at all times. Lower regional cerebral oxygenation indicates a calming brain deactivation effect, even in the presence of behavioral agitation that was most likely due to extreme environmental noise frequency. When KC ended, the increase in rSO2 indicated an increase in sympathetic control of cerebral hemodynamics. PT, Randomized Cross Over Trial, HR, RR, saO2, rSO2, environment, behavioral state, sympathetic control.

Martinez, J.C. (1991). El contacto madre-hijo prematuro piel a piel un apote a la moderna asistencia neonatal. Arch Argent Paediatr. 89: 142-147. PT Also as follows:

Martinez, J.C. (1991). Skin-to-skin contact between preterm babies and their mothers. A contribution to the modern neonatal assistance. Argentine Pediatric Archives, 89: 142-147. Safety and effectiveness of KC with continuing-care preterm infants was established in this manuscript and led Dr. Martinez and his team of neonatologists to practice KC since 1991. PT, HR, RR, SaO2, and maybe other outcomes. I cannot get this article, if anyone else can, please send it to me at S. Ludington 3850 Ellendale Road, Moreland Hills, OH 44022, USA

Martinez, J.C. (2007). Skin-to-skin contact: a paramount contribution in the modern neonatal paradigm. NeoReviews 8(2), e55-e56 [NeoReviews is a newsletter of the American Academy of Pediatrics]. This is an excellent, succinct review of the benefits of KC to preterm and full term infants and encourages all pediatricians to use KC because KC is “real progress in modern neonatal assistance.” “It is of paramount significance to understand clearly the substantial difference between an excellent innovation and real progress in modern neonatal assistance. Real progress is built on those interventions (actions) that can be implemented worldwide and whose tested beneficial effects are long-lasting or better, last forever. One such advance has been the discovery of the oldest beneficial stimulation for humans: the somatosensory stimulation produced by the special and deep contact between infants and mothers, represented by skin-to-skin contact. The kangaroo care technique involves….” (pg. e55). Martinez reports encountering a mother who had participated in KC at his hospital with her mechanically ventilated infant who died a few days later. The mother told him, “I will never forget my little son. I will never forget that moment (KC). I feel that at least I could do something good for him. I know that both of us will always remember, wherever he is now.” (pg. e56). Preterm, fullterm, review. End-of-life.

KCBib 2018
Martínez-Galiano, J., & Delgado-Rodríguez, M. (2013). Influence of an education program of pregnant women on delivery. Journal Maternal Fetal Neonatal Medicine, 27(7):719-23. doi: 10.3109/14767058.2013.836486. Quasi-experimental study of a program of education about delivery and health behaviors with newborns after delivery (ie. Doing KC) delivered to primiparous 520 mothers (354 attended the program -68.1%) in four hospitals in South of Spain in 2011 was conducted. The program improved the odds ratio of conducting skin to skin contact after birth (adjusted odds ratio 1.95, 95%CI 1.25-3.02 after adjusting for sociodemographic characteristics and presence of pathology during pregnancy). Mothers who attended the program also participated more actively during delivery (odd ratio of 1.64) but the education did not alter type of delivery or frequency of cesarean. Maternal education did not influence type of delivery but it favored women’s participation during delivery and early skin-to-skin contact between the mother and newborn. Quasi-experiment, FT, fullterm, birth KC, maternal education. Not on charts 8/22/2013

Martínez-Galiano JM, Delgado-Rodríguez M. (2013). [Health care model focused on the humanization: obstetric results]. *Ginecol Obstet Mex.* 2013 Dec; 81(12):706-10.[Article in Spanish] At present there a tendency towards a change to establish a new conceptual framework in perinatal health care which aims to give a more human and closer, where the woman is the protagonist of her own pregnancy and childbirth leaving behind a medicalized model.To determine perinatal outcomes that result from the new perinatal care model established and the degree of user satisfaction with this. A multicenter observational conducted in four hospitals in Andalusia (Spain) in 2011 on primiparous. The data were collected through an interview and medical history. Data were expressed as absolute frequencies, relative frequencies, mean and standard deviation. 520 women participated. The 18.11% (94) ended in cesarean deliveries. It was established early skin-to-skin between the mother and the newborn in 74.95% (389) and 75.53% (392) initiated breastfeeding early. The 73.26% (378) are very or fairly satisfied with the care provided at delivery. The new model of care has the user satisfaction, lower cesarean rate and implementation of recommended clinical practices. FT, descriptive evaluative, birth KC, cesarean, maternal satisfaction, BF, implementation, staff satisfaction. Not on Charts 4/12/2014

Martínez-Galiano JM, Delgado-Rodríguez M (2014). Effectiveness of the professional who carries out the health education program: perinatal outcomes. *Int J Womens Health.* 2014 Mar 19;6:329-34. doi: 10.2147/IJWH.S59126. eCollection 2014. The purpose of this study was to determine whether a maternal education program conducted by midwives achieves better results in regard to maternal and newborn health than when the program is conducted by other health professionals.Five hundred and twenty primiparous women attending four (two university) public hospitals in southern Spain in 2011 were recruited to participate in this prospective cohort study. Data on sociodemographic and obstetric variables and characteristics of newborns were collected by interviews and from clinical charts. Crude and logistic regression adjusted odds ratios (aORs) and confidence intervals (CIs) were estimated.A midwife was in charge of education for 75.4% of the 354 women who attended maternal education programs. Midwife-conducted programs had significantly more women attending more than three sessions than the programs conducted by other health professionals (aOR 2.85, 95% CI 1.60-5.11). Midwives achieved more active participation from mothers during delivery (aOR 1.96, 95% CI 1.15-3.33), more early skin-to-skin contact between the mother and newborn (aOR 1.79, 95% CI 1.01-3.23), more early breastfeeding (aOR 2.08, 95% CI 1.18-3.70), and fewer newborns with low birth weight (aOR 0.14, 95% CI 0.03-0.65) compared with other health professionals.Midwives achieve better results than other health professionals in regard to the health of the mother and her newborn when they are in charge of the maternal education program. FT, staff issues. [NOT ON CHARTS, 2014]

Massachusetts Breastfeeding Coalition & Stuebe A. (2005). It’s my birthday, give me a hug! Skin-to-skin contact for you and your baby. Available from Massachusetts Breastfeeding Coalition, 254 Conant Rd, Weston, MA 02493 or from their website 222.massbfc.org. This relates what skin-to-skin contact, breastfeeding, and how KC helps breastfeeding, smoothing the transition to extrauterine life, bonding, and care beyond the delivery room. FT.


Matos, T.A., Souza, M.S., Santos, E.K., Selbert, E.R. & Martins, N.M. (2010). Precocious skin-to-skin contact between mother and child: meanings to mother and contributions to nursing. *Revista Brasileira de Enfermagem, 63*(6), 998-1004. NO DOI. Nine mothers were observed and interviewed. Four themes were identified: pre-delivery orientation surrounding preterm infant skin to skin contact with mother, establishing preterm infant-mother skin to skin contact, meanings of perter skin to skin contact, and nursing contributions to establishing KC with preterm infants. Meanings attributed to KC were positive, and nursing’s contribution to establishing KC is significant. FT, Qualitative phenomenology study, maternal feelings. Implementation, staff support. Not on Charts 2.17/2011

Matthiesen, A.S., Ransjo-Arvidson, A-B., Nissen, E., & Uvnas-Moberg, K. (2001). Postpartum maternal oxytocin release by newborns: Effects of hand massage and sucking. *Birth 28* (or 297), 13-19. 10 fulltermers who had no maternal analgesia in labor were videotaped for hand, finger, mouth, tongue movements and sucking every 30 seconds from birth to 1º BF and placed in KC immediately

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Matthijsse PR, Semmekrot BA, Liem KD (2016). [Skin to skin contact and breast-feeding after birth: not always without risk!]. Ned Tijdschr Geneeskd.160:D171. Skin-to-skin contact after birth is propagated to facilitate breast-feeding and mother-child bonding. We describe two term infants with sudden unexpected postnatal collapse (SUPC) during skin-to-skin contact. The infants were found with abnormal colour, hypotonia and apnoea, in a prone position on the chest of their mothers, both of whom were primipara with a high BMI. After stimulation, both infants recovered completely. No specific potential cause, other than the position, could be found. These cases illustrate that skin-to-skin contact after birth is not without risk. In available literature, risk factors for SUPC include primiparity and infant orientation such as prone and lateral positions. These positions are also risk factors for sudden infant death syndrome (SIDS). To improve safety, a primipara should be supervised during skin-to-skin contact and not be left alone in the first hours after delivery; the infant should be guaranteed a free airway, especially when the mother has a high BMI.


Maulik, P.K. & Darmstadt, G.L. (2009). Community–based interventions to optimize early childhood development in low resource settings. J Perinatology, 29(8), 5311-542. This is a review of early interventions (reading, play, music and tactile (KC) stimulation) effects on development, particularly with emphasis on interventions appropriate to low resource countries. 76 articles were retrieved and 53 studies reviewed (24 were RCTs and 16 of them were from low and middle income countries. Has good review of early intervention programs like the Mother-Infant Transaction Program, Sure Start Local Program, Not By Bread Alone Project, Infant Health and Developmental Program in US. Head Start program, Abecedarian Project, Comprehensive Child Development Program, Integrated Child Development Services Programme, Healthy Steps, etc all around the world. Play and reading are the most common interventions and show + impact on development. Music was evaluated in intensive care units. KMC content begins on page 6 and continues onto page 7 with a summary of Conde-Agudelo 2003, Charpak et al., 2001; Tessier et al., 2003, Tallandini 2006; and Ibe 2004. Findings were that KMC and to a lesser extent massage showed beneficial effects. Play and reading are effective, more research is needed on music and KMC is effective but more research in community settings is needed. Massage is helpful but needs more research too. Review, systematic review but not meta-analysis, development interventions, massage.

Mazumder S, Tanuja S, Dalpath SK, Gupta R, Dube B, Sinha B, Bhata K, Yoshida S, Norheim OF, Bahl R, Sommerfelt H, Bhandari N, Martines J (2017). Impact of community-initiated Kangaroo Mother Care on survival of low birth weight infants: study protocol for a randomized controlled trial. Trials 18(1):262. doi: 10.1186/s13063-017-1991-7. Around 70% neonatal deaths occur in low birth weight (LBW) babies. Globally, 15% of babies are born with LBW. Kangaroo Mother Care (KMC) appears to be an effective way to reduce mortality and morbidity among LBW babies. KMC comprises of early and continuous skin-to-skin contact between mother and baby as well as exclusive breastfeeding. Evidence derived from hospital-based studies shows that KMC results in a 40% relative reduction in mortality, a 58% relative reduction in the risk of nosocomial infections or sepsis, shorter hospital stay, and a lower risk of lower respiratory tract infections in babies with birth weight <2000 g. There has been considerable interest in KMC to support effective research in our study setting, where 24% of babies are born with LBW. The main aim of this trial is to determine the impact of cKMC on the survival of these babies. This randomized controlled trial is being undertaken in the Palwal and Faridabad districts in the State of Haryana, India. Neonates weighing 1500-2250 g identified within 3 days of birth and their mothers are being enrolled. Other inclusion criteria are that the family is likely to be available in the study area over the next 6 months, that KMC was not initiated in the delivery facility, and that the infant does not have an illness requiring hospitalization. Eligible neonates are randomized into intervention and control groups. The intervention is delivered through home visits during the first month of life by study workers with a background in education similar to that of workers in the government health system. An independent study team collects mortality and morbidity data as well as anthropometric measurements during periodic home visits. The primary outcomes of the study are postenrollment neonatal mortality and mortality between enrollment and 6 months of age. The secondary outcomes are breastfeeding practices; prevalence of illnesses and care-seeking practices for the same; hospitalizations; weight and length gain; and, in a subsample, neurodevelopment. This efficacy trial will answer the question whether the benefits of KMC observed in hospital settings can also be observed when KMC is started in the community. The formative research used for intervention development suggests that the necessary high level of KMC adoption can be reached in the community, addressing a problem that seriously constrained conclusions in the only other trial in which researchers examined the benefits of cKMC, PT, RCT proposal – no study results yet, community or home-based KC, starting at 3 days postbirth, 3rd world. Not on charts, 6-19-2017


Mazurek T, Mikkel-Kostyra K, Mazur J, Wieczorek P, Radwanska B, & Pachuta-Wegier L. (1999a). Influence of immediate newborn care on infant adaptation to the environment. Med Wieku Rozwojowego 3(2), 215-224. Three randomized groups n=22min each group) (KC, swaddled newborns beside the mother, swaddled and separated from the mother) of FULLTERM newborns observed for 75 min after birth. Skin Tem, bl glucose, HR, RR, crying differences all favored KC group. pH not sig. diff between groups. For all but two unseparated newborns (KC or lying besides) temp was increasing during the 75 minutes, in separated group temp was unstable and not increasing in 6 (27%) of infants. Bl glucose highest in KC (60.1 mg/dl), lower in swaddled lying beside (52.5) and lowest in separated (49.6). Crying was shortest in KC, and 3 times longer in separated group. Episodes of crying were 7, 17, and 38 seconds in KC; lying beside, separated groups respectively. KC is optimal for newborn adaptation and a protection agst hypothermia and hypoglycemia. RCT, FULLTERM, Temp, HR, RR, pH, crying, blood glucose, separation, swaddled See next citation for same study but more information.

Mazurek, T, Mikkel-Kostyra, K., Mazur, J., Wieczorek P, Radwanska B, & Pachuta-Wegier L. (1999b). Influence of immediate newborn care on infant adaptation to the environment. Medycyna Wieku Rozwojowego 3(2), 215-224. Full terms randomly assigned to grp 1 (n=22) put in mom’s arms skin-to-skin and both covered with sheet & stayed here til end of experiment; grp 2 (n=22) infant wrapped in blanket and given to mom, no skin to skin, covered with a sheet. grp 3(n=22) infant wrapped and kept separate from mom at a distance in KCBib 2018
same room. Observed for 75 min. Study began 6-8 min after birth. Skin thigh temp, HR, RR, and glucose level best in KC group. KC grp cried 3 times less than grp 3 and less than grp 2. KC group had optimal adaptation and special protection against hypothermia. Glucose highest in KC (60 mg/dl), grp 2=52, grp 3= 49.6 mg/dl. In Grp 2 27% did not get warmer over the 75 min and metabolism was impaired. KC is protection against hypothermia and hypoglycemia.

RCT, FULLTERM, temp, thigh, HR, RR, pH, Blood glucose, crying episodes/duration, Birth KC/VEKC

Mazurier E, & Picard JC. (2005). Kangaroo mother care vs nidcap: a problem of semantics. Arch Pediatr 12(4), 471-472. This article is an author reply. Confusion exists in France about the terms “kangaroo method”, “kangaroo care”, and “skin-to-skin”. Kangaroo method must be differentiated from skin-to-skin care use in neonatology units. The “kangaroo method” was developed in Bogota and means preterms born in hospital, preterms <2000 grams birth weight, when infant is able to breathe on his own, has a good suck/swallow reflex, and does not need feeding tube, the infant gets Kangaroo method of care, which further meant placement against the breasts 24 hours/day until baby becomes uncomfortable at which time it should be discontinued permanently (based on Charpak et al., 1996 report). In technical units, kangaroo method has changed. Skin time varies according to infant’s capacity and parent’s presence (author says this does not resemble any part of the kangaroo method (p.471). States that Dzukou’s review confirmed that practice of skin-to-skin does not cause physiologic instability in premature or low birth weight infants and does promote maternal-infant bonding. Also, he goes on to say that the Breast article (see Sizun et al., 1999) is based on one case study with very precise measurements. Still, Kangaroo care cannot replace or be compared to individualized neonatal care (theNIDCAP program) (pg. 472). The five categories of Kangaroo care according to starting time are listed and then the state of kangaroo care in France is discussed: It is called “Kangaroo Unit” in France, means geographic closeness of mother and baby once infant is spontaneously breathing. France needs a complete definition of Kangaroo care that includes criteria, length of KC, cost, transport in KC, level of center to do it, in which unit: nicu or maternity. Authors also call for research to define developmental care in the prevention of DEVASTATING CONSEQUENCES of early separation, but an RCT may not be ethically possible. So, Dzukou’s analysis should not prevent the practice of KC, called “kangaroo unit.” (FRENCH). PT, Commentary and Ideas, Developmental care.

McAllister,H.M., Bradshaw, S., & Ross-Adjie, G. (2009). A study of in-hospital midwifery practices that affect breastfeeding outcomes. Breastfeeding Review, 17(3), 11-15. Has picture of KC on first page of article. This is a regression analysis of strategies to improve breastfeeding, and of course skin-to-skin contact within one hour of birth was considered as one of the four independent variables that might relate to breastfeeding duration. Of women who gave a first feeding within 60 minutes of birth, 73% had KC within first hour post-birth. The two variables that significantly related to BF duration (increased length of bf) were whether a mom could independently attach the baby on discharge and whether or not artificial milk was administered in the hospital. Skin to skin contact was not found to influence the length of BF. PT, KCBIB FT, Regression analysis, BF, KC, duration of BF. NOT ON CHARTS

McCain G, Ludington-Hoe SM, Swinth, JY, & Hadeed AJ. (2005). Kangaroo Care effects on heart rate variability: A case study. J Obstet Gynecol Neonatal Nurs. 34(6), 689-694. One subject pretest (incubator), test (KC) and posttest (incubator) 1.5 hours incubator time was compared to 1.5 hours in KC in a 35 week preterm infant. Heart Rate Variability was measured by ANSAR 1000. Low frequency, high frequency, and Low/high frequency ratio were calculated. Much more data was available during KC than in incubator because of infant quiescence during KC; sympathetic control remained high during KC even though it decreased and LF/HF ratio revealed that parasympathetic control increased during KC. Decrease of LF and HF during KC. (Contradicts Smith who found increase of LF during KC and Begum et al. 2009 who found increase in LF during KC and the LF of regional oxygenation was decreased during KC).

Preterm Case Study, HRV, HR, behavioral state

McCall EM, Alderice FM, Halliday HL, Jenkins JG, & Vohra S. (2005, 2007). Interventions to prevent hypothermia at birth in preterm and/or low birth weight babies. Cochrane Database of Systematic Reviews 4, 2005, Issue 1. Art. No. CD004210.DOI: 10.1002/14651858.CD004210.pub3. Retrieved March 20, 2006 from www.ncbi.nlm.nih.gov/coinhr/mccall.htm. Also published in 2007 in Cochrane Database of Systematic Reviews 2007, Issue 1.Meta-analysis of six studies with 304 infants (295 completed data collection) of interventions designed to prevent hypothermia in preterm and/or low birth weight infants when applied within 10 minutes after birth in the delivery suite compared to routine thermal care. Two types of interventions were reviewed: 1. barriers to heat loss (4 studies, plastic wrap, bag, stockinet caps) and 2. external heat sources (KC was one study; transwarmer mattress was one study). Skin-to-skin contact was effective in reducing the risk of hypothermia in preterms/LBW infants when compared to conventional incubator care for infants 1200-2199 gram birthweight. “Consideration should be given to using these interventions in the delivery suite.”(2007, pg. 2). These were the publications that announce the topic and the sources of data for the analysis, but the actual results follow in the 2008 publication listed below. PT, Cochrane Meta-analysis, temperature, hypothermia, Birth KC

McCall EM, Alderice FM, Halliday HL, Jenkins JG, & Vohra S. (2008). Interventions to prevent hypothermia at birth in preterm and or low birth weight babies. Cochrane Database of Systematic Reviews 1, Art. No. CD004210. This meta-analysis reviewed three KC articles with preterm infants to determine how well KC prevented hypothermia and then compared it to other interventions such as plastic wraps, warming mattresses, etc. Bergman et al., 2004,Conde-Agudelo et al., 2003 and Christensson et al., were reviewed to determine KC effectiveness. The meta-analysis concludes that skin-to-skin contact keeps infants warmer than routine measures (warmers, KCBib 2018
plastic shielding, wrapping and swaddling) to prevent hypothermia at birth in preterm and LBW infants. PT, Cochrane Meta-Analysis, temp, hypothermia. Birth KC.

McClennan MS, & Cabianca WA. (1980). Effects of early mother-infant contact following cesarean birth, OB GYN, 56(1), 52-55. 40 C/S dyads in early contact (n=20) or brief contact control (n=20), observed. Early contact infant taken to exam outside delivery room and care given, then returned to mom for visual contact for 5-15 min. After C/S complete, in recovery room KC (covered with light blanket) began and continued for 60 min in recovery room. Then spent 4-5 hrs in recovery, alternating KC and visual contact when baby was in warmer next to bed. Brief contact group infant put in warmer, cared for, then presented to mom for <5 mins for visual contact only then no contact during 6 hr recovery period. Maternal Perception of infant, maternal behaviors, and postnatal research inventory taken once on either 1st or 2nd PP day and then once between 28-32 days of age at home visit. Maternal perception in hospital was significantly higher for KC than controls, and higher maternal behavior scores in hospital and at home. RCT, Fullterm, Mat. Perception/behavior, Early KC (in birth recovery room), cesarean section

McDermott, K. (2003). Kangaroo care: It’s not just for marsupials. Available from www.cwru.edu/menu/research/kangaroo.htm. Report of Gene Anderson’s experimental study with preterm infants with KC beginning soon after birth. Tells of the MCN case study of KC beginning 4.5 hrs postbirth, saying the premise is that mothers can stabilize their infants. Says crying occurs twice as often in separated fullterm infants and fullterms have pathologic levels of salivary cortisol. Daddy says he still feels baby on his chest even when not holding him. Mom reports less anxiety when attending to other things while daddy was kangarooing. Parents learn how to do KC quickly. Review, PT, FT, VEKC, paternal KC, mat. Anxiety, cortisol, crying, learning to do KC

McGrath JM. (2006). Family presence during procedures: breathing life into policy and everyday practices. Newborn and Infant Nursing Reviews 6(4), 243-244. Review editorial not about KC per se, but says that parents want to be there and be involved even during heelsticks (pg. 243) and on page 244 she has guidelines and #3 states that “parents can be encouraged to speak to their infant, touch, comfort, and soothe them while also facilitating the procedure by holding the child still in the appropriate position for the successful completion of the procedure.” (pg. 244.) PT, FT, pain, review. NOT A KC STUDY BUT A RECOMMENDATION FOR KC during pain procedures. Not on charts yet

McGrath JM, & Brock, N. (2002). Efficacy and Utilization of Skin-to-Skin Care in the NICU. Newborn & Infant Nursing Reviews, 2(1), 17-26. Finally, we have an updated review since 1996. This reviews the research studies in chart form and comes to conclusions that are not surprises but are succinctly presented for those who have not kept up with the literature. Nurses do not use the evidence, i.e. they do not use KC to reduce pain. Review, BF, pain, Implementation, PT

McGrath SK & Kennell JH. (2002). Extended mother-infant skin-to-skin contact and prospect of breastfeeding. Acta Paediatric. 2002;91(12):1288-1289. This is a comment on “Effect of early skin-to-skin contact after delivery on duration of breastfeeding: a prospective cohort study that appeared in Acta Paediatrica. 2002 by Mikkel-Kostyra, Mazur et al. The review is laudatory and says that this should change practice and be offered routinely to improve breastfeeding in full term infants. PT, birth KC, BF

McInnes RJ & Chambers J. (2008). Infants admitted to neonatal units- interventions to improve breastfeeding outcomes: a systematic review 1990-2007. Maternal Child Nutrition 4(4), 235-263. 86 papers were reviewed and 27 met review criteria. Studies employed a range of methods and targeted different aspects of breastfeeding in the neonatal unit. There was no clear message of what works best, but “skin to skin contact and additional postnatal support seemed to offer greater advantage for the infant in terms of breastfeeding outcome.” (pg. 235). PT, Review, breastfeeding, meta-analysis. NOT ON CHARTS YET


McQueen, K.A., Murphy-Oskonen, J, Gerlach, K., & Montelpare, W. (2011). The impact of infant feeding method on neonatal abstinence scores of methadone-exposed infants. Advances in Neonatal Care, 11(4), 282-290. DOI: 10.1097/ANC.0b013e318225a30c. This is NOT A KC STUDY PER SE. It is about how breastfed infants have lower NAS scores than formula fed infants implying that some of the opiate towchich the mother has been exposed and/or treated is getting through the breast milk and calms the infant. Says hospital stay of these babies is very long too and negatively impacts mothering and shortening hospital stay is of critical importance not only for reduced

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costs but to increase opportunity for bonding and breastfeeding as mothers provide care in a natural environment (page 287-288). Moms like to experience empowerment in their ability to comfort and soothe their infants. On page 288 it says “In the absence of specific guidelines (regarding interventions to support breastfeeding mothers with infants experiencing NAS) evidence-based strategies from the general breastfeeding literature should be integrated whenever possible, including the Breastfeeding Best Practice Guideline, Baby Friendly Hospital Initiative 10 Steps, and systematic reviews of effective breastfeeding interventions. Examples of evidence-based strategies to promote breastfeeding success include, but are not limited to, early initiation of breastfeeding (<1 hour after delivery), skin-to-skin contact, practice rooming-in with unrestricted (on-demand) feeding, and provision of additional support by professionals and/or peers.”


MEDOFF-COOPER, B., HOLDITCH-DAVIS, D., VERKLIN, M.T., FRASER-ASKIN, D., LAMP, J., SANTA-DONATO, A., BINGHAM, D., & ONOPISE, B. (2012). Newborn Clinical Outcomes of the AWHONN Late Preterm Infant Research-Based Practice Project. J Obstet Gynecol Neonatal Nurs. 2012. doi: 10.1111/j.1552-6909.2012.01401.x. [Epub ahead of print] Descriptive study to describe the neonatal health risks (hypothermia, hypoglycemia, hyperbilirubinemia, respiratory distress, the need for a septic workup, and feeding difficulties) experienced by 802 late preterm infants (24 0/7 to 34 6/7) from 14 hospitals in US and Canada and determine how these risks were affected by gestational age at birth. 36% were initially cared for in a special care nursery; approximately one half of these infants were eventually transferred to a well-baby nursery. Of the 64% of LPs initially cared for in a routine nursery, 10% were transferred to a special care unit or neonatal intensive care unit (NICU). More than one half of LPs experienced hypothermia, hypoglycemia, feeding difficulties, hyperbilirubinemia, and respiratory distress and/or needed a septic workup. The risk for these problems was higher in infants of younger gestational ages. 43% were bathed during the first 2 hours of life, and by 4 hours, more than two thirds had had their first bath. 52% received kangaroo care during the first 48 hours of life. These findings support those of smaller studies indicating that LPs are at high risk for developing health problems during their neonatal hospitalization. Nurses may be able to ameliorate some of these health problems through early identification of problems and simple, inexpensive interventions such as avoiding early bathing and promoting kangaroo care. PT, descriptive, KC helps late preterm health problems, near term, late preterm

Medves, J.M., & O’Brien, B. (2004). The effect of bather and location of first bath on maintaining thermal stability in newborns. Journal of Obstetric, Gynecologic, and Neonatal Nursing, 33(2), 175-182. Randomized controlled trial of 111 vaginally born term infants given first bath within first few hours of birth by nurses in admission nursery in Canada or be parents at bedside in the postpartum room followed by kc. Aural temperatures revealed no difference in temperatures for one hour post-bath and both groups’ temperatures returned to neutral thermal range within one hour of bath. FT, RCT, temp, bath, rewarming. Not on Charts Yet

Meek, J., & Huertas, A. (2012). Cochrane review: non-nutritive sucking, kangaroo care and swaddling/facilitated tucking are observed to reduce procedural pain in infants and young children. Evidence Based Nursing, 15(3), 84–85. doi: 10.1136/ebnurs-2011-100453. In this Cochrane review 3396 participants were analyzed from 30 randomized controlled trials and 30 crossover trials with 91 treatment arms. Kangaroo care was effective for preterm infants for reactivity and immediate regulation. These authors do not believe that handling is really noxious and handling was a noxious treatment in Riddell’s Cochrane review and these authors say handling studies are stressful, they are not strictly noxious and there is difficulty differentiating between STRESS and PAIN (pg. 1). There is new evidence that noxious stimuli can elicit generalized intense delta brush activity rather than localised cortical responses (Fabrizi, L, Slater R, Warley A. Meek J, Boyd S, Olhede S, Fitzgerald M., A shift in sensory processing that enables the developing human brain to discriminate touch from pain. Curr Biol, 2011, 21:1552-1558.) Thus, the most premature infants may have a generalized response to all sensory stimulation, albeit varying in intensity. The facial component of the PIPP score correlates with cortical hemodynamic responses to heel lance (Slater R, Cantarella A, Yoxen J, et al. Latency in facial expression change following noxious stimulation in infants is dependent on postmenstrual age. Pain, 2009, 146:177-182) which can reduce total scores and blur the distinction between immediate and delayed responses measured in a review. In fact, sucrose before heel lance reduces PIPP score, but does nothing to the cortical response, so sucrose may affect physiologic stability which is not due to analgesia. Thus, sucrose blunts behavioral or physiologic responses to pain without providing analgesia and this technique may not reduce the long term developmental damage caused by repeated noxious stimuli.(Slater R, Cornelissen L, Fabrizi, L et al. Oral sucrose as an analgesic drug for procedural pain in newborn infants: a randomized controlled trial. Lancet, 2010, 376: 1225-1232). FT,
PT, micro-preemie, commentary, pain, swaddled, regulation, infants can tell touch from pain, stress vs. pain FABRIZI STUDIES are listed on the KC Pain chart

Meier PP. (2001). Breastfeeding in the special care nursery: Prematures and infants with medical problems. Pediatric Clinics North America, 49(2), 425-443. This is a summary of the BF program at Rush that starts KC as soon as infants are extubated and allows them to have Nonnutritive sucking at breast as early as 24-25 weeks postconceptional age. Shows picture of 900 gm and 25 weeker on CPAP in KC at breast. 90% of infants <1500 gms are BF at discharge in this program. Breastfeeding, Preterm, clinical article, CPAP

Meier PP (2003). Supporting lactation in mothers with very low birth weight infants. Pediatric Annals, 32 (5), 317-325. Reviews the Rush Mother’s Milk Club Program elements, all strategies to improve BF, including Pictures of KC on page 317, pg. 321, and a section on bottom left column page 320 says “Mothers and fathers are encouraged to hold even the smallest ventilated infants in KC to minimize apnea, bradycardia, and hypoxemia that can accompany bolus gavage feedings” (pg. 320). Shows on page 320 the “My Mom Pumps For Me” recording form for recording KC sessions. Preterm, Breastfeeding, Ventilated KC, apnea, bradycardia, SaO2


Meier PP, Engstrom JL, Mingoletti SS, Miracle DJ, & Kiesling S. (2004). The Rush Mother’s Milk club: Breastfeeding interventions for mothers with very-low-birth-weight infants. JObstet Gynecol Neonatal Nurs, 33 (5), 164-174. Daily KC is an integral part of the Rush Mother’s Milk Club program. They reviewed 207 VLBW records from 1997-1998. Lactation initiation is 72.9%, mean dose of own mother’s milk at 15,30, & 60 days was 81.7%, 80.1%, and 66.1% respectively, of total volume fed. 57.2% of hospital days infants were exclusively breastfed and 72.5% of hospital days infants received some of their own mother’s milk. The outcomes of low income African American women are the highest in the literature and these outcomes approach national health objectives. PT, BF, lactation initiation rate, % feeds of mothers’ own milk, exclusive breastfeeding

Meier, P.P., Patel, A.L., Bigger, H.R., Rossman, B., & Engstrom, J.L. (2013). Supporting breastfeeding in the neonatal intensive care unit. Rush Mother’s Milk Club as a case study of evidence-based care. Pediatric Clinics of North America, 60, 209-226. DOI: 10.1016/j.pcl.2012.10.007. A case study report of how the Mother’s Milk Club works and on page 219 it has one full paragraph and a picture of KC about KC. That paragraph relates “Most infants in the NICU receive parental nutrition before term (KC =40; control =40) and APGARS of 7-10. Experiments got SSC at birth and others routine care(no SSC) in same hospital. Duration of maternal separation, uterine contractility, duration of third stage labor, uterine atony, giving methergin, completeness of placenta, giving oxytocin, uterine position. There are significant difference in third stage of labor assessment, completeness of placenta separation, uterine contractility immediately after birth, uterine position below umbilicus, absence of any abnormal signs of uterine atony or postpartum hemorrhage and being given methergine. Education of all midwives and mothers is needed. And clarify benefits to mother and neonates. PT, Quasi-experimental or descriptive comparative, 3rd world/. Not on charts, new to biblio study.


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Breastfeeding, weight curves

almost two thirds of the children assisted by Kangaroo Mother Care were, at six months of life (n=76), they had an average weight of 36.8±21.8 days of chronological age, weighing 1780±165g and 67.9% were small for corrected gestational age. At six months of life, between percentiles 15 and 85 of the WHO weight curves. The frequency of exclusive breastfeeding at six months was low. PT, descriptive evaluative study, Exclusive Breastfeeding, weight. NOT ON Charts 8/28/2014.

Mendes E.W, & Prociaino RS,. (2008). Massage therapy reduces hospital stay and occurrence of late-onset sepsis in very preterm neonates. Journal of Perinatology, 28, 815-820. 104 newborns of GA<32 weeks & birth weight < 1500 gms randomly selected for massage or control, 52 in each group. KC was routine care for all babies. Treatment babies got 15 minutes of massage 4 times a day during a 6-hour period each day. Massage was massage of face and limbs plus passive exercises of upper and lower limbs. Infant was able to be discharged when able to maintain body temperature while dressed and take oral feedings without suction difficulties. Growth, feeding behavior, and late-onset (72hrs postbirth or more) sepsis (harmful bacteria and toxins in tissue). Infants in KC + massage left hospital seven days sooner than KC alone infants; controls had higher incidence of infection. Thus, massage increased probability of hospital discharge 1.85 times. PT, descriptive evaluative, growth, weight. Not on charts 6/1/2017.

Menezes MA, Garcia DC, Melo EV, Cipolotti R. (2014-June). Preterm newborns at Kangaroo Mother Care: a cohort follow-up from birth to six months. Rev Paul Pediatr.32(2):171-177, Doi: 10.1590/0103-058220143213113.[Article in English, Portuguese] To evaluate clinical outcomes, growth and exclusive breastfeeding rates in premature infants assisted by Kangaroo Mother Care at birth, at discharge and at six months of life. Prospective study of a premature infants cohort assisted by Kangaroo Mother Care in a tertiary public maternity in Northeast Brazil with birth weight ≤1750g and with clinical conditions for Kangaroo care. The sample was composed by 137 premature infants, being 62.8% female, with average birth weight of 1365±283g, average gestational age of 32±3 weeks and 26.2% were adequate for gestational age. They have been admitted in the Kangaroo Ward with a median of 13 days of life, weighing 1430±167g and, at this time, 57.7% were classified as small for corrected gestational age. They were discharged with 36.6±21.8 days of chronological age, weighing 2335±165g and 67.9% were small for corrected gestational age. At six months of life (n=76), they had an average weight of 5954±971g and 68.4% presented corrected weight for gestational age between percentiles 15 and 85 of the World Health Organization (WHO) weight curve. Exclusive breastfeeding rate at discharge was 56.2% and, at six months of life, 14.4%. In the studied sample, almost two thirds of the children assisted by Kangaroo Mother Care were, at six months of life, between percentiles 15 and 85 of the WHO weight curves. The frequency of exclusive breastfeeding at six months was low. PT, descriptive evaluative study, Exclusive Breastfeeding, weight. NOT ON Charts 8/28/2014.

Mercer, RT, & Walker, L. (2006). A review of nursing interventions to foster becoming a mother. Journal of Obstetric, Gynecologic, & Neonatal Nursing, 35(5), 569-582. Not a KMC study, but a review of interventions designed to improve the process of becoming a mother. She included Curry’s 1979 and 1982 studies and concluded that interactive therapeutic nurse client relationships and maternal role preparation (i.e. skin-to-skin contact) supports becoming a mother more than formal teaching, which, without nurse input, is ineffective. Review, not KMC study, maternal behaviors

Merenstein & Gardner, (2002) neonatology textbook that states that KC is a good analgesic. Text, pain

Merewood A., (2014-Nov). Skin-to-skin at birth: a new model of care. J. Hum Lact. 30(4):509-10. doi: 10.1177/0890334414549768. This article gives step by step procedure for birth KC and gives rationale and says it should be done to prevent separation, no interruptions, keep baby warm, cause BF success- BF longer and better, keep blood glucose of baby stable, delay weighing and bath, do APGARS in KC, do not take to warmer and can be done in OR for cesarean or have father/support position hold infant til mom can respond to baby. FT, Review, birth KC, BF, temp, cesarean KC, APGARS, Not on all charts

Messmer B¹, Krauss-Stoissier B, Urlesberger B. (2014-Feb). [Non-pharmaceutical measures, topical analgesics and oral administration of glucose in pain management: Austrian interdisciplinary recommendations on pediatric perioperative pain management]. Schmerz. 2014 Feb;28(1):31-42. doi: 10.1007/s00482-014-1391-9. Non-pharmaceutical procedures are increasingly being used in pediatric pain therapy in addition to pharmacological procedures and have a supporting function. This article describes the non-pharmaceutical procedures which have an influence on perioperative and posttraumatic pain in children and adolescents. Prerequisites for every adequate pain therapy are affection, imparting a feeling of security, distraction and the creation of a child-oriented environment. Topical analgesics are indicated for application to intact skin for surface anesthesia. For a safe use consideration must be given to the duration of application, the dose and the maximum area of skin treated in an age-dependent manner. For simple but painful procedures in premature infants, neonates and infants, pain can be effectively reduced by the oral administration of glucose. The positive effect is guaranteed particularly for the use in a once only pain stimulation, Non-nutritive sucking, swaddling, facilitated tucking and kangaroo mother care, for example can be used as supportive measures during slightly painful procedures. There is insufficient evidence for a pain reducing effect in older infants and small children. Physical therapeutic procedures can be used as accompanying measures for acute pain and are individually adapted. However, the limited amount of currently available data is insufficient to make a critical scientific assessment of the individual measures. The effects can, however, be observed in the daily routine practice. Psychological methods can facilitate coping with pain. In situations with mental and psychiatric comorbidities or psychosocial impairment, a psychologist should be consulted. Acupuncture and hypnosis are also a meaningful addition within the framework of multimodal pain therapy. PT, Pain, Review

Messmer P, Rodrigues S, Adams J, Wells-Gentry J, Washburn K, Zabaleta I, & Abreu S. (1997). Effect of Kangaroo Care on sleep time for neonates. Pediatric Nursing, 23(4): 408-414. One group of 20 stable (no O2) 30 wk PMA preterms in preKC, KC, posKC for one hour, four times. Increase in % of quiet sleep time (Braedelton’s 6 stage scale) during KC (pretest=13.60%, KC = 25.55%, posKC = 14.95%), less awake time (pretest = 59.8%, KC = 46.9%, posttest = 60.95%), had longer and deeper sleep periods (pg. 413), less agitation, few episodes of apnea and bradycardia during each period and stable SaO2 in KC as compared to incubator. HR, RR, SaO2 did not change. Most infants experienced few episodes of apnea and bradycardia during each period, similar to Bauer et al, 1996"(pg. 412). LOS did not differ between KC infants and others in nursery. Nonsignificant but positive trend for improved maternal attitude and emotional affect and decreased stress during KC. Hispanic moms less accepting of KC, resistant to unbutton blouse (pg.413). Quasi Experimental, test-test-posttest own control, repeated measures. PRETERM, RR, HR, T, sleep, apnea, bradycardia, oxygenation, agitation, crying, Mat stress, maternal confidence, mat attitude, mat affect, paternal KC, hispanic


Meyer, K. & Anderson, G.C. (1999). Using kangaroo care in a clinical setting with fullterm infants having breastfeeding difficulties. MNC. The American J. of Maternal Child Nursing, 24, 190-192. One fullterm who wasn’t BF @ 20hrs postbirth got 60 min KC before next feeding. Spontaneously sought nipple and latched on. Two others did same thing at 18 and 40 hrs postbirth when given KC “for about 1 hr, usually one hour prior to a feeding and continuing into the next breastfeeding session. Both infants were exclusively Breastfeeding at discharge and one week later. KC may be worthwhile to try when moms are having breastfeeding difficulties." FULL-TERM, BF difficulties. NOT ON CHARTS

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Michelson, K., Christenson, K., Rothganger, H., & Winberg, J. (1996). Crying in separated and non-separated newborns: Sound spectrographic analysis. *Acta Paediatrica*, 85: 471-475. 29 full-term infants were randomly assigned to cot or Kangaroo care for the first 90 min. following birth. Cot babies cried 10 times more than KC babies and the cry duration was 0.8-0.9 seconds with a contour that is a discomfort cry, elicited mainly by separation from the mother. RCT. FULL TERM, separation, crying See also Christenson 1995

Mikkel-Kostyra K, Boltszuko I, Mazur J, & Zielenska M (2001). Skin-to-skin contact after birth as a factor determining breastfeeding duration. *Med. Wieku Rozwoj*, 5(2), 170-189. 1250 Polish children at Early KC is an independent predictor of BF duration. One group had less than two hours of VEKC and the other had two hours. FULL TERM, BF, Regression, VEKC, BF


Full term, BF, Regression, VEKC, BF

Mikkel-Kostyra K, & Mazur J. (2000). Birth weight as a factor influencing infant feeding in Polish maternity wards. *Med Wieku Rozwoj* 4(3), 337-346. POLISH: FULL TERM; 11,784 newborns from 427 maternity hospitals were studied. 97.2% of all newborns breastfed; 72.5% of preterms breastfed. KC was compared to rooming-in and was strong predictor of initiating BF and KC; and rooming-in as influences for BF were more evident in lower birthweight infants than higher. They use KC routinely. BF, KC is routine. FULL TERM

Mikkel-Kostyra K, Mazur J, & Bolotszko I (2002). Effect of early skin-to-skin contact after delivery on duration of breastfeeding: A prospective cohort study. *Acta Paediatrica*, 91, 1301-1306. 9612 healthy full-term newborns were in three groups according to hospital care in Poland in 1995. Group 1 got no KC after birth (n=208), Group 2 got <20 minutes of KC (n=845; 532 got <14 min of KC, 200 got 5-9 min of KC, and 113 got 10-19 min of KC) and a third group got >20 minutes of KC (n=72; 20-29 min = 19; >30 min = 53). Years later the national data set was merged for chart review. 1923 healthy newborns were randomly assigned to complete follow-up questionnaires when infants were 3 years old. 1340 (69.7%) of questionnaires were returned and 1250 subjects were included in analysis. KC was given to 1020 dyads (81.6%); 96% of KC contact was initiated within first 10 minutes of birth. After c/s, only 11.2% of cases got KC, and in half of them KC was started 1 hour or later after delivery. In 586 moms, KC was initiated within first 5 min of birth and lasted <5 minutes. KC >20 min prolonged duration of exclusive BF by 1.35 mo, overall BF by 2.10 mo compared to no KC group. Especially beneficial was KC >30 min and longer. KC >20 minutes duration after delivery in DR increased duration of exclusive BF; but not overall BF. Only 6% had KC for 20 minutes or more, 76% had it for 1-19 mins, and 18% had no early contact at all. Irrespective of the duration of KC, 97% initiated KC within 10 minutes of birth. Duration does affect EXCLUSIVITY OF Breastfeeding: no contact group had an exclusive BF duration of 2.47 months. Group that had 1-19 mins of KC had 2.77 months exclusive breastfeeding, and >20 minutes had 3.82 months; any BF had similar pattern: no KC = 6.97 months, 1-19 minutes of KC = 8.33 months, and >20 minutes of KC = 9.07 months, >30 minutes KC = 10.07 months of BF. KC was main prognostic factor for duration of exclusive BF, even just under 6 minutes of KC. Extensive contact (>20 min) was more beneficial. Short KC was not very supportive for BF (30% of infants with KC <20 min started sucking, but 81% of infants with KC >20 min did so). VEKC significantly increased mean duration of exclusive BF by 0.39 months and overall BF duration by 1.43 months. BEST TO DO KC FOR 30 MINUTES OR MORE and FEED WITHIN 2 HOURS OF BIRTH. VEKC coexists with other hospital BF practices. Pairs who got VEKC had a greater likelihood for other supportive care (rooming-in, no separation of mother and infant for more than one hour day, and early feeding initiation. FULL TERM, BF, short vs long KC (>20 minutes), CS, VEKC, Exclusive BF, BF duration. See also Nommsen-Rivers annotation below. See Nommsen-Rivers report of this study that follows in thebib.

Mikkel-Kostyra K, Mazur J, & Wodzian-Godek E. (2005). Factors affecting exclusive breastfeeding in Poland: Cross-sectional survey of population-based samples. *Prev Paediat Med.* 50 (1), 52-59. One cross sectional survey in 1995 in hospitals (n=11,422 newborns) and a second in 1997 in primary care centers serving infants after discharge (n=10,156 newborns) submitted data to regression. In hospital factors contributing to non-exclusive BF were CS, BF initiation after 2 hr post-birth, lack of KC, use of pacifiers, separation >1 hour/24h, and infant health problems. After hospital discharge, factors were use of pacifier, mom’s reluctance to exclusively BF more than 4 months, and low level maternal/paternal education. Lack of KC was a significant contributor to non-exclusive BF during hospitalization, but does not contribute after discharge (because they only did six minutes of KC in the hospital and did not do it any more after that six minutes of birth). Descriptive survey FULL TERM, BF, exclusive BF, CS.

Miles, R., Cowan, F., Glover, V., Stevenson, J., & Modi, N. (2006). A controlled trial of skin-to-skin contact in extremely preterm infants. *Early Human Development*, 82(7), 447-455. Randomly chosen hospitals (2) either gave daily KC for 4 weeks or routine care for 4 weeks. 145 Infants <32 weeks GA were recruited within 7 days of birth, were given one session of KC (n=46) (in chair, no strong perfume, infants had diaper & woolen hat between breasts covered by light blanket, flexed limbs) daily for 20 minutes per day for 4 weeks KCBib 2018
Miles, R., Cowan, F., Glover, V., Stevenson, J., & Modi, N. (2003). A controlled trial of skin-to-skin contact in extremely preterm infants. Pediatric Research, 54, 569. Same study as reported in 2006 but this was one page abstract. In summary there were not differences between the KMC and control group on development and memory tests at 1 years. There was great variation in amount of KMC that started at <32 weeks and continued for 4 weeks, but authors strongly say they cannot recommend resource allocation to do KMC to promote development because of no differences between the groups. PT, RCT, development, memory.


Miler-Petrie, E. (2012). MCHIP and USAID host first Latin American and the Caribbean Annual Conference on Kangaroo Mother Care. Healthy Newborn Network, Washington, DC: Save the Children. This is a blog that appeared on Jan. 20, 2012 on the Newborn News Express site on the HealthyNewborn Network.org/blog and relates how Kangaroo Mother Care in third world countries is saving babies’ lives and improving the health of mothers too. The meeting brought together many countries implementing Kangaroo Mother Care so they should share what they have learned with other programs. Aims of conference were to present recent advances in the field, share experiences of implementing KMC programming throughout the region, create a regional sustainable network for KMC with a standardized methodology and common indicators, create a community of practice in the region, and showcase the KMC program supported by MCHIP at the San Vicente de Paul hospital in San Francisco de Macoris. Participants represented 12 countries in the region, and found many issues in common, including lack of funds, lack of health care staff, and resistance towards innovation and implementation. However, throughout the conference, common solutions were much more popular topics, and there was no shortage of ideas in the regional brainstorming sessions. Participants stressed methods of building awareness and cost-effectiveness tools, among other strategies. A common issue included resistance in the medical community toward accepting KMC as a valid medical intervention despite scientific evidence supporting its implementation. During the conference, a new scientific study linking KMC care to improvements in brain development was presented (must have been Morgan et al 2011 article that includes Nils Bergman on it that was presented that showed that one hour of KMC sleep was better (more quiet sleep) and less stressful (less sympathetic nervous system activation) to fullterm newborns than one hour in a cot beside the mother). Dear Susan I participate to a meeting in December in Dominican Republic but it was not a scientific meeting. As we trained 6 central american countries with USAIDS y The neonatal alliance (with Save the children), i meet with all the KMC program of these countries and peru and bolivia. Paraguay came by they don’t have really a KMC program. Ecuador came and normally they will come for a training now in Colombia. Haiti was invited too a a first step of their integration in the Caribbean countries. They trained with us in December We spoke about the difficulties of the implementation, the resistances, each country presented their KMC program, we spoke about economical difficulties and auto sustainability. I presented the results of our study on excitability of the brain and KMC and nothing more. Nils was not there. It was a practical workshop and not a scientific workshop. 3rd world, KMC, PT, implementation.

in this position. A cohort study. A Kangaroo Unit sector and a Nursery sector in a secondary and tertiary care at a mother-child hospital in Recife, Brazil. Preterm infants of gestational age 27-34 weeks (n=38) and term infants (n=39). Surface electromyography was used to investigate muscle activity in the brachial biceps at rest. 3 groups were designed: (1) preterm newborns in the kangaroo position (PT-KAN), where the newborn remains in a vertical position, lying face down, with limbs flexed, dressed in light clothes, maintaining skin-to-skin contact with the adult's thorax. Her electromyographic activity was recorded at 0 h (immediately before starting this position), and then at 48 h after the beginning of the position (but newborns were kept in the kangaroo position for 8-12 h per day) and at term equivalent age (40±1 weeks); (2) preterm newborns not in the kangaroo position (PT-NKAN), in which measurements were made at 0 h and 48 h; and (3) term newborns (T), in which measurements were made at 24 h of chronological age. The Root Mean Square (RMS) values showed significant differences among groups (F(15,108)=56.69; p<0.001). The multiple comparisons showed that RMS was greater at 48 h compared to 0 h in the preterm group in the kangaroo position, but not in the group not submitted in the kangaroo position. The RMS in the term equivalent aged group in the kangaroo position was also greater when compared with those in the term group. The kangaroo position increases electromyographic activity in the brachial biceps of preterm newborns and those who have reached the age equivalent to term. PT, Quasi-experimental or comparative descriptive (PTs compared to FTs), emg, motor development, 3rd world, Not on Charts Jan. 8, 2013 See also Diniz study 2013

Miranda-Wood, C., & Morelos, J. (2010). Promoting early breastfeeding and attachment: Our journey to SOFT. Journal of Obstetric, Gynecologic and Neonatal Nursing, 39 (Suppl 1), S31. The first 3 hours post birth are a SENSITIVE Period that is critical for establishing early attachment. This was a performance improvement project to use KC to promote attachment and BF. Previous to this project, the infant and mother were allowed some time together but then infant was taken to transitional nursery. 271 charts were reviewed and showed that 64% of moms had a desire to BF and 32% received birth KC, but documentation of BF was inadequate and there were differences in HOW EACH STAFF person ACCOMPLISHED SKIN to SKIN CONTACT. So they embraced S (skin to skin) O (Open eye-to-eye), F (fingertip touch), and T (time together), formed a committee, developed patient education brochure, a DVD and a two-part class and a SOFT resource nurse during implementation. Now 100% of perinatal staff have been trained. This project breaks the barriers of resistance, and protected the maternal/infant dyad and promoted early attachment. One nurses noted that “Mothers provide the habitat, babies breastfeed, fathers and nurses protect the dyad and keep them together.” PT, quality improvement project, implementation attachment, BF: paternal role is to PROTECT THE DYAD.

Mitchell AJ, Yates C, Williams K, & Hall RW. (2013 Nov). Effects of daily kangaroo care on cardiorespiratory parameters in preterm infants. J Neonatal Perinatal Medicine. 6(3):243-249. doi: 10.3233/NPM-130513. College of Nursing, Univ Arkansas. Kangaroo care (KC) has possible benefits for promoting physiological stability and positive developmental outcomes in preterm infants. The purpose of this study was to compare bradycardia and oxygen desaturation events in preterm infants in standard incubator care versus KC. Thirty-eight infants 27 to 30 weeks gestational age were randomly assigned to 2 hours of KC daily between days of life 5 to 10 or to standard incubator care. Infants were monitored for bradycardia (heart rate <80) or oxygen desaturation (<88%). Analysis of hourly events was based on three sets of data: standard care group 24 hours daily, KC group during time 22 hours daily, and KC group during holding time 2 hours daily. The KC group had fewer bradycardia events per hour while being held compared to time spent in an incubator (p = 0.048). The KC group also had significantly fewer oxygen desaturation events while being held than while in the incubator (p = 0.017) and significantly fewer desaturation events than infants in standard care (p = 0.02). Conclusion: KC reduces bradycardia and oxygen desaturation events in preterm infants, providing physiological stability and possible benefits for neurodevelopmental outcomes. PT, oxygen saturation, desaturations, bradycardia, duration =2 hrs/day X5 days, stability, micropreemies

Mitchell AJ1, Yates CC, Williams DK, Chang JY, Hall RW (2013). Does daily kangaroo care provide sustained pain and stress relief in preterm infants? J Neonatal Perinatal Med. 2013;6(1):45-52. doi: 10.3233/NPM-1364212. Objectives were to determine whether stress in preterm infants, measured with salivary cortisol, decreases after five days of Kangaroo Care (KC) compared to five days of Standard Care (SC). 2. To determine whether kangaroo care provides sustainable pain relief beyond the period of skin-to-skin holding. Preterm infants (n = 38) born at 27-30 weeks gestational age were randomized to either the KC or the SC group and received the allocated intervention starting on day of life (DOL) five and continuing for five days. Salivary cortisol was collected on DOL five and again on DOL ten. Differences were analyzed using repeated measures ANOVA and t tests. Pain during nasal suctioning over five days was assessed using the Premature Infant Pain Profile (PIPP). 1. Adequate saliva samples for salivary cortisol were collected for 13 KC infants and 11 SC infants. There was no main effect of group (p = 0.49), but there was a significant main effect of age (DOL five versus DOL ten), with salivary cortisol levels decreasing in both groups (p = 0.02). 2. Pain scores for both groups (n = 38) indicated mild to moderate pain during suctioning, with no significant difference in pain scores between groups. Conclusions: 1. KC did not affect salivary cortisol levels in preterm neonates, but levels in both the KC and SC groups decreased over time from DOL five to ten. Salivary cortisol may vary with age of infant. 2. Infants experience pain during routine suctioning and may require pain management. PT, RCT, Pain, stress, salivary cortisol, duration of KC, residual effects NOT ON CHARTS 4/12/2014

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Mitchell HK, Thomas R, Hogan M, Bresges C. (2014-June 4). Miracle baby: managing extremely preterm birth in rural Uganda. BMJ Case Rep. 2014; pii: bcr2013200949. doi: 10.1136/bcr-2013-200949.Descriptive case study. Preterm birth is an important cause of neonatal morbidity and mortality globally. Uganda has one of the highest rates of preterm birth in East Africa but few resources to care for these infants. This case highlights the clinical course of an extremely premature infant born at 26 weeks gestation to a nulliparous 24-year-old woman. Her mother was involved in her care and taught the principles of kangaroo mother care. After initial problems establishing feeds she progressed well and was discharged in the fifth week of life. The case describes some of the low technology conservative and medical measures which can be used to care for neonates, such as antenatal steroids and kangaroo care. The use of antibiotics and aminophylline are also discussed. The approach to the common challenges faced by premature infants such as respiratory disease, sepsis and necrotising enterocolitis in a resource-poor environment are discussed.Descriptive, micropreemie | not on charts 7/8/2014

Mizuno K, Mizuno N, Shonohara T, & Noda M. (2004). Mother-infant skin-to-skin contact after delivery results in early recognition of own mother’s milk odour. Acta Paediatrica 93(12), 1560-1562. Randomized control trial in 2002 of 60 healthy fullterm infants into KC (n=30) (KC for a mean 63.7 ± 7.7 minutes immediately after birth and stopped once infant had suckled at breast and no fathers were present) and control group (n=30) (no contact with mothers until 24 hours old, no skin contact after birth, and no fathers present) who were given mother’s milk odour to follow at day 1 and day 4 after birth. All infants remained in observation ward for 24 hours postbirth (and fed formula in nursery) and then went to moms for BF every 3 hrs. Moms stayed in hospital for 4 days. Infant facial action (and frequency of mouthing movements (sucking, licking, chewing) were assessed on day 1 and 4 before 1st BF of the day, and BF every 3 months was assessed. KC infants demonstrated a larger difference in frequency and duration of mouthing movements between their own and another mother’s milk odour (and more movement with formula than orange juice or water) at 4 days age than control infants (and they mouthed more with own mother’s milk smell than other mother’s milk scent on day 4) and KC infants breastfed 1.9 months longer than controls. Most common reason for stopping was insufficient milk supply. KC results in enhanced infant recognition of own mother’s milk and longer BF. During 1st hour of life serum noradrenaline levels are 20-30 times higher than later and noradrenaline neurons in the locus coeruleus send signals to the olfactory bulb and promote olfactory learning (Ref 8 & 9 in article).See also Winberg for stuff on olfaction during labor. Attraction to mother’s milk odor could be genetically determined as infants who have no contact with mom for 2 wks also demonstrate this preference (pg. 1643). Immediate KC after birth results in the infant having enhanced recognition of his own mother’s milk, and is associated with longer breastfeeding duration. Fullterm, RCT, BF, Birth KC, mothung and facial action to show recognition of milk odor, olfaction, breastfeeding duration (Not on charts)

Modi, N. & Glover, V. (1998). Non-pharmacological reduction of hypercortisolaemia in preterm infants. Infant Behavior and Development, 21, April 1998. Special ICIS issue, pg. 86. Extremely preterm infants experience numerous stresses and they have shown that preterms have very high levels (often exceeding 1500nmol/l while baseline level in healthy infants of equivalent GA are around 150nmol/l) of circulating cortisol (a glucocorticoid steroid hormone). Glucocorticoids are neurotoxic. In animals, exposure to high cortisol leads to hippocampal cell death and loss of hippocampal volume (hippocampus plays role in learning and intermediate memory and contains highest concentration of glucocorticoid receptors in the brain. In adults, hypercortisolaemia is associated with reduced hippocampal volume, memory dysfunction, and hippocampal atrophy in Alzheimer’s disease. Cortisol potentiates hypoxic-ischemic brain injury which is anor cause of neurodevelopmental impairment, raising possibility that chronic stress may exacerbate existing neurological injury. Reducing hypercortisolaemia will lead to measurable benefits. Massage results in ↓ in plasma cortisol, but not catecholamine levels. Median difference in cortisol before and after massage was -35.8nmol/l, 95%CI -0.5-94.0. Intrauterine like sound stimulation did not change circulating cortisol nor β-endorphin. KC caused circulating cortisol and β-endorphin to fall significantly after KC (cortisol geometric mean change 66%, p<0.008; β-endorphin geometric mean change 74%, p<0.002) KC and massage study done too and KC alone caused significant fall in salivary cortisol; massage caused salivary cortisol to rise in some and fall in others (inconsistent response and may be effective only if behavioral state of infant is appropriate). Significant fall in salivary and serum cortisol was NOT sustained when compared to a control period on a separate day (No residual effect beyond one day). KC appears to result in most consistent response but may need to be applied over a prolonged period of time to produce benefit. PT, Review of 4 studies. Stress, cortisol, massage, micropreemie, beta-endorphin, residual effects. No duration of KC mentioned.

Modrcin-McCary, M.A., Harris, M., & Marlar, C. (1997). Touch and the fragile infant: Comparison of touch techniques with implications for nursing practice. Mother Baby Journal, 2(4), 12-19. Provides overview of historical perspectives on touch, Sister Callista Roy’s adaptation model as a framework for touch studies, and a comparison of the types of touch (procedural, comforting – that includes stroking, massage, tactile-kinesthetic touch, gentle human touch, and Kangaroo Care (pg 17-18). Author admonishes one to “frequently monitor the infant during kc for temperature instability, patency of tubes, and stimulation tolerance”(pg. 17) and states that "minimal detrimental effects are associated with KC if the infant is medically stable"(pg.17). Preterm, review, stability, over stimulation, >32 weeks


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response to stress is immature or disorganized. The article reviews actual and potential stressors of premature infants, describing autonomic, motor, and state behavioral responses and proposed a clinical tool called STRESS (signs of stress, touch interventions, reduction of pain, environmental considerations, state, and stability) that encompasses all one needs to know about stress in the infant, but no tool is provided nor are any scoring criteria, so this is just a conceptual paper identifying content relevant to measuring stress in premature infants. On page 68 it says as part of the TOUCH Interventions portion of the STRESS tool “Stroking, massage, tactile/kinesthetic, and kangaroo care types of touch may be appropriate, (Sned’s note: meaning it may meet the criteria of being gentle human touch that is a form of continuous touch that is spoken about before this statement), but the nurse needs to know that stroking, massage, and tactile/kinesthetic touch may be inappropriate to too much stimulation for some fragile infants.” Pg. 68. 

**Review, theoretical article, PT, Stress, pain.** Not on charts


Moehrbacher, N. (2008). *Breastfeeding the preterm baby*, Ameda Breastfeeding Products. Available from Ameda Breastfeeding Products, Evenflo Company, Inc. 1801 Commerce Drive, Piqua, OH 45356, 1-866-992-6332. In this two page clearly written, no-nonsense and engaging handout for mothers, on page 2 it states under the heading of Boosting Milk Supply: “hold your baby skin-to-skin before pumping” and under the heading Starting To Breastfeed, it states, “Your hospital may have policies that affect when you start breastfeeding. Even before then, try to hold your baby skin-to-skin as much as you can. This helps your baby stay warm and calm, and sleep better. It may also help you make more milk.” Preterm, breastfeeding.


Moehrbacher, N. (2008). *Holding Your Baby and Latching On*. Ameda Breastfeeding Products. Available from Ameda Breastfeeding Products, Evenflo Company, Inc. 1801 Commerce Drive, Piqua, OH 45356, 1-866-992-6332. Under the heading “Using your baby’s hard wiring” it states “To see your baby’s inborn feeding skills in action, undress your baby down to her diaper and open your shirt or take it off. Hold her upright between your breasts skin to skin as much as you can. This helps your baby stay warm and calm, and sleep better. It may also help you make more milk.” Keep Baby Close, Feed Often.


Mondlane, R., de Graa, A.M.P., & Ebrahim, G.J. (1989). Sin-to-skin contact as a method of body warmth for infants of low birth weight. *Journal of Tropical Pediatrics*. 35. 321-326. 132 preterms <2500 gram started 24/7 KMC at 3-5 day of life and continued at least til discharge during the cold season (ambient temp 22-32°C) in Maputo, Africa. 67% of those who had home visit were still doing KC at home. KMC was principal means of warmth, no hypothermia occurred, Readmission to NICU was required for 4 for diarrhea, 2 for respiratory infection, 2 for jaundice, one for poor sucking. *3rd World temp, Preterms, post-discharge KC, home KC, infection*. Not on charts

Monguilhotte JJDC, Brüggemann OM, Freitas PF, d’Orsi E. (2018-Jan). Nascer no Brasil: the presence of a companion favors the use of best practices in delivery care in the South region of Brazil. Rev Saude Publica..52:1. doi: 10.11606/s1518-8787.2018052006258. [Article in English, Portuguese] OBJECTIVE To analyze if the use of best practices in delivery care in the South region of Brazil. METHODS This is a cross-sectional analysis of the longitudinal study Nascer no Brasil. We analyzed data from 2,070 women from the South region of Brazil who went into labor. The data were collected between February and August 2011, by interviews and medical records. We performed a bivariate and multivariate analysis, calculating the crude and adjusted prevalence ratios using Poisson regression with robust variance estimation. The level of significance adopted was 5%. RESULTS Most women had a companion during labor (51.7%), but few remained during delivery (39.4%) or cesarean section (34.8%). Less than half of the women had access to several recommended practices, while non-recommended practices continue to be performed. In the model adjusted for age, education level, source of payment for the delivery, parity, and score of the Brazilian Association of Market Research Institutes, the presence of a companion was statistically associated with a greater supply of liquids and food (aPR = 1.34), dietary prescription (aPR = 1.34), use of non-pharmacological methods for pain relief (aPR = 1.37), amniotomy (aPR = 1.10), epidural or spinal analgesia (aPR = 1.84), adoption of non-lithotomy position in the delivery (aPR = 1.77), stay in the same room during labor, delivery, and postpartum (aPR = 1.62), skin-to-skin contact in the delivery (aPR = 1.81) and cesarean section (PR = 2.43), as well as reduced use of the Kristeller maneuver (aPR = 0.67), trichotomy (aPR = 0.59), and enema (aPR = 0.49). CONCLUSIONS In the South region of Brazil, most women do not have access to the best practices in addition to undergoing several unnecessary interventions. The presence of a companion is associated with several

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beneficial practices and the reduction in some interventions, although other interventions are not impacted. FT, descriptive evaluative study, birthKC, cesarean KC, recommended OB care, 3rd world.

Montirosso R, Fedeli C, Del Prete A, Calciolari G, Borgatti R; NEO-ACQUA Study Group. (2013 Nov21). Maternal stress and depressive symptoms associated with quality of developmental care in 25 Italian NICUs: A cross sectional observational study. Int J Nurs Stud. 2013 Nov 21. pii: S0020-7489(13)00333-7. doi: 10.1016/j.ijnurstu.2013.11.001. [Epub ahead of print] 0-3 Centre for the Study of Social Emotional Development of the At-Risk Infant, Scientific Institute, IRCCS Eugenio Medea, Bosissio Parini, Lecco, Italy. Electronic address: rosario.montirosso@hp.lnf.it. Parents of very preterm infants are at great risk for experiencing stress and depression. The so called developmental care oriented approach used in Neonatal Intensive Care Units have beneficial effects for parents. However the actual level of developmental care may vary among units and little is known about how the routine adoption of developmental care affects maternal stress and depression. To investigate the extent to which level of quality of developmental care routinely carried out in 25 tertiary Neonatal Intensive Care Units across Italy affects maternal stress and depression.178 mothers of healthy very preterm infants with gestational age ≤29wk and/or birth weight ≤1500g and without documented neurologic pathologies were recruited consecutively. 180 full-term mothers were recruited as the control group. To distinguish the quality of developmental care level, each unit was assessed using a specifically developed questionnaire. We compared negative emotional states of mothers by splitting the 25 Neonatal Intensive Care Units into units with high-care and low-care based on median splits for two main care factors: (1) The Infant Centered Care index (consisting of measures of parent involvement, including ability to room in, frequency and duration of kangaroo care and nursing interventions aimed at decreasing infant energy expenditure and promoting autonomic stability). (2) The Infant Pain Management index (consisting of measures to decrease painful experiences including pharmacologic and nursing practices). Maternal stress was assessed by the Parental Stressor Scale: Neonatal Intensive Care Unit questionnaire. Maternal depressive symptomatology was assessed by the Edinburgh Postnatal Depression Scale questionnaire. Preterm mothers from low-care units in the Infant Pain Management reported higher scores in their perception of stress associated with behavior and appearance of the infant than mothers from high-care units (p=0.05). Preterm mothers from high-care units in the Infant Pain Management reported a depressive symptomatology score average similar to that reported by full-term mothers. No significant Infant Centered Care effect was found both for maternal stress and depression. The findings suggest that implementing more practices useful to reduce infants’ painful experience can mitigate the stress and depressive symptomatology of the preterm mothers. PT, Quasi-experimental, lead control group but not randomization), pain, maternal stress, infant centered care, Not on charts 1/8/2014.

Montirosso, R. & Provenzi, L. (2015-Mar-Apr). Implications of Epigenetics and Stress Regulation on Research and Developmental care of preterm infants. JOGNN, 44(2), 174-182. doi: 10.1111/1552-6909.12559. Great review article about how the NICU environment is TOXIC stressor to preterm infant, primarily due to repeated pain and maternal separation which disrupts maternal regulation of early stress reactivity and that disruption of early stress reactivity translates into long term impairment of the central nervous and endocrine systems (pg. 172). “NICU is inherently stressful and it might be only partially appropriate for the neurodevelopmental needs of preterm infants. Painful procedures and high levels of physical stimulation (lights and sound exposure) may affect the functionality of the central nervous and neuroendocrine systems (cites Brown G 2009 NICU noise and the preterm infant. Neonatal Network, 28(3), 165-173: doi: 10.1891/0730-0832.28.3.165; Ozawa M et al., 2010 Effect of procedure light on physiological responses of preterm infants. Jpn J Nurs Science, 7(1), 76-83: doi:10.1111/j.1742-7924.2010.00142.x). NICU hospitalization is associated with prolonged maternal separation (Latva R, Lehtonen L, et al. 2007 Visits by the family to the NICU. Acta Paediatrica, 96(2), 215-220) and caregivers (mother) have a critical role in early regulation of the stress response (Gunnar MR. 1998. Quality of early care and bufferin of neuroendocrine stress reactions: Potential effects on the developing human brain. Preventive Med 27(2), 208-211 doi: 10.1006/pmed.1998.0276). Early maternal care is accompanied by biobehavioural processes that support physiological, behavioral, and neural developmental dimensions specifically associated with stress reactivity and environmental adaptation, thereby building infants’ resilience. During the early period of neurolplasticity, the HPA axis is a key regulatory pathway that coordinates stress regulation and is mediated by maternal care (Jansen J, Beijers R et al., 2010). Parent/infant closeness during hospital care mediates infant behavioral and neuroendocrine responses in many beneficial ways (Flacking R, 2012 on KC bib above). For example, preterm infants held in SSC by their mothers during a heel lance exhibited less crying and grimacing than a control group who were swaddled in a crib for the same procedure (cites Gray Watt & Blass 2000). Skin to skin contact with the mother has been shown to elicit protective effects on neurobehavioral trajectories (Feldman, Rosenthal, Eidelman, 2014) and to be effective in reducing cortisol responses to pain in PTs (Cong. Ludington-Hoe, Walsh 2011). MORE PROLONGED AND FREQUENT PRESENCE OF PARENT IN THE NICU IS ASSOCIATED WITH LESS STRESS AND GREATER NEUROBEHAVIORAL STABILITY IN PT INFANTS (Montirosso R et al., 2012; Reynolds LC et al. 2013. Parental presence and holding in the NICU and associations with early neurobehavior. J Perinatolology 33(8), 636-641. doi: 10.1038/jp.2013.4). Frequent pain and maternal separation within the NICU might exert stress-dependent epigenetic changes which contribute to altered developmental trajectories in neurobehavior and HPA functioning, especially in later life stress regulation. Stress exposure effects on brain and HPA axis: the HPA axis is one of the primary systems involved in stress reactivity (cites Jansen 2010 above). Physiology is that corticotropin releasing hormone is transported from hypothalamus to pituitary gland, stimulating release of adrenocorticotropic horone which leads to peripheral secretion of glucorticoids (cortisol in humans) from adrenal glands into blood stream. Cortisol

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release is ESSENTIAL for infant to respond to stress, and glucocorticoids mobilize glucose from energy storage and increase cardiovascular tone (BP increases) and many other widespread effects (see Gunnar M & Donzella, 2002). It is detrimental for the HPA axis activity to be prolonged over time as a consequence of CHRONIC or PERSISTENT stressful conditions (p. 175). Even in early infancy the HPA axis adaptively sustains stress reactivity to physical and social environments (Gunnar & Donzella, 2002).

Feedback mechanisms regulate cortisol secretion to maintain homeostasis. HPA regulatory function is enabled by release of adrenal cortisol which binds to glucocorticoid receptors (GRs) and inhibit HPA axis activity via a negative feedback loop (cites Jansen et al. 2010). GRs are in several brain areas: amygdala, hippocampus, prefrontal cortex and adverse childhoos experiences characterized by elevated and chronic stress (TOXIC STRESS) can exert deleterious effects on developing brain architecture: 1) loss of dendritic arborization, 2) negative effect on synaptogenesis (McCrorry E, De Brito SA & Viding E, 2012. The link between child abuse and psychopathology: A review of neurobiologic and genetic research. J. of the Royal Society of Medicine, 105(4),151-156 doi:10.1258/prsm.2011.110222), 3) reduced apical dendritic length and 4) reduced spine densities (these last two in animals and citation is Radley JJ & Morrison JS, 2005 Repeated stress and structural plasticity in the brain. Ageing Review 4(2), 271-287 doi: 10.1016/j.aggrev.2006.03.004), 5) altered HPA activity, 6) smaller intracranial and cerebral volumes, 7) smaller prefrontal cortical white matter (de Bellis MD et al., 2002. Brain structures in pediatric maltreatment-related post traumatic stress disorder: A sociodemographically matched study. Biological Psychiatry 52(11), 1966-1078 doi: 10.1016/S0006-3223(02)01459-2). “During TOXIC stress conditions, environmental support (ie mother/caregivers) is insufficient or unable to return the individual’s stress response systems back to baseline” (pg. 176). “Even chronic or extended exposures to early negative environmental conditions have a significant effect on childhood brain development” (pg. 176). “However, supportive parenting can act as a mediator of stress exposure and has been associated with increased hippocampal volume, an area greatly involved in stress regulation” (pg. 176).

TOXIC stress increases pressure on stress regulatory systems (ie. Allostatic load), leading to the programing of HYPER or HYPO-responsive HPA axis functioning and contributing to the degree of an infant’s susceptibility or resiliency (ability to react to adapt and then go back to baseline after stressor is gone) to further life challenges (McEwen,BS. 2012. Brain on stress: How the social environment gets under the skin. Proceedings of the National Academy of Sciences of the USA, 109(Suppl 2), 17180-17185, doi: 10.1073/pnas.1112541109). “Preterm birth and NICU hospitalization are TOXIC STRESS CONDITIONS (pg.176) because infant is exposed to strong, frequent, prolonged painful stressors in a context in which stress buffering and protective factors such as maternal care are less available. This situation is associated with several negative developmental outcomes: 1) altered neuroendocrine responses, 2) long lasting brain alterations (Smith GC Gutovich J, ….,Inder, T. 2011. NICU stress is associated with brain development in preterm infants. Annals of Neurology, 70(4), 541-549. Doi: 10.1002/ana.22545), 3) dampened basal cortisol levels which switch to hypercortisolemia at 8 and 18 months (Gunnar RE. 2013.Neonatal pain in very preterm infants: long-term effects on brain, neurodevelopment, and pain reactivity. Rambam Maimonides Medical J. 4(4), e0025. doi:10.5041/RMMJ.10132). Neuroimaging has shown that preterm infants exposed to higher levels of stress during NICU hospitalization exhibited a proportional reduction in parietal and frontal regions and altered connectivity within temporal lobes at NICU discharge (Ranger M et al., 2013. Neonatal pain related stress predicts cortical thickness at age 7 years in children born very preterm. Plos One, 8(10), e76702. Doi:10.1371/journal.pone.0076702). Early life stressful events such as pain and maternal separation causes epigenetic changes. The gene does not change, but its expression does as the gene interacts with the environment through variations in chromatin structure. Gene expression occurs through DNA transcription into messenger RNA and subsequently into protein synthesis. So, epigenetics is the process that alters the accessibility of the coding portion of a gene to molecular transcriptional agents that lead to permanent alterations in gene expression. The altered pattern of gene expression and protein synthesis leads to changes in cell functioning in target tissues, contributing to phenotype. Epigenetic transcriptional regulatory mechanisms include DNA Methylation, the binding of a methyl molecule to cytosine sites called Cytosine-phosphate-Guanine dinucleotides (CpGs) which is also called GENE SILENCING, histone modification, small noncoding RNA molecules (microRNAs). Pain has caused methylation-mediated promoter regulation of nociceptive genes; and early social stress (maternal separation) is associated with DNA methylation of NR3C1, a stress-related gene encoded for hippocampal Glucocorticoid Receptors (Champagne and Carley, 2009). Rat pups raised by moms with low quality care showed altered NR3C1 methylation and GR expression and an increase in cortisol reactivity to stress (Meaney M & Smyf, 2005). Therefore, variations in maternal care (think separation) affect the HPA axis through stable and lasting epigenetic changes of a stress-related gene and DNA methylation changes are reversible. Fortunately. The matureterine and early postnatal lifes epochs are CRITICAL periods for brain plasticity in the human infant developing brain. Throughout these periods the brain is highly susceptible to environmental variations and challenges. Infants born to women with depression in 3rd trimester had increased DNA methylation at the NR3C1 promoter regions for GRs; and this was predictive of high salivary cortisol levels at 3 months age (Oberlander TF et al., 2008 Prenatal exposure to maternal depression in Epigenetics, 3(2), 97-106). DNA methylation has been found to be associated with early experiences of maltreatment and exposure to maternal stress (Mehta D et al., 2013. Proceedings of national academy of sciences of USA). If stress continues, global methylation has been found to occur at adolescence (Essex MJ, Boyce WT et al., 2013 in Child Development). Young adults born preterm had genomic wide DNA methylation alterations suggestive of long-lasting epigenetic modifications related to preterm birth (Wekhalamki K et al., 2013, in Plos One) but no one has yet studied epigenetic changes associated with chronic exposure to NICU-related stressors/physical stressors, pain, maternal separation) even though NICU is recognized as an early adverse experience for developing preterm infants. Rapid development of behavioral epigenetic studies related to NICU stress are needed (pg. 179). Several issues for such studies are addressed on the last two pages. PT, Review, Stress, Toxic stress, Separation, brain studies, dev, pain.
Mooney S, Giannakouloupoulos X, Glover V., Acolet D., & Modi N. (1997). The effect of mother-infant skin-to-skin contact on plasma cortisol and Beta-endorphin concentrations in preterm newborns. Infant Behavior and Development, 20(4): 553-557. Preterm study that says the extra handling of KC may lead to harmful fluctuations in physiologic parameters and that is why units have minimal handling policies (cites Harrison L, Ovlet L, Cunningham K, Bodin M & Hicks, C. 1996. Effects of gentle human touch on preterm infants: pilot study results. Neonatal Network 15:35-42 for minimal handling). From 23 weeks Gestation infant mounts hormonal stress response to painful stimuli (Giannakouloupoulos et al. 1994 in dorsum hand at 5-10 min prior to and after the 60 min study period on both days. Plasma beta-endorphin and plasma cortisol were measured after 20 minutes of KC to determine if attenuation of stress response occurred in comparison to a control day. All infants remained stable, no brady, no apnea. O2 requirements for the two oxygen dependent infants decreased during KC by 25cc/min. Temp was maintained between 36.5-37.0° C. No crying during KC. No sig changes in HR, SaO2, Temp during control and KC periods. All mothers said KC was “pleasurable”. Cortisol did drop significantly after KC (geometric mean change of 66%) on the KC day and after control period (geometric mean change of 78%) the next day (but ANOVA showed no difference in degree of fall between KC and control days); Endorphin dropped significantly after KC (geometric mean change of 74%) but not after control (incubator/cot) period and ANOVA showed beta endorphin fall on KC day was significantly different than on control day. Wide variation in basal cortisol and beta-endorphin on both days (KC day cortisol = 47-856 nmol/l; beta = 10-63 pg/ml Control day cortisol = 95-1560 nmol/l; beta = 10-97 pg/ml). Weak correlations between basal cortisol and beta values each day. The fall in cortisol on control day may be due to paradoxal response to blood sampling because Lewis & Thomas 1990 found that 24/69 2-month old infants had fall in salivary cortisol with inoculation prick. They say “we accept that this is small study of heterogeneous grp of babies with respect to GA and postnatal age. These factors are potentially compromising... Further study is needed. KC results in significant reduction in B-endorphin as sign of attenuation of stress response; no adverse effects occurred... PT, descriptive, serum cortisol, stress, HR, FiO2, Temp, apnea, bradycardia, crying, maternal feelings, SaO2, beta-endorphin, stress

Mooney-Leber SM, Brummelte, S. (2017-Feb). Neonatal pain and reduced maternal care: Early-life stressors interacting to impact brain and behavioral development. Neuroscience, 342 (2017), 21-36. doi: 10.1016/j.neuroscience.2016.05.001. A review of literature. Advances in neonatal intensive care units (NICUs) have drastically increased the survival chances of preterm infants—extremely early preterm infants (i.e.23 weeks) now have a 23-33% chance of survival (Rysavy MA, LiL, et al. 2015). Between hospital variation in treatment and outcome in extremely premature infants. New England J. Medicine 372, 1801-1911). However, preterms are still exposed to a wide range of stressors during their stay in the NICU, which include painful procedures and reduced maternal contact. The activation of the hypothalamic-pituitary-adrenal (HPA) axis, in response to these stressors during this critical period of brain development, has been associated with many acute and long-term adverse biobehavioral outcomes such as altered brain maturation and alterations to the HPA axis (Grunau RE et al., 2007). Altered basal cortisol levels at 3, 6, 8, and 18 months in infants born at extremely low gestational age. J Pediatrics 150: 151-156. Preterm birth itself can lead to impaired brain maturation and altered behavioral outcomes (Aylward,G 2005. Neurodevelopmental outcomes of infants born prematurely. J. Dev Behav Pediatrics 26, 427-440), but altered brain maturation and behavioral outcomes are also a product of environmental stressors such as separation and pain exposure during early life ( Anand KJ & HickeyPR, 1987. Pain and its effects in the human neonate and fetus, New Engl J Med, 317:1281-1289; Anand KJ & Scalzo FM, 2000. Can adverse neonatal experiences alter brain development and subsequent behavior? Biol Neonate, 77, 69-82; Grunau RE, Holsti L, Peters, JW, 2006. Long-term consequences of pain in human neonates. Sem Fetal Neonatal Med, 11: 268-275). More recently, several studies provide evidence for a DIRECT LINK between exposure to painful procedures and altered brain and behavioral development (Brummelte S, Grunau RE et al. 2012. Procedural pain and brain development in premature newborns. Annals Neurology 71, 385-396; Ranger M, Chau CM et al., 2013. Neonatal pain related stress predicts cortical thickness at age 7 years in children born very preterm. PloS One 8: e76702; and smaller cerebellum (Ranger M, Wicker JG, et al., 2015. Neonatal pain and infection relate to smaller cerebellum in very preterm children at school age. J. Pediatr 167(292-298): e 291). Recent research has shown that Kangaroo care, a non-pharmacological analgesic based on increased skin-to-skin contact between the neonate and the mother, negates the adverse outcomes associated with neonatal pain and reduced maternal care, however the biological mechanism remains widely unknown. “One way to increase maternal care in the NICU setting is through the use of Kangaroo Care (increased skin to skin contact between the neonate and the mother) which is a nonpharmacologic analgesic for premature infants (Johnston CC et al., 2003) and has been linked to positive outcomes which range from typical brain development to improved cognitive functioning (Scher et al, 2009; Feldman et al., 2014). Due to the positive outcomes, the use of Kangaroo Care has increased in the US (Engler et al., 2002), however, the question as to how Kangaroo Care produces positive outcomes remains widely unknown. Better understanding of the biological mechanisms by which KC provides positive biobehavioral outcomes may help to implement KC as a standard care practice in more hospitals around the globe and may help further optimize the environment.” (pg.22). This review summarizes findings from both human and rodent literature investigating neonatal pain and reduced maternal care independently, primarily focusing on the role of the HPA axis and biobehavioral outcomes. PAIN: The KCBib 2018
spinal cord perception of pain is carried ascendingly to many supraspinal regions such as nuclei of thalamus, hypothalamus, sensory cortex amygdala, insula, and sections of the cingulate and prefrontal cortices (Brooks & Tracey, 2005). Pain is a multidimensional, multisensory modality that relies on many intact systems and components to produce its affective and sensory experience. It was widely believed that neonates did not perceive pain due to underdeveloped nervous system and as a consequence some surgeries were performed on neonates without analgesia (Rodkey & Pillai Ridell, 2013). The physiological and positive outcomes of Kangaroo care are discussed in terms of how dampening of the HPA axis response to neonatal pain, specifically closing of pain receptors due to central oxytocin (increased maternal care may account for positive outcomes associated with Kangaroo care. PT, Review of Literature, Stress, separation, pain, reduced maternal contact, micropreemie, 

Not on charts 5-26-16, new to biblio study

Moore, E. & Anderson, G.C. (2007). Randomized controlled trial of very early mother-infant skin-to-skin contact and breastfeeding status. J Midwifery & Women’s Health 52(2), 116-125. No doi. RCT of 20 mothers intending to BF with fullterm infants (KCs; 10) vs swaddled (10) who were placed between maternal breasts for KC or given to mother/father for swaddled holding (hands left out for observation of hunger cues) at 15 minutes post birth after eye care, Vit K shot, drying, footprinting, banding was done under warmer. When infant demonstrated hunger cues (mouthing, rooting, open mouth, looking around, alertness, head turning, sucking on fingers or fist, etc) then put onto breast in cross cradle position (upright infants slumped down during feeding), but not before hunger cues were seen because infant is not ready to breastfeed before cues appear. KC group demonstrated hunger cues significantly earlier (between 30-45 minutes post-birth; swaddled infants at ?? - ?? mins postbirth) and in greater number (more hunger cues in KC group) than swaddled grp. Both grps got equal BF attention from lactation consultant. All BF sessions over 1st 7 days of life scored by mother using IBFAT (Infant Breast Feeding Assessment Tool –Mathews MK, 1998; scores arousal, eating behaviors, nipple grasp, consistent sucking) in which score of 10-12 = effective feeding. KCers had higher IBFAT scores than swaddled grp at 1st feed. After feeding complete, KC could continue. Length of KC varied between 1.5-3.0 hours in delivery room because mother being cared for by the research nurse and deliveries were on weekends when DR was less busy. Nipple protractility was confounder because babies did not suckle or latch on at 1st feeding as well if mom had flat or minimally erect nipples (future study should score erecticity and control for this). Time of effective BF (measured as time when first of 3 consecutive IBFAT scores of 10 or more occurred) showed that KCers were nippeling effectively sooner (took ½ the time that control group to achieve this outcome). One, 3 and 6 months postbirth follow-up showed: at 1 month babies who had earlier effective suckling had fewer BF problems than later effective suckling, but no differences between the grps. 3 and 6 month data not assessed as of August 1, 2005. Trend for KC moms to return to work sooner and more were full time (perhaps because babies feed well?). ONSET OF MILK production should be measured and asking when mom feels breast is fuller (consider babies weight loss at 72 hrs postbirth and milk production in response to birth weight loss as recent 2004/2005 article shows). Authors concluded that KC has profound effect on early BF, but did not see diff in exclusivity and duration of BF. Qualitative results showed that mothers wanted qualified woman to help with 1st feeding. Fullterm, RCT, BF Effectiveness, IBFAT, BF exclusivity, BF duration, KCBF, VEKC, maternal feelings, infant feeding behaviors (hunger cues). Elizabeth.moore@Vanderbilt.edu

Moore, E.R, Anderson, G.C., & Bergman, N. (2007). Early skin-to-skin contact for mothers and their healthy newborn infants. The Cochrane Database of Systematic Reviews, 2007, Issue 3. No doi. Review is updated. 30 studies with 1925 mother-infant pairs (fullterm and a few near term, but not all the preterm studies) were reviewed in this updated meta-analysis of KC immediately after birth and within 30 minutes of birth. Pairs who had early skin-to-skin contact were more likely to breastfeed and to breastfeed for longer than those who did not. The review also showed that babies who had KC immediately after birth “interacted more with their mothers, stayed warmer, and cried less.” This was one of the top 20 most-accessed articles from the Cochrane Library in 2007 and is discussed on the WHO Reproductive Health Library website http://www.who.int/hhl/newborn/en/. A podcase is available in 2009 at http://www.cochrane.org/podcases/review_summaries/most_accessed/index.html with a link to the abstract and layman’s summary.

Meta-analysis, Cochrane, FT, near term, BF, cry, interaction, temperature, Birth KC, VEKC


Moore, E.R., Anderson, G.C. Bergman, N. & Dowswell , T. (2012). Early skin-to-skin contact for mothers and their healthy newborn infants. Cochrane Database of Systematic Reviews, 2012, Issue 1, 1-76,May 16:5:CD003519. Thirty-four randomized controlled trials were included involving 2177 participants (mother-infant dyads). Data from more than two trials were available for only eight outcome measures. For primary outcomes, we found a statistically significant positive effect of early SSC on breastfeeding at one to four months postbirth (13 trials; 702 participants) (risk ratio (RR) 1.27, 95% confidence interval (CI) 1.06 to 1.53, and SSC increased breastfeeding duration (seven trials; 324 participants) (mean difference (MD) 42.55 days, 95% CI -1.69 to 86.79) but the results did not quite reach statistical significance (P = 0.06). Late preterm infants had better cardio-respiratory stability with early SSC (one trial; 31 participants) (MD 2.88, 95% CI 0.53 to 5.23). Blood glucose 75 to 90 minutes following the birth was significantly
higher in SSC infants (two trials, 94 infants) (MD 10.56 mg/dL, 95% CI 8.40 to 12.72). The overall methodological quality of trials was mixed, and there was high heterogeneity for some outcomes. Limitations included methodological quality, variations in intervention implementation, and outcomes. The intervention appeared to benefit breastfeeding outcomes, and cardio-respiratory stability and decrease infant crying, and had no apparent short- or long-term negative effects. Further investigation is recommended. To facilitate meta-analysis, future research should be done using outcome measures consistent with those in the studies included here. Published reports should clearly indicate if the intervention was SSC with time of initiation and duration and include means, standard deviations and exact probability values. TT, Late Preterm, Meta-analysis, BF, Cardiorespiratory stability, IB glucose, crying, no negative effects.

Moore, E.R., Anderson, G.C., Bergman, N., Ludington, S.M., Rojas, M., & Chiu, S-H. (2010). Skin-to-skin contact for mothers and their preterm or low birth weight infants in the neonatal intensive care unit (Protocol). Cochrane Database of Systematic Reviews, Issue 3. This is a protocol that will compare intermittent KMC with Preemies (<37 wks) in NICU hospitalized preterm or low birth weight infants to outcomes in incubator and swaddled care and will compare <30 weeks with infants >30 weeks and assess the safety of intermittent KMC on hypothermia (<36.5°C), bradycardia (HR <100 x 15 seconds), desaturations (saO2 <80% for 15 seconds), apnea (20 seconds or 10 seconds with bradycardia or desat), hypoglycemia (<40 mg/dL), stability using SCRIP scores, infection rate., Outcomes are lactation, growth, length of stay, neuro-behavior, bonding/attachment, thermoregulation, respiratory functions, heart rate, metabolic functions, mortality. PT, Review excludes fathers and other KC providers

Moore ER, Bergman N, Anderson GC, Medley N. (2016 Nov). Early skin-to-skin contact for mothers and their healthy newborn infants. Cochrane Database Syst Rev. 11:CD003519. Mother-infant separation post birth is common. In standard hospital care, newborn infants are held wrapped or dressed in their mother’s arms, placed in open cribs or under radiant warmers. Skin-to-skin contact (SSC) begins ideally at birth and should last continually until the end of the first breastfeeding. SSC involves placing the dried, naked baby prone on the mother’s bare chest, often covered with a warm blanket. According to mammalian neuroscience, the intimate contact inherent in this place (habitat) evokes neuro-behaviors ensuring fulfillment of basic biological needs. This time frame immediately post birth may represent a ‘sensitive period’ for programming future physiology and behavior. The objectives were to assess the effects of immediate or early SSC for healthy newborn infants compared to standard contact on establishment and maintenance of breastfeeding and infant physiology. We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (17 December 2015), made personal contact with trialists, consulted the bibliography on kangaroo mother care (KMC) maintained by Dr Susan Ludington, and reviewed reference lists of retrieved studies. Randomized controlled trials that compared immediate or early SSC with usual hospital care were selected. Two review authors independently assessed trials for inclusion and risk of bias, extracted data and checked them for accuracy. Quality of the evidence was assessed using the GRADE approach. We included 46 trials with 3850 women and their infants; 38 trials with 3472 women and infants contributed data to our analyses. Trials took place in 21 countries, and most recruited small samples (just 12 trials randomized more than 100 women). Eight trials included women who had SSC after cesarean birth. All infants recruited to trials were healthy, and the majority were full term. Six trials studied late preterm infants (greater than 35 weeks’ gestation). No included trial met all criteria for good quality with respect to methodology and reporting; no trial was successfully blinded, and all analyses were imprecise due to small sample size. Many analyses had statistical heterogeneity due to considerable differences between SSC and standard care control groups. Results for women: SSC women were more likely than women with standard contact to be breastfeeding at one to four months post birth, though there was some uncertainty in this estimate due to risks of bias in included trials (average risk ratio (RR) 1.24, 95% confidence interval (CI) 1.07 to 1.43; participants = 887; studies = 14; P = 41%; GRADE: moderate quality). SSC women also breast fed their infants longer, though data were limited (mean difference (MD) 64 days, 95% CI 37.96 to 89.50; participants = 264; studies = 6; GRADE: low quality); this result was from a sensitivity analysis excluding one trial contributing all of the heterogeneity in the primary analysis. SSC women were probably more likely to exclusively breast feed from hospital discharge to one month post birth and from six weeks to six months post birth, though both analyses had substantial heterogeneity (from discharge average RR 1.30, 95% CI 1.12 to 1.49; participants = 711; studies = 6; P = 44%; GRADE: moderate quality; from six weeks average RR 1.50, 95% CI 1.18 to 1.90; participants = 640; studies = 7; P = 62%; GRADE: moderate quality). Women in the SSC group had higher mean scores for breastfeeding effectiveness, with moderate heterogeneity (BFAT (Infant Breastfeeding Assessment Tool) score MD 2.28, 95% CI 1.41 to 3.15; participants = 384; studies = four; P = 41%). SSC infants were more likely to breast feed successfully during their first feed, with high heterogeneity (average RR 1.32, 95% CI 1.04 to 1.67; participants = 575; studies = five; P = 85%). Results for infants: SSC infants had higher SCRIP (stability of the cardio-respiratory system) scores overall, suggesting better stabilization on three physiological parameters. However, there were few infants, and the clinical significance of the test was unclear because trialists reported averages of multiple time points (standardized mean difference (SMD) 1.24, 95% CI 0.76 to 1.72; participants = 81; studies = two; GRADE: low quality). SSC infants had higher blood glucose levels (MD 10.49, 95% CI 8.39 to 12.59; participants = 144; studies = three; GRADE: low quality), but similar temperature to infants in standard care (MD 0.30 degree Celsius (°C) 95% CI 0.13 °C to 0.47 °C; participants = 558; studies = six; P = 88%; GRADE: low quality). Women and infants after cesarean birth results: Women practicing SSC after cesarean birth were probably more likely to breast feed one to four months post birth and to breast feed successfully (BFAT score), but analyses were based on just two trials and few women. Evidence was insufficient to determine whether SSC could improve breastfeeding at other times after cesarean. Single trials contributed to infant respiratory rate, KCBib 2018
maternal pain and maternal state anxiety with no power to detect group differences. Subgroup results: We found no differences for any outcome when we compared times of initiation (immediate KC is defined as less than 10 minutes post birth versus early KC which is defined as 10 minutes or more post birth) or lengths of contact time (60 minutes or less contact versus more than 60 minutes contact). AUTHORS’ CONCLUSIONS: Evidence supports the use of SSC to promote breastfeeding. Studies with larger sample sizes are necessary to confirm physiological benefit for infants during transition to extra-uterine life and to establish possible dose-response effects and optimal initiation time. Methodological quality of trials remains problematic, and small trials reporting different outcomes with different scales and limited data limit our confidence in the benefits of SSC for infants. Our review included only healthy infants, which limits the range of physiological parameters observed and makes their interpretation difficult. This Cochrane is an update of their 2012 Cochrane by almost the same authors. FT, meta-analysis, Cochrane, birth KC, early KC definitions, stability, blood glucose, temperature, BF duration, BF effectiveness, more mothers breastfeeding, exclusive BF


Moran AC, Kerber K, Sitrin D, Guenther T, Morrissey CS, Newby H, Fishel J, Yoder PS, Hill Z, Lawn JE. (2013). Measuring Coverage in MNCH: Indicators for Global Tracking of Newborn Care. PLoS Med. 10(5):e1001415. doi: 10.1371/journal.pmed.1001415. Consensus report of important trackers of essential newborn care, and practice of KMC is still a major gap and is being considered an indicator of good newborn care by Saving Newborn Lives, United Nations and USAID. (MNCH= Maternal, newborn, child health) Neonatal mortality accounts for 43% of under-five mortality. Consequently, improving newborn survival is a global priority. However, although there is increasing consensus on the packages and specific interventions that need to be scaled up to reduce neonatal mortality, there is a lack of clarity on the indicators needed to measure progress. In 2008, in an effort to improve newborn survival, the Newborn Indicators Technical Working Group (TWG) was convened by the Saving Newborn Lives program at Save the Children to provide a forum to develop the indicators and standard measurement tools that are needed to measure coverage of key newborn interventions. The TWG, which included evaluation and measurement experts, researchers, individuals from United Nations agencies and non-governmental organizations, and donors, prioritized improved consistency of measurement of postnatal care for women and newborns and of immediate care behaviors and practices for newborns. In addition, the TWG promoted increased data availability through inclusion of additional questions in nationally representative surveys, such as the United States Agency for International Development-supported Demographic and Health Surveys and the United Nations Children’s Fund-supported Multiple Indicator Cluster Surveys. Several studies have been undertaken that have informed revisions of indicators and survey tools, and global postnatal care coverage indicators have been finalized. Consensus has been achieved on three additional indicators for care of the newborn after birth (drying, delayed bathing, and cutting the cord with a clean instrument), and on testing two further indicators (immediate skin-to-skin care and applications to the umbilical cord). Finally, important measurement gaps have been identified regarding coverage data for evidence-based interventions, such as Kangaroo Mother Care and care seeking for newborn infection. Policy/guidelines, essential care of newborn, FT, PT, community-based KMC, birth KC. See also Stanton 2013.

Moran-Peters JA, Zauderer CR, Goldman S, Baierlein J, Smith AE. (2014 - August). A Quality Improvement Project Focused on Women’s Perceptions of Skin-to-Skin Contact After Cesarean Birth. Nursing in Women’s Health 18(4):294-303. doi: 10.1111/1175-468X.12135 A quality improvement (QI) project was designed to identify women’s perceptions of the benefits of skin-to-skin contact with newborns in the recovery room (0.5-2.0 hours after birth) following repeat cesarean birth and women compared the cesarean experience to earlier no KC cesarean experience in which mother disliked the separation from the baby and had feelings that separation interfered with their ability to connect with the baby. Women reported positive experiences associated with skin-to-skin contact with their newborns. A major theme that emerged was that women who had cesarean birth felt that this QI project resulted in a birthing experience comparable to that of mothers who had vaginal deliveries. Participants also experienced decreased anxiety regarding the health and welfare of their newborns, as compared to a previous cesarean birth experience in which they did not have skin-to-skin contact. Individualized nations value KMC because it enhances the mother’s birth experience and has demonstrated long term health benefits for the newborn and family. FT, PT, qualitative study, cesarean, birth KC, maternal perception, quality improvement, implementation, maternal anxiety, not so little use of KC (not on chart)

Moran, M, Radzyniski S.G., Higgins, KR., Dowling, D.A., Miller, MJ, & Anderson, G.C. (1999). Maternal kangaroo (skin-to-skin) care in the NICU, a 4 hours postbirth, MCHN (Amer J. Maternal/Child Nursn), 24(2), 74-79. A case study of a 32 weeker. Infant was 32 wks, 1953 gr, got KC beginning at 4.5 hours postbirth, then got 6hrKC/day in 2-3 hr intervals. Both parents got to KC their son, and nursing support was given and described. To intermediate care on day 2, regained BW by Day 12, Discharged on day 21 (effect KCBib 2018
Morelius, E. & Anderson GC. (2015-Sept) Neonatal nurses' beliefs about almost continuous parent-infant skin-to-skin contact in neonatal intensive care. *J Clin Nurs.* 24(17-18):2620-2627 doi: 10.1111/jocn.12877. To describe what nurses believe about almost continuous skin-to-skin contact for preterm infants between 32'-36' weeks gestation. Skin-to-skin contact a few hours per day has become standard care for preterm infants in most high-technology neonatal intensive care units. However, few units practice Kangaroo Mother Care which involves almost continuous skin-to-skin contact. A qualitative descriptive design. An online questionnaire with open-ended questions was administered to 129 nurses at three neonatal units. Data were analysed with qualitative content analysis. Nurses believed they would lose control because of limited access to the infant and would not be able to provide adequate care. Nurses also believed that mothers practicing almost continuous skin-to-skin contact would feel trapped and would experience stress if they could not meet the demands of the method. Although the nurses can describe several of the documented benefits of almost continuous skin-to-skin contact, an underuse continues to exist. Beliefs described by the nurses are important to consider and resolve if the goal is to implement and provide Kangaroo Mother Care. PT, Qualitative, staff issues, 24/7 KMC, barriers, implementation, not enough KMC being done, nurses' beliefs NO! on Charts 5/25/2015

Morelius, E., Angelhoff, C., Eriksson, J., & Olbager, E.(2012). Time of initiation of skin-to-skin contact in extremely preterm infants in Sweden. *Acta Paediatrica,* 101(1), 14-18. doi:10.1111/j.1651-2227.2011.03298.x. A descriptive study of how soon intermittent KMC begins for 520 infants <27 weeks GA in 7 regional hospitals in Sweden (do not know if it includes Uppsala and Karolinska in Stockholm, but I doubt it because both of those practice 24/7 KMC within 24 hours of birth.) Intermittent KMC began at a median of 6 postnatal days (R=0-44). Data were collected for first 180 days of life until discharge or death, which ever was first. 601 infants were alive at 24 hours and entered into study; 81 died in first 28 days of life and were separately analyzed. For the 330 infants who got KMC, their mean birthweight was 777(SD=17) gm, crible score =6.0 (SD=3.6). GA median was 25' (22'-26'), days on vent was 16.5 (SD=19.1) and 45.8% were females. Low GA, high score on Critical Risk Index for Babies (CRIB score), and # of days on ventilated delayed first KMC. Also, statistically significant differences between hospital 2 (start Intermittent KMC at median 3 postnatal days (R=0-12) and others (region 4 was median 17 postnatal days (R=2-44) and between hospital 5 and others was found. Region 2 also had fewer number of days on a ventilator than another region. 190 infants were alive after day 28 and had no KMC reported. The mean Birth weight for this group was 765g (sd=166; R=375-1315 gm), GA Median was 25' (R=22'-26'), 12.5 (SD=15.1) days on vent and 44.2% were female. No differences in GA, CRIB score, birthweight days on ventilator, gender and # of moms with preeclampsia between those who got KMC and those who did not. Of the 81 who died in first 28 days, mean birthweight was 698 g (SD=169; R=434-1161), and GA was 246 wks (R=22'-26') and their birth weight, GA, and CRIB scores were significantly different than the group who did not die. Median day of death was 4 (R=1-26) and 17 (21%) got KMC; the median day of KC was 3 (R=0-22), Median day of death for infants who got KMC was12 (R=3-2) and for infants who did not get KC was 3(R=1-26) and this was significantly different (p<0.0001). 17 (21%) of the infants who died got KC’ and they lived longer and 80% of the parents who lost a newborn preterm infant never experienced KC with their baby before its death. Extremely preterm infants get first intermittent KC at median 6 postnatal days, but hospitals vary in their practices, due to attitudes and knowledge among staff, routines at different wards and hospital tradition. Underuse of KMC is explained by medically and technologically driven care. PT, micro preemie, mortality, end of life KC, ventilated KC. Not on charts 5/2/2011

Morelius, E., Brostrom E.B, Westrup, B., Sarman, I., & Ortenstrand, A. (2012). The Stockholm Neonatal Family-Centered Care Study: effects on salivary cortisol in infants and their mothers. Early Human Development, 88(7), 575-581, doi:10.1016/j.earlhumdev.2011.12.033. The family centered program includes 24/7 KMC and parents as primary providers, so this is relevant. Parental involvement in the care of preterm infants in neonatal intensive care units (NICUs) is common, but little is known about the effect on stress responses in mothers and infants. The aim of this study is to evaluate the effect of family-centered care on salivary cortisol reactivity in mothers and preterm infants and the correlation between the mothers’ and the preterm infants’ salivary cortisol levels. This study is part of a randomized controlled trial conducted at two level-III NICUs, including Family Care (FC), where parents were able to stay 24/day from admission to discharge, and Standard Care (SC). To investigate the cortisol response, saliva was collected from 289 preterm infants and their mothers before and after a diaper change at the time of discharge. No significant differences were found between the two groups in salivary cortisol reactivity, either in mothers or in infants. The results revealed a correlation between preterm infants’ and their mothers’ baseline and response cortisol in the FC group: r=0.31 (p=0.001) and r=0.24 (p=0.01), respectively. Such correlation was not observed in the SC group: r=0.14 (p=0.14) and r=0.18 (p=0.07), respectively. Family-centered care had no effect on salivary cortisol reactivity during diaper change. However, sharing the same environment may increase the concordance between preterm infants’ and their mothers’ salivary cortisol levels. PT, RCT, parents as providers, salivary cortisol infant and mother, co-regulation/synchrony, stress, paternal KC

parental stress, parental depression, and breastfeeding. This is a randomised study engaging families of late preterm infants (32-35 weeks gestation). Salivary cortisol reactivity was measured in infants during a nappy change at one month corrected age, and in infants and mothers during still-face at four months corrected age. Both parents completed the Swedish Parenthood Stress Questionnaire (SPSQ) at one month and the Edinburgh Postnatal Depression Scale (EPDS) at one and four months. Ainsworth's sensitivity scale was used to control for parental sensitivity. Thirty-seven families from two different neonatal care units in Sweden, randomised to either almost continuous SSC or standard care (SC). Infants randomised to SSC had a lower salivary cortisol reactivity at one month (p=0.01). There was a correlation between the mothers’ and the preterm infants' salivary cortisol levels at four months in the SSC group (p=0.65, p=0.005), but not in the SC group (p=0.14, p=0.63). Fathers in SSC scored lower on the SPSQ sub-scale spouse relationship problems compared to fathers in SC (p<0.05). Almost continuous SSC decreases infants' cortisol reactivity in response to handling, improves the concordance between mothers’ and infants' salivary cortisol levels, and decreases fathers' experiences of spouse relationship problems. RCT, stress, cortisol – salivary, depression, HF, cortisol almost continuous KC, paternal KC, co-regulation/synchrony/concordance

Mörelius E, Örtenstrand A, Theodorsson E, & Frostell A. (2016-May). OCO9 - Early maternal contact has an impact on preterm infants' brain systems that manage stress. Nursing Children & Young People. 28(4):62-3. doi: 10.7748/ncyp.28.4.62.s40. Early maternal contact can protect the infants’ brain from harmful effects of stress while deprivation increases the stress level and leads to increased sensitivity to stress. To evaluate the effects of continuous skin-to-skin contact (SSC) after preterm birth on stress. Late preterm infants from two neonatal care units were randomized to either SSC or standard care. Salivary cortisol was measured in response to a nappy change at one month, and again at four months in response to a still-face procedure. Infants randomized to SSC had a significantly lower salivary cortisol reactivity at one month and there was a correlation between the mothers' and the preterm infants' salivary cortisol levels at four months. The results show that close parental contact and human touch have a buffering effect on the infant's stress reactivity and stimulate a more rapid development of regularity. PT, RCT, stress, separation, maternal involvement, co-regulation/synchrony. PT, RCT, diaper change, late preterm, infant stress, co-regulation during mother and infant cortisol, no toxic stress, development. Not on charts 3-25-16. New to biblio study.

Mörelius, E, Theodorsson E, & Nelson N. (2005). Salivary cortisol and mood and pain profiles during skin-to-skin care for an unselected group of mothers and infants in Neonatal Intensive Care. Pediatrics 116(5), 1105-1113. No Doi:10.1542/peds.2004-2440. Seventeen dyads were studied at 1st and 4th KC sessions to measure infant stress in each 30 minute session of KC when infants were 2-21 days old, one on mechanical vent and 16 on CPAP with 25-33 wksGA. Salivary cortisol and mood scale and pain NPS, PIPP, and VAS from mother were taken before KC and after 30 minutes of KC and again 60 minutes later (but KC continued for 30 minutes more after the second data collection at 30 minutes into KC, so total KC was 60 minutes, but second salivary cortisol was taken at 30 minutes into KC) on days 1 and 4. Maternal stress decreased during KC (salivary cortisol dropped 32%, HR by 7%, and visual analog scale of stress by 89% and mood increased by 6%). Before the 4th session mothers rated less stress on the VAS and salivary cortisol and HR improved faster. Infant salivary cortisol increased in some and decreased in others, Infant HR and PIPP and NIPS pain scores decreased during KC. At the first KC day, infant salivary cortisol decreased in 5 infants during KC, increased in 5 infants during KC, did not increase nor decrease in 3 infants. At the first KC day, the median infant cortisol level was highest post-SSC and lowest pre-SSC and changes were not significant and did not depend on environment characterized as calm vs noisy. At the 4th KC day, 4/11(36%) infants decreased salivary cortisol during KC; 7/11 (64%) infants increased cortisol during KC. Day 1 vs Day 4 pre-KC cortisol was 60% higher on Day 1; Day 1 vs Day 4 post-KC was 47% higher on Day 1 than on Day 4. Seven infants had PATERNAL KC on Days 2 and 3 but Day 4 cortisolss were not related to Paternal KC on Days 2 and 3 and were not related to environment classification (using Fisher’s exact test). Moms need more support with KC during 1st session than later sessions. Descriptive one group, maternal stress, cortisol, infant HR, maternal HR, Pain scoring (PIPP and NIPS), maternal emotion (MOOD), infant stress, visual analog scale of maternal stress and , Paternal KC, PT

Morgan, B.E., Horn, A.R., & Bergman, N.J. (2011). Should neonates sleep alone? Biological Psychiatry 70, 817-825. Doi: 10.1016/j.biopsych.2011.06.018. A one group quasi-experimental randomized cross over study. Measured Heart rate variability as a sign of stress in 16 2-day old cesarean birth fullterm infants sleeping skin-to-skin with mother or sleeping alone (semi-prone, left side down, facing mother and in loose swaddling in open air cot next to mother’s bed) for Hour in each place before discharge from the hospital. Infants were fed and then put into randomly assigned order of KC for one hour and then cot for one hour or vice versa. In KC they were prone wearing Nif’s KC shirt. Infant behavior (Anderson behavioral state scale) was observed manually and continuously. Cardiac interbeat intervals and ECG measured heart rate variability. Heart rate variability (ms²/Hz) was only taken for analysis during sleep states and used frequency domain. There was a 176% increase in autonomic activity and a 86% decrease in quiet sleep duration during maternal neonatal separation compared to KC sleep. Sleep latency was time from entry into SSC or cot until onset of quiet sleep. All 16 babies entered into active sleep but only 6 entered into quiet sleep in both places and HRV data did not distribute normally for all subjects so were log transformed. Mothers were 17-40 yrs, all five min apgar were >9 and no postnatal complications. Mean birthweight was 2925 +/- 437 g. and age was 42-74 hours (M=53+/=9.3). Significantly higher LF (sympathetic control) in separation than in KC. This indicates central anxious autonomic arousal during separation (stress). Separation had a profoundly negative impact on quiet sleep duration. Maternal
separation may be a stressor and may not be benign. **Randomized quasi-experimental cross over trial, FT, sleep, stress, separation, HRV, cesarean-birth**

Morgan, K.L. & Ludington-Hoe, S.M. (2013). Kangaroo Care in the NICU: Part 2. Understanding the impact of kangaroo care beyond neonatal vital signs. White Plains, N.Y.: March of Dimes. Available at [www.marchofdimes.com](http://www.marchofdimes.com). If you go to marchofdimes.com/nursing you can read this document for free or you can go to marchofdimes.com/catalog and see this listed on page 46 of the 2014 product catalog. It says “**Builds on Kangaroo Care in the NICU: Part 1.** Presents clinical scenarios related to kangaroo care that require critical thinking and clinical expertise to answer. Focuses on the impact of kangaroo care beyond neonatal vital signs, including parental engagement and strategies to incorporate kangaroo care in your own practice. Evidence-based rationale and biobehavioral mechanisms of kangaroo care that support practice decisons are provided, along with discussion for applying the knowledge gained from the clinical scenarios.” (pg. 46 of 2014 catalog). Can get contact hours if completed before 11/30/2016. See also Ludington-Hoe & Morgan, 2013 above for part 1 reference. Finish this reference for what the scenarios are. **Not on charts as of 2/12/2014**

Mori, R., Khanna, R., Pledge, D., & Nakayama T. (2010). A meta-analysis of physiological effects of skin-to-skin contact for newborns and mothers. *Pediatric International* 52(2), 161-170. doi: 10.1111/j.1442-200X.2009.02909.x. A meta-analysis of 23 studies of 326 stable preterm and 190 fullterm infants (GA 26-36 wks)(not all were randomized controlled trials as some were just pretest-posttest one group studies) to examine difference in HR, SaO2 and body temp from before KC to during KC, and then from during KC to after KC. Only studies with rectal and auxillary temps were included, and if both temps were taken, only rectal temp data was analyzed as that reflects core temp better than auxillary. Across all studies, **body temperature increased** (weighted mean difference of 0.22 °C, p <0.01), no change in HR, and SaO2 **went down by 0.60%** (p=0.01) during KC when compared to pretest values. Both of these effects were more marked in cold environment (cold environment means the temperature of the city in which the study was conducted – NOT the temperature of the unit in which the infant was housed!). **No difference** in heart rates. The stability of these parameters was NOT affected by prematurity, meaning that these measures were **stable** during KC. Duration of KC sessions was considered and varied considerably. **Meta-analysis, HR, Temp, SaO2. Stability, PT, FT** Maternal-Neonatal Thermal Synchrony (see also Bergstrom et al., 2007, US Breastfeeding Committee 2013, and temp chart for maternal-neonatal thermal synchrony).

Morrison, B. (2010). Implementing Kangaroo Care: creating evidence-based practice. *Advances in Neonatal Care, 10*(4), 218. Descriptive report of the Iowa Model of Implementation of birth kangaroo Care at Fairview Hospital in Cleveland, Ohio. 15 months after the task force was created implementation began (Sept. 2008) and between April 2008 and April 2009 there was a five fold increase in the number of dyads doing some birth kangaroo care. Significantly more mothers declared an interest in breastfeeding and more dyads were discharged breastfeeding (54.2 vs. 60.5%). Parental responses were unanimously positive. Physicians are asking for BKC to be implemented throughout hospitalization. After 3 years, the journey to full implementation is far from complete. **Full term, implementation, breastfeeding, birth kangaroo care. Not on CHARTS.**


Morrison, B., & Ludington-Hoe, S. (2012). Interruptions to breastfeeding dyads in an LDRP unit. *MCN: American Journal of Maternal Child Nursing, 37*(1), 36-41. This is a descriptive study of 1593 interruptions (mean of 53 interruptions from 8a to 8 p) to breastfeeding dyads and data show that interruptions were a mean of 18.5 minutes long and time alone was a mean of 15.4 minutes, so there is little time for breastfeeding. Thus, on page 41 there is Box2: Strategies to Decrease Interruptions and Increase Opportunities for Breastfeeding. In the first section of Box2 it says During Prenatal Visits, childbirth class and birthing center tours discuss: Kangaroo (skin-to-skin) care (KC) as frequently and as long as possible” and in the second section of Box 2, it says “During postpartum, support and encourage: Using door signs or lights to signal time alone periods for Kangaroo Care, breastfeeding sessions, and rest.” **Descriptive, FT, postpartum KC, BF. Not on Charts 1/3/2012**

Morrow, C., Hidinger, A., & Wilkinson-Faulk, D., (2010). Reducing neonatal pain during routine heel lance procedures. *MCN, Am J Mat Child Nurs, 35*(6), 346-356. 42 FT neonates were in RCT of heel stick when held upright and fully swaddled vs. heel stick when lying in open air crib and only loose blanket over baby, not good swaddling. On page 349 it has a review of KC “KC has been shown to be an effective analgesic; is has been studied more extensively in stable preterm neonates than full term neonates” (p. 349) and it cites Kaahaninia et al. 2008 that showed significantly reduced NIPS; Gray et al., 2000 is also cited and showed that KC was better than swaddling for reducing crying by 82% and grimacing by 65%. Then it cites Castral’s 2009 meta-analysis of 12 studies in which KC reduced pain in all of them. “Although more studies are needed to determine the magnitude of KC as an analgesic, KC does seem to be an effective analgesic for acute painful procedures among infants, and it is a readily available intervention that is easy to initiate on any nursing unit.” (pg. 349.). In the reported RCT, held and swaddled infants had less pain than unswwaddled infants in a cot. The article also reviews non nutritive sucking, oral sucrose, breastfeeding, and swaddling and their effects on pain reduction. **FT, Not KC, swaddled holding. PAIN, NOT ON CHARTS AS OF 11/2010**

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Morton JA. (2003). The role of the pediatrician in extended breastfeeding of the preterm infant. Pediatric Annals, 32 (5), 308-316. This article identifies variables that predict the best outcomes for BF at discharge from NICU, reviews factors that led to compromised milk production, and lists strategies to transition the infant from milk feedings to breastfeeding. On page 312 it talks about KC under the Stimulants to Milk Production section, saying it “provides innumerable benefits to mother and baby and has consistently been associated with improved milk production, improved infanthgrowth, and competence in BF and extended lactation.” pg. 312. Preterm, BF, pediatricians


Muddu, G.K., Boju, S.L., & Chodavarapu, R. (2013-Oct). Knowledge and awareness about benefits of Kangaroo Mother Care. Indian Journal of Pediatrics, 80(10): 799-803. doi: 10.1007/s12098-013-1073-0 To determine mothers’ prior knowledge of Kangaroo Mother Care (KMC) and awareness about benefits of KMC for preterm babies. Mothers of a consecutive sample of 46 (N=46) preterm babies, eligible for KMC admitted to a teaching hospital, from June through August 2009, were studied to determine the attitude and knowledge about KMC. A structured questionnaire was prepared. Mothers were asked questions to determine their baseline knowledge about KMC. Then each mother was explained about KMC and instructed to do KMC. After one hour of KMC, mothers were asked questions again to know their feelings and difficulties regarding KMC and feasibility of breast feeding during KMC. Most of the mothers could understand what was explained to them (97.8 %; 95 % CI 88.5-99.9 %) in a single session. Positive feelings like closeness to baby (93.5 %) and sense of goodness (97.8 %) were noted amongst mothers. Though statistically not significant, the proportion of mothers who felt it impracticable to give breast feeding while doing KMC was considerable (39.1 %; 95 % CI 25.1-54.6 %) compared to those who felt no difficulty in breast feeding (60.9 %; 95 % CI 45.4-74.9 %). Practicable duration of KMC is 1, 2 and 12 h as felt by 52 %, 19.6 % and 6.5 % of mothers respectively. After practicing KMC for just one hour, 94% of mothers thought KMC was a necessary practice and felt closer to their baby. All the mothers expressed their willingness to continue KMC at home. Mothers can understand and implement KMC with simple and clear oral instructions in local language. Positive feelings arise in mothers even with 1 h of KMC. KMC of 24 h is not practicable to almost all of the mothers. There is a need for special emphasis on breast feeding the child while doing the KMC. PT, one group quasi-experimental, pretest-posttest questionnaire maternal knowledge, maternal feelings, 3rd world, home KC, BF in KC, feasible duration of KC. Learning to do KC,


Mukhopadhuyay, K., Naran A, Kumar P, Pradeep GCM, Arora U, Mahajan R, & Dutta S. (2004). Premature infants need dads too! Presentation at “Workshops on KC” at Neoncon 2004, XXIV NNF Annual Convention at Chandigarh, 28 October, 2004." Available from file://E:/KangarooMotherCareInitiative/KMCI.html. Descriptive study of paternal KC (during the daytime) with preterms weighing at least 2000 grams and being medically stable (no oxygen support). Duration of KMC was measured, as was infant and father temperature before and after KC. Social worker interviewed parent to learn their perception and response to KC. 81 infants eligible from Feb-July (mean GA = 30.5 wks, mean birthweight = 1364.2 gms, mean enrollment weight = 1363.4 gms. Father gave KC in 24 (29.6%) of infants. Duration of KC at father = 2.8hr/day. Mean father temp during KC= 36.8 (SD=0.27)°C. Mean temp of baby during KC was 36.9 (SD=0.26)°C. No hypothermia, no hyperthermia during KC. Fathers were more supportive of mothers during hospital stay and after discharge in families where both mother and father gave KC, and these babies had increased duration of KC after discharge. Descriptive, PT, preterm, 3rd world, paternal KC, grandmother KC, mother-in-law KC, sister KC, surrogate KC, duration of Paternal KC, home KC, paternal support . Not on Charts yet.

Mullaney, L.C., Katz, J., Khatri, S.K., Lechner, S.C., Darmstadt, G.L., & Tielsch, J.M. (2010). Neonatal hypothermia and associated risk factors among newborns of southern Nepal. BMC Medicine, 8(11), 43+ (13 pages) NO DOI but http://www.biomedcentral.com/1741-7015/8/43. Descriptive study of 23,240 babies in Nepal who were visited at home and had their temperatures measured. Hypothermia was associated with smaller birth weight, being born in the hot season (because moms did not think they had to keep the babies warm in the hot season), and hypothermic mothers. 50% of infants had hypothermia. Hypothermia was not associated with delayed bathing, hat wearing, room warming, and KC But, 2,799 babies did not get KC in first 14 days and 221 moms did do KC in first 14 days. Also, those who got KC (4% of the 23,240 babies) were more likely to initiate BF. Descriptive, 3rd world, epidemiological study, hypothermia, and BF, FT, PT, home visit Not on Charts yet.


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hospital and followed for 3 months: 78% KC vs. 34% controls (p<.005) exclusively BF at 3 mos., growth/development at 3 months was same in both groups. Has English summary on page 60. RCT, PT, exclusive BF, and growth/development, Intermediate KC. Is this preterm or fullterm?? probably preterm because these are Colombia team members who may have spread KC to Guatemala. Was this KMC or KC? On charts?

Mullen, K., Conrad, L., Hoadley, G., & Iannone, D. (2007). Family-Centered maternity care. One hospital’s quest for excellence. Nursing for Women’s Health, 11(3) June/July 2007, pg. 282-291. Review of Hoag Hospital’s ( in Newport Beach, CA) quest to move toward NON-SEPARATION of fullterm infant and mother and family centered care throughout all maternal-newborn units. On page 285 the 10 principles of family centered care are listed (1. childbirth is wellness, not illness; 2. prenatal care is personalized to needs, 3. comprehensive perinatal education begins before birth, 4. hospital team assists family in making choices, 5. father and other support people are actively involved in education, birth, postpartum same nurse cares for mother and baby even when separated, and 10. parents have access to high risk newborns at all times), on page 286 are their goals (to create new labor support skills ie. Aroma therapy, massage, music, etc) and new mother-baby unit skills (non-separation means “newborn transition occurs at the mother’s bed side ”(pg. 288). States on page 290 that “We continue to carry out new developmental strategies, including kangaroo care, co-bedding, and retinopathy of prematurity guidelines... Most importantly, we encourage parents to touch their baby and participate in their baby’s hands-on care throughout the baby’s hospitalization.” Reference to KC only, not a KC study Clinical review, implementation, FT, PT KC, separation, parent involvement, not on charts yet

Munn AC, Newman SD, Phillips SM, Mueller M, Taylor SN. (2018-Jan). Factors Influencing Southeastern U.S. Mothers' Participation in Baby-Friendly Practices: A Mixed-Methods Study. J Hum Lact. 2018 Jan 1;34(1):10.1177/0890334417750143. [Epub ahead of print]. Mothers in the southeastern United States, including rural-dwelling and African American mothers, have historically had low rates of breastfeeding; however, no studies have investigated these mothers' experiences of breastfeeding support processes associated with the Baby-Friendly Hospital Initiative. Research aim: This study aimed to determine factors influencing southeastern U.S. mothers' participation in Baby-Friendly practices and breastfeeding decisions. Using a convergent parallel mixed-methods design, medical record review of mother-infant dyads (n = 234) provided data to determine if those who participated in more than half of the Ten Steps to Successful Breastfeeding had improved breastfeeding outcomes. Logistic regression was conducted to determine whether maternal demographic/clinical characteristics were predictive of Baby-Friendly practice participation. Qualitative methods included in-depth interviews (n = 16). Directed content analysis was conducted to identify themes. Results of the analysis of the two data sets were triangulated to enhance understanding of mothers' barriers to and facilitators of participation in Baby-Friendly practices. Rural-dwelling and African American mothers had greater odds of nonparticipation in Baby-Friendly practices relative to other groups (odds ratios = 5 and 10, respectively; p ≤ .01). Mothers who received lactation consultation and had moderate (15-44 min) or completed (≥ 45 min) skin-to-skin contact had greater odds of participation in Baby-Friendly practices (both odds ratios ≥ 17.5; p < .05). Directed content analysis revealed six themes: maternal desire to breastfeed, infant state, maternal state, milk supply concerns, provider support, and access to breastfeeding equipment and support services. Rural-dwelling African American mothers had limited knowledge of Baby-Friendly practices; however, culturally tailored services could improve Baby-Friendly practice participation and breastfeeding success. Descriptive evaluative study, FT, full term, Baby Friendly, BF. Not on charts 3-25-2018

Munninghoff, B. (2010). Kangaroo mother care department in Kapstadt receives tombola proceeds of the Breast Feeding and Lactation Congress in Hamburg. Kinderkrankenschwester, 29(6), 223-224. This unit in Mainz has done so well with increasing preterm breastfeeding that they were designated the winning unit for funds generated at a breastfeeding congress. Comment, BF, PT


Munson, M, Saatkamp, R., & West, C. (2012). Late Preterm Infants: Steps to Success. Neonatal Netwrok, 30(4), 267-270. DOI: 10.1891/0730-0832.30.4.267. This is not a KC study, but this review of best care for late Preterm infants says under What Can Nurses Do? 1. Goal: monitor frequently (q 30 min for first two hours after birth until stable and then every 4 hour) and intervene to promote thermoregulation and avoid thermal stress. The risk for cold stress extends through the first day of life: 1a.”Immediately after birth, dry the infant and place directly (naked or hat/diaper only) ventral-to-ventral, skin-to-skin with mother. Encourage continuous skin-to-skin contact as much as possible. 2. Skin-to-skin contact can be maintained during hearing screenings, blood screening, and so forth. There is evidence of increased difficulty with breastfeeding for babies who are separated from their mothers (cites Moore, Anderson, Bergman 2007 cochrane review). 3. Clothing, hat, socks, and double-wrapping may be added if skin-to-skin contact and/or the warmer is not being used.4

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Delay first bath until the temperature is stable. II. Goal: Monitor blood sugar and maintain euglycemia. 1. Temperature instability can lead to hypoglycemia and vice versa. Maintaining newborn skin-to-skin contact has been shown to stabilize temperature and, therefore, is a preventive measure to protect against hypoglycemia (Moore, Anderson, Bergman 2007 Cochrane & Laptok & Jackson, 2006). Pg. 267-268 for this quote. Also on page 268 in Table 1, Practice Guideline Summary for Late Preterm Infants, on Day 1 it says under the “breastfeeding” section: “Provide skin-to-skin” and this is listed in the Day 1, Day 2, and Day 3+ of life categories, encouragingKC during postpartum and at home. And on page 269 in Table 2 Breastfeeding Guidelines for Late Preterm Infants, it says “Day1. 1. Continuous skin-to-skin with mother as much as possible (encourage family member skin-to-skin participation if mother is unable or available) so this is supporting surrogateKC. PT, Late preterm, clinical guidelines, breastfeeding, hypothermia, hypoglycemia, postpartum KC, home KC, surrogate KC, KC during infant tests.

Murguia-Peniche, T., & Kirsten, G.F. (2014). Meeting the challenge of providing neonatal nutritional care to very or extremely low birth weight infants in low-resource settings. World Review of Nutrition and Diet. 110;278-96. doi: 10.1159/000358476. Most infant deaths (99%) occur in developing countries. The 14.9 million infants born prematurely (>11% of all live births) carry a particularly high mortality risk. This chapter discusses strategies to improve neonatal outcome under resource-restricted conditions, with a focus on nutritional interventions. Evidence-based interventions begin before conception with strategies to prevent and treat malnourishment among women of reproductive age, and micronutrient supplementation in pregnancy. As an example, a practically feasible strategy of feeding very low birth weight infants in South Africa is presented. The use of parenteral nutrition can be limited by feasibility and affordability, but intravenous glucose and electrolytes should generally be provided after birth. Emphasis is put on the use of expressed own mother’s milk without or with pasteurization from women without or with HIV infection, respectively, which is complemented by the use of pasteurized donor milk. If human milk fortifiers are not available, calcium and phosphate should be added, and high total daily feed volumes should be strived for, e.g. by frequent feedings. With restricted resources, human milk fortifiers or preterm formula can be used for high-risk groups such as infants with poor growth. Kangaroo mother care and breastfeeding should be actively encouraged. 3rd world, Clinical report, BF, KMC, mortality Not on charts as of 5/7/2014.

Murmu J, Venkatnarayan K, Thapar RK, Shaw SC, Dalal SS. (2017-Mar). When alternative female Kangaroo care is provided by other immediate postpartum mothers it reduces post procedural pain in preterm babies more than swaddling. Acta Paediatr. 106(3), 411-415. doi: 10.1111/apa.13716. Research on alternative female Kangaroo care (KMC) has been hampered by high maternal refusal rates. We assessed the efficacy of Kangaroo mother care (KMC), alternative KC provided by other postpartum mothers and swaddling for post procedural pain relief in preterm babies. The study was carried out in a tertiary armed forces hospital, where mothers did not have support from other female relatives and other postpartum mothers agreed to act as alternative female KC providers. We exposed 51 stable preterm neonates, with a gestational age of 30-36 weeks, to KMC, alternative female KC and swaddling for 30 minutes before heel lancing. The outcome measures included the Preterm Infant Pain Profile (PIPP) scores at 30 seconds and the time taken for the heart rate to return to baseline. The mean PIPP scores were lower with KMC (10.59) and alternative female KC (11.24) than swaddling (12.96) and heart rate normalisation took 111, 117 and 149 seconds respectively. The p values were less than 0.001 for individual groups and outcomes. KMC fared better than KC for both pain (p=0.045) and heart rate (p=0.013). Providing KMC and alternative female KC before heel lancing resulted in better pain relief than swaddling. PT, descriptive comparative study, duration of KC 30 mins, pain, swaddled, surrogate KC

Myers, D., & Rubarth, L.B. (2013). Facilitating breastfeeding in the neonatal intensive care unit: identifying barriers. Neonatal Network 32(3), 206-207. Descriptive study of two surveys, one to nurses and one to 15 moms (mostly Caucasian, >50% had college degree, most planning to return to work and had babies 24-37 wkGA) of currently hospitalized infants who had said they wanted to breastfeed, to identify benefits and barriers to breastfeeding. Questions were regarding initial decision to BF and two questions asking “What do you feel are the barriers (benefits) to breastfeeding?” (p207). Many barriers are listed in Table 2 on pg 207 and are: small size and fragile state of the premature infants, medical complications of the infant, mother’s dislike of breastfeeding, maternal stress and fatigue, inadequate milk supply, maternal concern about her infant consuming adequate volumes of milk when breastfeeding, delays in initiating pumping, transition from gavage feedings to breastfeeding, bottle feeding before breastfeeding, high stress and noise in NICU, maternal exhaustion because of return to work, full time maternal employment, separation of mother and infant). 60% of moms said their decision was made when advised to BF prior to delivery by MD, RN, or NP and all knew someone in the family who had BF. Eleven moms were still BF at discharge and 3/11 planned to continue to BF for 6-12 months, 4 for 6 months, and 2 until they returned to work, and 2 were unsure how long they would BF. Moms were satisfied with their BF experiences in NICU, facilitators were encouraging the mom to provide breast milk, Kangaroo Care (listed in Table 2 on page 207), cost-effective peer support in hosp. and community, NICU staff education, lactation consultant support, early/efficacious breast milk expression, and lactation technologies to solve BF problems. “The mothers agreed that Kangaroo care was encouraged in the NICU. This skin to skin contact wasfound to have a positive effect on breastfeeding and can be established as soon as the infant is clinically stable (cites Flacking, Ewald, & Wallin, 2011). Kangaroo care has been shown to improve maternal breast milk production and increase the duration of BF (cites Bier et al, 1997).” PT, BF, barriers, implementation, separation

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Myers MM, Grieve PG, Stark RI, Isler JR, Hofer MA, Yang J, Ludwig RJ, Welch MG (2015-July). Family Nurture Intervention in preterm infants alters frontal cortical functional connectivity assessed by EEG coherence. Acta Paediatr.104(7):670-677. doi: 10.1111/apa.13007. To assess the impact of Family Nurture Intervention (FNI) on cortical function in preterm infants at term age. Family Nurture Intervention is a NICU-based intervention designed to establish emotional connection between mothers and preterm infants. FNI includes skin-to-skin contact. Infants born at 26-34 weeks postmenstrual age (PMA) were divided into two groups, standard care (SC, N = 49) and FNI (FNI, N = 56). Infants had EEG recordings of ~one hour duration with 124 lead nets between 37 and 44 weeks PMA. Coherence was measured between all pairs of electrodes in ten frequency bands. Data were summarised both within and between 12 regions during two sleep stages (active, quiet). Coherence levels were negatively correlated with PMA age in both groups. As compared to SC infants, FNI infants showed significantly lower levels of EEG coherence (1-18 Hz) largely within and between frontal regions. Coherence in FNI infants was decreased in regions where we previously found robust increases in EEG power. As coherence decreases with age, results suggest that FNI may accelerate brain maturation particularly in frontal brain regions, which have been shown in research by others to be involved in regulation of attention, cognition and emotion regulation; domains deficient in preterm infants. PT, brain devel, brain studies, coherence, connectivity. Not on Charts 9/17/2015

Nagai, S., Adinumaranana, D., Rabesandratana, N., Yonemoto, N., Nakayama, T., & Mori, R. (2010). Earlier vs. later continuous Kangaroo Mother Care (KMC) for stable low-birth-weight infants: A randomized controlled trial. Acta Pueriatria, 99(6), 827-835. A randomized trial (really a comparison study between early and late KMC but because late KMC is common practice in Madagascar, late KMC is considered control), of 73 (early KMC = 37; late KMC or control = 36)?! infants. Early KMC began as soon as possible (within 24 hours postbirth), and late KMC began after infant was completely stable (off all oxygen supplementation), generally after 24 hours postbirth). This was a247 KMC. Early KMC group had higher (but not statistically significant) mortality within first 28 days of life. no difference in morbidity between groups, birth weight loss from birth till 24 hours of age was significantly less for early KMC (-34.81 gms) than late KMC (-73.97 gms), and no difference in adverse events and length of stay between groups. PT, RCT, 24/7 KMC, Early KMC, mortality, morbidity, length of stay, weight, negative effects. Madagascar study (3rd world).

Nahidi F, Tavafian SS, Heidarzadeh M, Hajizadeh E, Montazeri A(2014-Feb. 24). The Mother-Newborn Skin-to-Skin Contact Questionnaire (MSSCQ): development and psychometric evaluation among Iranian midwives. BMC Pregnancy Childbirth. 2014 Feb 24;14(1):85. doi: 10.1186/1471-2393-14-85. *Department of Health Education, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran. tavafian@modares.ac.ir. Despite the benefits of mother-newborn skin-to-skin contact immediately after birth, it has not been universally implemented as routine care for healthy term neonates. Midwives are the first person to contact the neonate after birth. However, there is evidence that many midwives do not perform mother-newborn skin-to-skin contact. The aim of this study was to develop and psychometrically evaluate an instrument for measuring factors associated with mother-newborn skin-to-skin contact (MSSCQ) based on the PRECEDE-PROCEED model. This was a two-phase qualitative and quantitative study. It was conducted during 2010 to 2012 in Tehran, Iran. In the qualitative part, 150 midwives working in labor room participated in 19 focus group discussions in order to generate a preliminary item pool. Then, content and face validity were performed to provide a pre-final version of the questionnaire. In the quantitative phase, reliability (internal consistency and test-retest analysis), validity and factor analysis (both exploratory and confirmatory) were performed to assess psychometric properties of the instrument. A 120-item questionnaire was developed through the qualitative phase. It was reduced to an 83-item after content validity. The exploratory factor analysis loaded fifteen-factors and three constructs (predisposing, enabling and reinforcing) containing 82 items (38, 18, and 26 statements, respectively) that jointly accounted for 60.64% of observed variance. The Confirmatory factors analysis determined a model with appropriate fitness for the data. The Cronbach’s alpha coefficient showed excellent internal consistency (alpha = 0.92), and test-retest of the scale with 2-week intervals indicated an appropriate stability for the MSSCQ (ICC = 0.94). The Mother-Newborn Skin-to-Skin Contact Questionnaire (MSSCQ) is a reliable and valid theory-based measurement and now can be used in clinical practice, midwifery and nursing studies. Qualitative, Staff Issue, Tool, Practice/implementation of KMC, birth KC

Nakai. More stable thermoregulation when infants have continuous KC was cited in a paper. See this citation


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Nakamura, T., & Sano, Y. (2008). Two cases of infants who needed cardiopulmonary resuscitation during early skin-to-skin contact with the mother. J. Obstet Gynaecol Res. 34(4 Part 2): 603-604. This is an article put out by the journal of the Japan Society of Obstetrics and Gynecology. Two case reports are stated. Infant #1 was female, 38 weeks gestation, 2907 gm birthweight with 1 minute APGAR of 8. Cord was clamped “soon after delivery and SS was started after the neonate was dried off” (pg. 603). Nurses found the pale, hypotonic and apneic infant on the mother’s breast at 5 minutes after birth, HR = 90, temp = 36.8, bag and mask resuscitation begun and HR =100 but infant had tachypnea and went to NICU were pH = 7.263; PCO2 = 55.4mmHg, pCO2=30mmHg. Base excess was -2mEq/L, BS =70mEq/L. No infection, but nasal CPAP x 3 days. EEG on day 6 was normal, MRI of brain on day 10 was normal, infant discharged day 13 and neurological development at 1 year was normal. Infant #2: male, 40 weeks gestation, 3036 grams, APGARS were 8,9,9; cord clamped soon after delivery and SSc began after 10 minute APGAR. At 70 minutes postbirth nurse found pale, apneic, hypotonic infant at breast, HR=50, temp =36.0, bag and mask resuscitation quickly brought HR to 100 but infant went to NICU for paleness, pH =7.123, pCO2=28.8 mmHg; pO2=75 mmHg. BS =165 mg/dL. Had tonic seizures x 3 days; EEG on days 2 and 6 normal; MRI of brain on day 10 normal, discharged day 15, normal neurological development at one year. In conclusion, authors state that cardiopulmonary arrests occur in full term infants shortly after birth when not in KC, so a nurse should monitor color, respirations, tone, and heart rate throughout the first two hours postbirth. Descriptive, Full term, birth KC, negative outcomes, pH, pCO2, HR, ianfection, CPAP, MRI, ALTE, life threatening events.


Namairo, F.B., Mugalu, J., McAdams, R.M. & Ndeez, G. (2012). Poor birth weight recovery among low birth weight/preterm infants following hospital discharge in Kampala, Uganda. BMC Pregnancy and Childbirth, 12(1), 1-7? Epub ahead of print. 235 preterm and/or LBW infants from the Kangaroo Mother Care unit were followed to determine by descriptive study how many had regained their birthweight by 21 days of life. 113 (48.1%) had NOT regained birthweight by 21 days postbirth and hospital stay longer than 7 days and initiation of first feeding after 48 hours of age were both independently associated with failure to regain birthweight by 21 days postbirth. Maternal factors and infant factors and physical exam were not associated with failure to regain birth weight. PT, Descriptive, 3rd world, weight

Nannabati, M., Talakouth, S., Mohammadzadeh, M., Mousavi, F. (2016-Jan/Feb). The implementation of kangaroo mother care and nurses’ perspective of barriers in Iranian NICUs. Iran J Nurs Midwifery Research. 21(1):84-88. doi: 10.4103/1735-9066.174753. Kangaroo mother care (KMC) is the most recommended intervention in caring for infants, and in this method, both the mothers and infants are cared-for. The World Health Organization recommends implementation of KMC for all infants. However, there are some barriers in the way of its application. The purpose of this study was evaluation of the practical application of KMC and nurses’ perspective about its implantation barriers in the neonatal intensive care units (NICUs) in Iran. The descriptive study was conducted on 96 infants and 80 nurses working in the NICUs of two university hospitals in Isfahan, Iran. Data were collected by a two-section questionnaire and analyzed by t-test through SPSS 14. Study findings indicated that mean weight and age of the infants with KMC were 1510 g and 32 weeks, respectively. KMC was implemented for 32 min in a day. From nurses’ perspective, mother-related barriers were the main barriers in the implementation of KMC as mothers were not present by their infants. Another barrier was the mothers’ fear of touching their infants. In the domain of organizational barriers, physician’s order was found to be the most important barrier in application of KMC. Identifying barriers in implementation of KMC is essential to support the mothers. Regarding mother-related barriers, organizational barriers, and the need for a physician’s order for implementation of KMC, policy makers must provide facilities and equipment for applying KMC practice for mothers and improve the protocol of KMC in the NICU. PT, Descriptive evaluative study, barriers, staff issues, duration of KC. Not on charts 3-22-16 New to biblio study.

Nancavoli, R.N., Balan, R., & Kabra, N.S. (2013). Effect of kangaroo mother care expressed breast milk administration on pain associated with removal of adhesive tapes in very low birth weight neonates: a randomized controlled trial. Indian Pediatrics, 50(11), 1011-1015. No doi. To compare the pain relief effect of KMC and expressed breast milk on pain associated with adhesive tape removal in VLBW neonates, an RCT was conducted in a University level hospital with 15 VLBW neonates who needed adhesive tape removal for the first arm of the study and then 50 VLBW who needed tape removal were assigned to KMC or to expressed breast milk for pain relief. In first arm, they demonstrated that adhesive removal is painful (PITT went from 3.47 to 12.13) and in the second, the post-adhesive removal PITT pain score was NOT significantly different between KMC and expressed breast milk groups. PT, pain, Micropreemie, KC, breastfeeding, 3rd world, RCT.

PT, HR, RR, stability  GET THIS and PUT ON charts

Nassi N, Piumelli R,Nardini V, et al. (2013). Sudden unexpected perinatal collapse and sudden unexpected early neonatal death. Early Hum Dev.89(suppl 4):S25-S26. One definition offered by the British Association of Perinatal Medicine includes any term or near-term (defined as >35 weeks’ gestation in this review) infant who meets the following criteria: (1) is well at birth (normal 5-minute Apgar and deemed well enough for routine care), (2) collapses unexpectedly in a state of cardiorespiratory extremis such that resuscitation with intermittent positive-pressure ventilation is required, (3) collapses within the first 7 days of life, and (4) either dies, goes on to require intensive care, or develops encephalopathy. Other potential medical conditions should be excluded (eg, sepsis, cardiac disease) for SUPC to be diagnosed PT, Birth KC, SUPC Not on charts

National Association of Neonatal Nurses (NANN). (2008). Pain Assessment and Management Guideline for Practice. 2nd Ed. This may or may not include Kangaroo Care now, must get it to determine. Available for $20.00 from NANN (same as next citation source). Product # 7061-291. PAIN, PT, FT

National Association of Neonatal Nurses. (2014 – Aug). Baby Steps to Home: A Guide to Prepare NICU Parents for Home. National Association of Neonatal Nurses. This is a comprehensive manual that is free to all members of NANN and it covers Breastfeeding in Hospital and at home, Infant care (temperature control, pain management, developmental care, parenting in NICU, newborn screening), Kangaroo Care (pg. 30), Skin Care, and Newborn Jaundice, Basic Baby Care, choosing the newborn’s provider, Home Safety, Oral feedings, Hearing Screening, Immunizations, Car Seat testing, CPR, Safe Sleep (pg. 63), RSV, preventing infections, meds at home, follow-up appointments with specialists, and a myriad of diagnosis and what parents should do with each. PT, parent manual for care of infant. NOT on Charts 8/29/2014

National Association of Neonatal Nurses (NANN) Board of Directors. (2009). Transfer procedure for ventilated kangaroo care wall poster. June 2009. This colorful laminated poster is a useful tool for units. The poster clearly and concisely outlines the transfer procedure for the ventilated infant receiving Kangaroo Care. Steps are presented for before transfer, for transferring the infant from the incubator into kangaroo care position, and from ventilated kangaroo care back to the incubator. Instructions are provided for both a sitting and standing transfer. Available for $15.00 from NANN at www.nann.org or by calling in USA 1-800-451-3795. NANN product # 6010-244. Ventilated KC, transfer, guidelines, PT

National Association of Neonatal Nurses (NANN) Board of Directors. (2009). The Use of Human Milk and Breastfeeding in the Neonatal Intensive Care Unit. Position Statement #3046. Advances in Neonatal Care, 9(6): 314-318. On page 316 it states: “3. Transitioning the Vulnerable Infant to At-Breast Feedings. Skin-to-skin care provides a valuable opportunity for all mothers to feel connected to their infants. Prior to holding her infant skin to skin, the mother should pump her breasts to prevent the leakage of milk. In addition, skin to skin care is an important component of transitioning the infant from tube feeding to direct feeding from the breast. As a component of skin to skin care, nonnutritive sucking at the emptied breast during tube feeds can be initiated as soon as the infant is no longer ventilator dependent. PT, BF, National Guidelines

National Association of Neonatal Nurses (NANN) Board of Directors. (2012). The Use of Human Milk and Breastfeeding in the Neonatal Intensive Care Unit. Position Statement #3052. Advances in Neonatal Care, 12(1), 56-60. Of course, they promote use of human milk and breastfeeding and encourage all nurses to do it. The recommendations are 1. Assess Human Milk Supply, 2. Use Fortified Human Milk when needed, 3. Transition the vulnerable infant to at-breast feedings and here, the first thing it says is “Skin to skin care provides a valuable opportunity for all mothers to feel connected to their infants and has been demonstrated to improve breastfeeding outcomes. Prior to holding her infant skin to skin, the mother should pump her breasts to prevent leakage of milk. In addition, skin to skin care is an important component of transitioning the infant from tube feedings to direct feedings from the breast. As a component of skin to skin care, nonnutritive sucking at the emptied breast during the feeds can be initiated as soon as the infant is no longer ventilator dependent.” Pg 58. KC is not mentioned in the conclusion. PT, National Guidelines. Breastfeeding

National Collaborating Centre for Primary Care (NCCPC). (2006). Postnatal Care. Routine postnatal care of women and their babies. See citation under Demot, Blick, Norman et al. 2006. PT

National Perinatal Association – all of their documents are open access and available through www.nationalperinatal.org and the guidelines about integrating family care are also available from www.support4nicuparents.org


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National Perinatal Association. (2015-Dec 1). Recommendations for the family in developmental care of the NICU baby. J Perinatology 35 (S1), S5-S8. doi: 10.1097/j.pn.2015.142. This is a four page article offering recommendations about how to support parent’s roles as caregivers, reduce maternal-infant separation, and practice FC. On page S3: “Family-centered developmental care (FCDC) takes family-centered care one step further by involving the family as an essential contributor to the provision of individualized, developmentally supportive care of their baby. (citing McGrath J, Samra H, Kenner C. 2011. Family centered developmental care practices and research: what will the next century bring? J Perinat Neonatal Nurs, 25 (2): 165-170). Fully implementing FCDC requires a global change in culture (cites Cesario Moore K, et al. 2003).Implementing potentially better practices for improving family centered care in NICU: origins, advances, impact. Peds 111(Supple E1) e450-e460). In the section Supporting parents’ role as caregivers of their babies in NICU, it states on page S5: “The separation of parents from their baby in the NICU 15 combined with parental mental health issues such as depression, post-traumatic stress disorder, anxiety and other stress-related conditions can adversely affect the parent-baby relationship resulting in adverse outcomes for the baby’s social and emotional development,16,17 and behavioral18 and cognitive functioning19,20 This separation may render the preterm baby, especially one who is very low birth weight, to be at risk for abuse and maltreatment following hospital discharge.17,21,22.” On page S6 it states “Parents of premature and sick babies must develop and maintain an appropriate understanding of their babies’ needs in order to be prepared for home caregiving.11,23 Studies by O’Brien et al.24 in Canada and Ortenstrand et al.25 in Sweden, in which families were fully integrated into the NICU team and actively provided much of their babies’ care, showed many benefits to both parents and babies. Mothers had lower stress scores and felt more knowledgeable and confident, while babies had improved weight gain and a higher rate of exclusive breastfeeding at discharge in the O’Brien et al.24 trial. The length of stay was shorter for babies in the Ortenstrand et al.25 trial. Phillips et al.26 found that supporting mothers in the NICU to respond to their babies’ behavior in an effort to support attachment led to significantly higher rates of breastfeeding at 8 weeks after birth.26 Several studies have revealed a link between infant stress in the NICU and the corresponding changes in brain architecture. Smith et al.27 demonstrated that when neonates were exposed to increasing numbers of stressors in the NICU, the babies had regional alterations in brain structure and function, as determined by magnetic resonance imaging, as well as abnormalities in motor behavior on neurobehavioral examination. However, when parents of premature babies are shown how to recognize their baby’s behavioral, social and physical cues, parents facilitate their baby’s developmental and physical progress, further reflected by changes in the brain’s structure. Milgrom et al.28 found that when parents participated in a 10-session training program to help them reduce their preterm babies’ stressful experiences, their babies’ brains showed improved cerebral white matter micro-structural development, again as determined by magnetic resonance imaging. In another study, preterm babies who received 8 weeks of skin-to-skin contact with their mothers demonstrated accelerated functional brain maturation as assessed by electroencephalogram, when compared with babies who did not receive such contact. (cites Scher, Ludington-Hoe et al., 2009). Further work by Milgrom et al.30 evaluated the impact of an extended intervention using the enhanced Mother-Infant Transaction Program, called PremieStart, on both mothers and their babies born at ≤30 weeks gestation. Mothers who participated were found to be more sensitive to their babies and were appropriately responsive to the identified stress behaviors. Their babies displayed fewer stress behaviors at term equivalent age and showed more advanced communication development at 6 months corrected age. This latter finding gives promise that the intervention may provide an early benefit to cognitive and pre-linguistic development. White-Traut et al.31 demonstrated that when mothers received information on how to provide their babies with simple, developmentally appropriate multi-sensory stimulation through the ‘Hospital to Home Transition—Optimizing Premature Infant’s Environment’ program, their babies had better weight gain during the hospital stay and were less likely to see a healthcare provider for an illness in the 6-weeks post-NICU discharge.32 Parents also benefited when they were supported to improve interactions with their babies. Melnyk et al.33 found that parents who participated in the ‘Creating Opportunities for Parent Empowerment’ program during their NICU stay reported less stress while in the NICU and less depression and anxiety at 2 months’ corrected infant age than did mothers who did not receive the intervention. Babies of participating mothers also had a shorter length of stay in the NICU.13. These interventions have the potential to lessen the adverse impact of environmental stressors to which NICU babies are exposed, ultimately lessening the chance of poor developmental outcomes. Positive benefits of reduced stress can further improve parents’ relationships with their babies. 1. Parents should be incorporated as full participatory, essential, healing partners within the NICU caregiving team. As partners within the medical team, parents should: (a) Assume the parental role through provision of hands-on care to their baby including early, frequent and prolonged skin-to-skin contact as is medically appropriate, with coaching, guidance and support from the NICU staff; (b) Participate in both medical rounds and nursing shift change reports; (c) Honor both Health Insurance Portability and Accountability Act (HIPAA) and safety concerns while in the NICU; and (d) Have full access and input to both written and electronic medical records. 2. Parents and family members should be supported to engage in developmentally appropriate care in order to become competent caregivers and advocates for the neuroprotection of their babies.13,14,35 Components of parent support should include guidance on how to: (a) Provide comfort and security through consistency of their presence for their baby whenever possible; (b) Understand the behavioral communication of their baby so as to best interpret and respond to the baby’s needs; (c) Create and sustain a healing environment with respect to sensory exposures and experiences; (d) Provide supportive positioning and handling for their baby, including supportive oral feeding experiences,
Recommendations for Psychosocial Support of NICU Parents

1. Parents should be incorporated as full caregiving partners with the medical establishment for the care of their babies. In the ideal NICU, parents will find numerous studies documenting the NICU experience as a potentially traumatic event, primarily to parents, but also to babies and staff. In the ideal NICU and that traumatic stress continues after discharge for mothers and fathers, psychosocial support of both NICU parents and staff should be goals equal in importance to the health and development of babies. It reports that the supplement is composed of several articles: Recommendations for involving the family in developmental care of the NICU baby. J W Craig, C Glick, R Phillips, S L Hall, J Smith and J Browne J Perinatol 35: S5-S8; doi:10.1038/jp.2015.142; Recommendations for peer-to-peer support for NICU parents S L Hall, D J Ryan, J Beaty and L Grubb J Perinatol 35: S9-S13; doi:10.1038/jp.2015.143; Recommendations for mental health professionals in the NICU M T Hyinan, Z Steinberg, L Baker, R Cicco, P A Geller, S Lassen, C Milford, K O Mounts, C Patterson, S Saxton, L Segre and A Staebe, J Perinatol 35: S14-S18; doi:10.1038/jp.2015.144; Recommendations for palliative and bereavement care in the NICU: A family-centered integrative approach C Kenner, J Press and D Ryan J Perinatol 35: S19-S23; doi:10.1038/jp.2015.145; NICU discharge planning and beyond: recommendations for parent psychosocial support I B Purdy, J W Craig and P Zeanah J Perinatol 35: S24-S28; doi:10.1038/jp.2015.146; Recommendations for enhancing psychosocial support of NICU parents through staff education and support S L Hall, J Cross, N W Selix, C Patterson, L Segre, R Chuffo-Siewert, P A Geller and M L Martin, J Perinatol 35: S29-S36; doi:10.1038/jp.2015.147. PT, Review, guidelines, NICU, toxic stress, depression Cite as Hyinan, MT & Hall, SL (2015) Psychosocial program standards for NICU parents. J Perinatol 35 (S1): S1-S4; doi:10.1038/jp.2015.141 because this is correct citation for this article which states on page 51 “Distress is the companion of everyone in the NICU.” PT, family integration

Naughten, F. (2005). The heel prick: how efficient is common practice? RCM Midwives, 8(3), 112-114. States that Kangaroo Care can be used to reduce heel stick pain. Review, Pain, FT, PT READ AND PUT ON CHARTS

Narayan IC, Mulder EEM, Boers KE, van Vonderen JJ, Wolters VERA, Freeman LM, Te Pas AB. (2018-Feb). Neonatal Safety of Elective Family-Centered Caesarean Sections: A Cohort Study. Front Pediatr. 2018 Feb 12;6:20. doi: 10.3389/fped.2018.00020. eCollection 2018. Although little data are available concerning safety for newborns, family-centered caesarean sections (FCS) are increasingly implemented. With FCS mothers can see the delivery of their baby, followed by direct skin-to-skin contact. We evaluated the safety for newborns born with FCS in the Leiden University Medical Center (LUMC), KCBib 2018

skinto-skin contact (kangaroo care) and infant touch; (e) Collaborate with NICU staff to minimize their baby’s stress and pain in the developmentally-unexpected environment of the NICU; (f) Safeguard their baby’s sleep, recognizing the importance of sleep to healing, growth and brain development; (g) Optimize their baby’s nutrition with breast milk and breastfeeding whenever possible; and (h) Protect their baby’s skin and its many functions, including its role as a conduit of neurosensory information to the brain. Article then goes on to explain how staff should participate in family integrated care, and what policies are need on the unit (i.e. never call parent a “visitor”). PT, Review and guidelines, separation, integratefamily care, parents as providers, stress, single family rooms

National Perinatal Association, Workgroup for Psychosocial Support of NICU Parents. (2015-Dec 1), Interdisciplinary Recommendations for Psychosocial Support of NICU Parents. J Perinatology. 35 (S1), S29-S36.This is a compilation of many recommendations or the integration of parents as full caregiving partners with the medical establishment for the care of the their infants in the NICU. Many recommendations are giving, such as staff education and supportive attitude, never calling a parent a visit, having them participate in medical rounds and nursing report, giving them full access to and ability to contribute to written and electronic medical records, have peer educators available to them, and how to help them at their infant’s end of life. On page S30 it has a section A and reads: “A. Recommendations for supporting parents’ roles as caregivers of their babies in the NICU: 1. Parents should be incorporated as full participatory, essential, healing partners within the NICU caregiving team. As partners within the medical team, parents should: a. Assume the parental role through provision of hands-on care to their baby including early, frequent and prolonged skin-to-skin contact as medically appropriate, with coaching, guidance and support from the NICU staff; b. Participate in both medical rounds and nursing shift change reports; c. Honor both HIPPA and safety concerns while in the NICU; and d. Have full access and input to both written and electronic medical records. 2. Parents and family members should be supported to engage in developmentally appropriate care in order to become competent caregivers and advocates for the neuroprotection of their babies. Components of parent support should include guidance on how to: a. Provide comfort and security through consistency of their presence for their baby whenever possible; b. Understand the behavioral communication of their baby so as to best interpret and respond to the baby’s needs; c. Create and sustain a healing environment with respect to sensory exposures and experiences; d. Provide supportive positioning and handling for their baby, including supportive oral feeding experiences, skin-to-skin contact (kangaroo care) and infant touch; PT, Guidelines, recommendations, family integration, parents as-providers, end of life, developmental care, reducing NICU STRESS and this should be cited as S L Hall, J Cross, N W Selix, C Patterson, L Segre, R Chuffo-Siewert, P A Geller and M L Martin. (2015-Dec 1). Recommendations for enhancing psychosocial support of NICU parents through staff education and support J Perinatol 35 (S1): S29-S36; doi:10.1038/jp.2015.147
where FCS was implemented in June 2014 for singleton pregnancies with a gestational age (GA) ≥38 weeks and without increased risks for respiratory morbidity. The incidence of respiratory pathology, unplanned admission, and hypothermia in infants born after FCS in LUMC were retrospectively reviewed and compared with a historical cohort of standard elective cesarean sections (CS). From June 2014 to November 2015, 92 FCS were performed and compared to 71 standard CS in 2013. Incidence of respiratory morbidity, hypothermia, temperatures at arrival at the department, GA, and birth weight were comparable (ns). Unplanned admission occurred more often after FCS when compared to standard CS (21 vs 7%; p = 0.03), probably due to peripheral oxygen saturation (SpO2) monitoring. There was no increase in respiratory pathology (8 vs 6%, ns). One-third of the babies were separated from their mother during or after FCS. Unplanned neonatal admissions after elective CS increased after implementing FCS, without an increase in respiratory morbidity or hypothermia. SpO2 monitoring might have a contribution. Separation from the mother occurred often. FT, birth KC, cesarean, Not on charts 3-25-2018

Necypor JL, Holley SL. (2017-Dec). Providing Evidence-Based Care During the Golden Hour. Nurs Womens Health. 21(6):462-472. doi: 10.1016/j.nwh.2017.10.011. The Golden Hour encompasses a set of evidence-based practices that contribute to the physiologic stabilization of the mother-newborn dyad after birth. Important elements of the Golden Hour include delayed cord clamping, skin-to-skin contact for at least an hour, the performance of newborn assessments on the maternal abdomen, delaying non-urgent tasks (e.g., bathing the newborn) for 60 minutes, and the early initiation of breastfeeding. The Golden Hour contributes to neonatal thermoregulation, decreased stress levels in a woman and her newborn, and improved mother-newborn bonding. Implementation of these actions is further associated with increased rates and duration of breastfeeding. This article explores the evidence supporting the Golden Hour and provides strategies for successfully implementing a Golden Hour protocol on a hospital-based labor and delivery unit. FT, essential care, birth KC, BF. Not on charts 3-25-2018

Nelson AM. (2017-Apr). Risks and Benefits of Swaddling Healthy Infants: An Integrative Review. MCN Am J Matern Child Nurs. 2017 Apr 7. doi: 10.1097/NMC.000000000000344. Published online Antonia M. Nelson is an Associate Professor of Nursing, Saint Anselm College, Manchester, NH. The author can be reached via e-mail at anelson@anselm.edu. Swaddling has been practiced since antiquity; however, there is controversy about its safety. The purpose of this review is to update and build upon previous reviews and synthesize evidence on risks and benefits of swaddling in healthy term, near-term, or older infants. MEDLINE (1960-May 13, 2016) and CINAHL (1963-May 13, 2016) searches were conducted, relevant articles retrieved, and citation lists reviewed for other references. Synthesis Methods: A table summarizes study details. Selected older references and supporting literature are integrated into the synthesis to provide context. Swaddling calms infants and promotes sleep, but it is equally or less effective than other nonpharmacological methods in managing pain. There may be a slight risk for sudden infant death syndrome associated with supine swaddling, although the impact of confounding variables is unclear. Early skin-to-skin contact supports early breastfeeding, but swaddling does not have a negative impact on breastfeeding long term. Swaddling tightly around the hips is strongly associated with developmental dysplasia of the hip. More research is needed on the impact of swaddling on pain in term infants, infant vital signs, arousal thresholds, and a possible association between swaddling, vitamin D deficiency, and acute lower respiratory tract infection. The number of studies was small, with few randomized control trials, and researchers used different definitions of swaddling. If a few precautions are taken, such as swaddling securely to minimize risk of unwrapping, avoiding overheating, placing infants to sleep supine, and discontinuing swaddling when infants first show signs of rolling over, swaddling presents minimal risk. Maternity and neonatal nurses should model swaddling practices based on the evidence and promote informed decision-making among infant caregivers. FT, Review, swaddling, KC, pain, swaddling problems, Not on charts 4-28-2017

Ndlela B, Van den Bergh R, Manzi M, van den Boogaard W, Kosgei RJ, Zuniga I, Juvenal M, Reid A.(2016-Jan, yes, 2016). Low-tech, high impact: care for premature neonates in a district hospital in Burundi. A way forward to decrease neonatal mortality. BMC Research Notes, 16(9):128. doi: 10.1186/s13104-015-1666-y. Death among premature neonates contributes significantly to neonatal mortality which in turn represents approximately 40% of paediatric mortality. Care for premature neonates is usually provided at the tertiary care level, and premature infants in rural areas often remain bereft of care. Here, we describe the characteristics and outcomes of premature neonates admitted to neonatal services in a district hospital in rural Burundi which also provided comprehensive emergency obstetric care. These services included a Neonatal Intensive Care Unit (NICU) and a Kangaroo Mother Care (KMC) ward, and did not rely on high-tech interventions or specialist medical staff. A retrospective descriptive study, using routine programme data of neonates (born at <32 weeks and 32-36 weeks of gestation), admitted to the NICU and/or KMC at Kabezi District Hospital. 417 premature babies were admitted to the neonatal services; of these, 134 (31 %) were born at <32 weeks, and 236 (54 %) at 32-36 weeks. There were 67 (15 %) with an unknown gestational age but with a clinical diagnosis of prematurity. Survival rates at hospital discharge were 62 % for the <32 weeks and 87 % for the 32-36 weeks groups; compared to respectively 30 and 50 % in the literature on neonates in low- and middle-income countries. Cause of death was categorised, non-specifically, as “Conditions associated with prematurity/low birth weight” for 90 % of the <32 weeks and 40 % of the 32-36 weeks of gestation groups. Our study shows for the first time that providing neonatal care for premature babies is feasible at a district level in a resource-limited setting in Africa. High survival rates were observed, even in the absence of high-tech equipment or specialist

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neonatal physician staff. We suggest that these results were achieved through staff training, standardized protocols, simple but essential equipment, provision of complementary NICU and KMC units, and integration of the neonatal services with emergency obstetric care. This approach has the potential to considerably reduce overall neonatal mortality. PT, descriptive chart review, implementation, 3rd world setting. Mortality. NEW TO BIBLIO STUDY

Ndaye O, Diouf A, Diouf S, Diouf NN, Cisse C, Bathily A, Cisse CT, Sylla A, Gaeye M, Sall MG, Moreau JC, & Kuakuiu N. (2006). Efficiency of kangaroo care on thermoregulation and weight gain of a preterm newborn cohort in Dakar. Dakar Medicine 51(3), 155-160. A retrospective survey of charts of preterms <2000 gm birthweight who were cared for in KC unit. Efficiency was conducted using thermic curve evolution and daily weight gain. 56 preterms (GA = 33 +/-7.6 wks; mean birthweight=1488+/-.277.6 gms) had mean temp “around 37.0+/-.0.5°C at discharge (temp was satisfactory during follow-up and was stable at discharge from hospital”). Mean daily weight gain was 33.0+/-.7.6 gms. Only one case of death occurred. KC is good for thermoregulation, weight gain, and survival of preterm babies and has low cost. Descriptive, Preterm, 3rd world, weight, temperature, mortality, cost. Not yet on charts

Nelson, J.M. (2010). This skin-to-skin thing really works. Journal of Obstetric, Gynecologic and Neonatal Nursing, 39(Suppl 1), S31-32. Reports a quality improvement project to educate labor and delivery nurses about Birth KC after hearing comments like “The patients don’t want to hold their babies.” “I haven’t seen that skin-to-skin does anything in my practice” “I don’t believe the research”, and “How will we ever get our assessments done?” (pg. S31). So they educated with theory and evidence, used a “coaches” among the staff model and support BIRTH KC in their “go live” period, collected success stories and shared them with peers in formalized process to identify and accentuate successes, and birth KC initiation rate data were collected. PT, Birth KC, Implementation, quality improvement project, staff resistance, barrier

Neogi SB, Chauhan M, Sharma J, Negandhi P, Sethy G. (2016-Oct-Dec). Rolling out of kangaroo mother care in secondary level facilities in Bihar-Some experiences. Indian J Public Health, 60(4):302-308. doi: 10.4103/0019-557X.195864. Preterm birth is one of the leading causes of under-five child deaths worldwide and in India. Kangaroo mother care (KMC) is a powerful and easy-to-use method to promote health and well-being and reduce morbidity and mortality in preterm/low birth weight (LBW) babies. As part of the roll-out of India Newborn Action Plan interventions, we implemented KMC in select facilities with an objective to assess the responsiveness of public health system to roll out KMC. KMC intervention was implemented in two select high priority districts, Gaya and Purnea in Bihar, over the duration of 8 months from August 2015 to March 2016. The implementation of intervention was phased out into situation analysis, implementation of intervention, and interim assessment. KMC model, as envisaged keeping in mind the building blocks of health system, was established in 6 identified health-care facilities. A pretested simple checklist was used to assess the awareness, knowledge, skills, and practice of KMC during baseline situational analysis and interim assessment phases for comparison. The intervention clearly seemed to improve the awareness among auxiliary nurse midwives/nurses about KMC. Improvements were also observed in the availability of infrastructure required for KMC and support logistics like facility for manual expression of breast milk, cups/suitable devices such as paladi cups for feeding small babies and digital weighing scale. Although the recording of information regarding LBW babies and KMC practice improved, still there is scope for much improvement. There is a commitment at the national level to promote KMC in every facility. The present experience shows the possibility of rolling out KMC in secondary level facilities with support from government functionaries. PT, descriptive report, implementation evaluation, 3rd world, NOT ON CHARTS 3/6/2017 New to biblio study. See the erratum in Indian J Public Health, 2017 Jan-Mar;61(1):63. doi: 10.4103/0019-557X.200264. No author. Erratum: Rolling out of kangaroo mother care in secondary level facilities in Bihar - some experiences.[This corrects the articleRolling out of kangaroo mother care in secondary level facilities in Bihar-Some experiences. [Indian J Public Health. 2016] DOI: 10.4103/0019-557X.195864.]

Neu, M. (1999). Parents’ perception of skin-to-skin care with their preterm infants requiring assisted ventilation. Journal of Obstetric, Gynecologic, and Neonatal Nursing, 28 (2): 157-164. Nine parents (8 moms, 1 father) of ventilated preterms were interviewed and were apprehensive when first doing KC and needed support to do it with these infants. Parents valued the experience but needed intervention to alleviate apprehension, enhance autonomy feelings, and modify environment. Those who continued with KC had more active parenting role. Preterm, descriptive,vent KC, FATHER, Qualitative study

Neu M. (2004). Kangaroo Care: Is it for everyone? Neonatal Network 23 (5), 47-54. Qualitative study of two interviews with mothers, one B4 & one after discharge asking them to relate their experience of holding in the NICU and at home. Mothers who held swaddled infants were interviewed. KC moms had no anxiety, no frustration, and no fatigue (pg. 50) and perceived many benefits of close contact with the infant. 4 mothers who switched from KC holding to swaddled holding expressed emotional distress (pg. 53). Building a trusting relationship and providing individualized attention about holding the infant are important for all mothers of preterms, even when they appear competent and satisfied because they may not be discussing their feelings of emotional distress or

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dissatisfaction with nurses in the NICU. Preterm, descriptive, Qualitative, maternal stress/distress, anxiety, fatigue, swaddled holding, KC at home.

Neu M., Brown, J.V. & Vogir, C. (2000). The impact of two techniques used during skin-to-skin care on the physiologic and behavioral responses of preterm infants. Nursing Research, 49(4), 215-223. 15 ventilated preterms (MGA=30.2 wks; Mwgt=1094g, Mage=18.3days) each received one day each of transfer by nurse (sitting) or transfer by parent (standing)/(14 Moms, 1 Father) on 2 consecutive days in random order in interrupted time series, cross over design. Min-by-min HR, SAA2 recorded manually for 30 min B4 & after transfer & every minute during 1 hr of KC. Axillary Temp was stable, HR increased, SAA2 decreased and there was more motor disorganization with transfer but returned to baseline during and after KC regardless of transfer technique. More physiologic and motor disorganization, less self-regulation, more need for caregiver support during transfers than during pre, post, and Kc periods. During and after KC, infants showed NO SIGNS of ENERGY DEPLETION. VENT KC, FATHER, Infant own control.HR, SAA2, Temp, motor movements, energy conservation, self-regulation, SITTING and STANDING transfer, PT.

Neu, M., Hazel, N.A., Robinson, J., Schmiege, S.J. & Laudenslager, M. (2014, Mar). Effect of holding on co-regulation in preterm infants: A randomized controlled trial. Early Hum Development, 90(3):141-147 doi: 10.1016/j.earhumdev.2014.01.008 Purpose was to determine whether kangaroo holding of healthy preterm infants over the first eight weeks of an infant’s life facilitates co-regulation of salivary cortisol between mother and infant. A Randomized control trial in which infants were assigned to receive 1h of daily kangaroo (skin-to-skin contact on the chest of mother) or blanket holding (dressed and held in mother's arms) at home after NICU discharge. A registered nurse visited mothers weekly for eight weeks to encourage holding and provide information about infant development. A control group had no holding restrictions and received weekly brief social visits. The study included 79 preterm infants, born between 32 and 35 weeks gestational age and were a mean of 15 days (±5.7) at enrollment. Co-regulation was conceptualized as progressive reduction in the absolute difference between mother and infant cortisol levels across 60 min of holding at each holding session. Mother and infant cortisol levels were measured before holding and at 30 and 60 min after holding began during three holding sessions (baseline and at two and eight weeks after study initiation). Primary analyses were conducted using hierarchical linear models. There was much variability in cortisol levels. Levels of mother and infant cortisol decreased during holding. No significant co-regulation occurred in any group at any holding session or over time. Decreasing level of cortisol in both mothers and infants suggests that holding promoted the expected decline in stress hormone levels. However, supported holding methods did not differentially affect co-regulation compared to controls. Holding is pleasurable and stress may need to be present in order for mothers and infants to demonstrate co-regulation in cortisol levels. PT, RCT, co-synchrony, cortisol, home KC, community KC, co-regulation, duration, stress

Neu, M., Laudenslager, M.L., & Robinson, J. (2009). Co-regulation in salivary cortisol during maternal holding of premature infants. Biologic Research for Nursing, 10(3), 226-240. Doi: 10.1177/1998004808327789 A descriptive study of 20 mother-infant dyads (14 dyd KC for 60 minutes and 10 dyd swaddled holding) at 34.7 weeks (mean of 15 days old) who had salivary cortisol samples taken when mothers first picked up in KC or swaddled infants and 60 minutes after KC or swaddled holding began. Co-regulation was defined as minimal difference between maternal-infant cortisol levels immediately after KC holding as compared to before KC holding. Salivary cortisol data from mothers and infants did not distribute normally, so were log transformed. When infants were held, either in KC or swaddled, the mean mother-infant difference in salivary cortisol after holding was less than the mean difference before holding, showing a moderately strong trend toward co-regulation of HPA activity (effects size was moderate = .50). The strongest factors predicting a change from before-to-after holding in HPA scores were not KC and swaddled holding, but were noise level and use of antenatal steroids. Noise was the only independent significant predictor (if you want salivary cortisol to drop, drop the noise level of the environment- KC did not make salivary cortisol level drop which is contrary to Mooncey et al,1997, Modl & Glover 1998, Morelius et al. 1998, and Morelius et al.2005 studies). When the mothers quietly held the sleeping infant or consolcd a fussyl infant by gentle stroking or patting, these activities were not related to a decrease in salivary cortisol levels and did not amply or detract from overall effect of KC and swaddled holding. Essentially, no differences between KC and swaddled holding on salivary cortisol levels. Descriptive comparative study, swaddled holding, salivary cortisol, lighting, PT, Studied at late preterm/interm age Noise level increases stress, massage. SEE Neu M, Goldstein, M, Guo D, Laudenslager ML (2007) Salivary Cortisol in Prematures: Validation of a simple method. Early Human Development, 83(1), 47-54.

Neu, M., & Robinson, JA. (2010). Maternal holding of preterm infants during the early weeks after birth and dyad interaction at six months. Journal of Obstetric, Gynecologic, and Neonatal Nursing, 39(4), 401-414. doi: 10.1111/j.1552-6909.2010.01152.x A randomized controlled trial of 65 mother infant dyads of mean GA of 33 wks. An 8-week home intervention of daily 1-hour uninterrupted KC or wrapped and held in mother’s arms was conducted. Weekly home visits were made to provide encouragement to hold the infant, emotional support, and info about infant behavior and development. Mothers completed the Edinburgh scale for DEPRESSION and State Trait Anxiety (have to get article to relate these outcomes). At 6 months the still face test for maternal-infant interaction was done. KC infants had more coregulation behaviors during play than blanket-holding group. No differences between groups in infant vitality during neutral face. KC in the early weeks of life helps infants develop more co-regulation strategies. She reports trouble recruiting mothers to KC’ holding and noted that, although the mothers were informed about benefits of KC, they rarely practiced it or did so only
with support from nurses. PT, RCT, Home KC, psychosocial development, coregulation, attention, interaction, swaddled, long term development outcome, 6 months. Mutual caregiving has become co-regulation, Little KC going on, Depression, Maternal Anxiety, duration one hour. Not on charts

Neu, M., Robinson, J.A., & Schmiege, S.J. (2013). Influence of holding practice on preterm infant development. MCV. Am. Maternal Child Nursing, 39(3), 13-143. doi: 10.1097/MCC.0b013e31827c6f1e. Randomized controlled trial of 87 PT infants of 32-35 wk GA to KC (n=31) X1h/day/X8wks, blanket swaddled holding (n=29) 10 blanket mothers did KC too for 1-27 days; and control group (no restrictions on holding: were told about KC and blanket holding, could do KC too if they wanted, KC and blanket holding and any holding were not encouraged to hold but could do any holding and they had to record in their diary if they did anything; p 139. On page 141 it says that 11 control mothers did KC for 1-9, 19, 27, and 33 days). Control group (n=27) got 10-20 min visits) KC and blanket groups got 8 weekly visits (30-60 mins each) from nurse who encouraged the holding and gave some info on how to read infant cues; controls got short social visit weekly. Tested at end of 8 weeks of treatment. Moms held in KC an average of 59 min/day, blanket moms held 5 mins/day and controls 9 mins/day. KC and blanket groups had more optimal scores than control group in Robust Crying, so they could arouse to vigorous crying and then calm better than others. All scores on Assessment of Preterm Infant Behavior except for Attention and State Regulation were at least as high as those of fullterm infants in the KC and blanket holding groups at 6 months age.

Mothers kept track of their holding in diaries. The KC and blanket infants had similar developmental scores and robust crying means infant has high energy and excellent health. They got high autonomic cluster scores showing physiologic health too (pg. 142). Most mothers did not know about KC, author thinks that visits and encouragement and education made all groups have high scores and high scores were not related to holding type. But if you look at the tables, you will see that the KC group had consistently higher scores (but not statistically higher) than the other two groups. But all groups did KC, and I think that is why there were no differences. PT, RCT, diary, home KC, development, little KC being done. crying, visits, duration of KC

Neves, P.N., Ravelli, A.P. & Lemos, J.R. (2010). Human care newborn low-weight (kangaroo mother method): mother’s perceptions. Revista Gaucha Enfermeria, 31(1), 48-54. From August to October 2006 6 Brazilian mothers were included in a qualitative study using semi-structured interviews to determine their perceptions of how KMC helped them accomplish breastfeeding. The specific areas investigated were Maternal Experience with KMC (the method per se and then maternal breastfeeding, and experiences with kangaroo practice) and KNOWLEDGE of KMC. Nursing plays an essential role introducing families to KMC and providing care. No results of BF listed in the abstract and the article is in Portuguese. PT, BF, Qualitative study, 3rd world, maternal feelings, nursing support

Nezle, Ministry of Health. (2012-July). Observations of mother and baby in the immediate postnatal period: consensus statements guiding practice. A 4 page online document including the references. Available from http://www.health.govt.nz/publication/observation-mother-and-baby-immediate-postnatal-period-consensus-statements-guiding-practice Accessed March 28, 2018. This is a consensus policy statement written by the New Zealand College of Midwives and the Royal Australian and New Zealand College of Obstetricians and Gynecologists. The policy was reviewed by the Neonatal Encephalopathy working group of the Perinatal and Materna Mortality Review Committee and is endorsed by the Ministry of Health of New Zealand and the National Materniy Guidelines Working Group and is intended as a policy to prevent SIDS. “It is expected that all practitioners supporting mothers and babies in the immediately postnatal period will use this document to guide their practice. Responsibilities of Practitioners: 1) all mothers and their babies must receive active and ongoing assessment in the immediate postnatal period, regardless of the context around their birth. During this time, the mother and baby should not be left alone – even for a short time. 2) Ongoing assessment is for a minimum of one hour. Assessment will be longer than one hour if the mother or baby has experienced factors that increase their risk of adverse outcomes 3) Care during this time supports the physiological processes of the mother’s transition to motherhood and the baby’s transition to independent life, 4) to assist these transitions there is ongoing observation of both the mother and baby’s wellbeing, promotion of skin-to-skin contact, and support and oversight of the first breastfeeding. Supporting these processes promotes the psychological attachment essential to the baby’s wellbeing within a safe and secure environment, 5) monitoring the baby’s wellbeing includes ongoing assessment of the baby’s colour, tone, and respirations at all times (SML comment: This is what the Neonatal Resuscitation Program says, but neither the NRP nor this document mention monitoring POSITION), with particular care during periods of skin-to-skin contact. If there is any question about the baby’s wellbeing a full assessment should be carried out. 6) if there are any concerns regarding the baby’s ability to transition to independent life, there must be follow up with a review by a paediatric staff as soon as possible. 7) all practitioners providing care in the immediate postnatal period must understand the importance of, and undertake, ongoing assessment of both the mother and baby, including situations where non-midwifery personnel are providing this care outside the delivery unit (eg. in a post-operative recovery unit). All staff must be educated and competent in recognising any departure from normal. 8) all practitioners must be competent in providing emergency intervention for both the mother and the baby and how to obtain assistance from a midwife or doctor if there are concerns (end of pg. 1 quote)”. Page 2: “Involvement of family and whana. 1) The principles of safe seep involve placing the baby to sleep so that they remain face up, with face clear and in a smoke-free environment at all times. Mother, father, and family are provided with education and encouraged to follow safe sleeping practices during the immediate postnatal period and on an ongoing basis. 2) It is recommended that the mother with her family may need a time of privacy after the birth. Observations of the baby may be transferred to family if this is deemed clinically appropriate. The baby must be well, the mother alert, and the family be KCBib 2018
responsible for the time specified. During this time the mother and her family must understand that they are ensuring the baby’s nose and mouth are clear and are able to observe the baby’s colour and respirations. They must also be aware to note excess bleeding or a change in the mother’s condition during this time. They must know when it is necessary to call for help and how to do so if they are concerned.

**Responsibilities of District Health Boards or Employers**: 1) District health boards and employers must ensure sufficient staff are available to support lead maternity carers and, if necessary, provide ongoing active assessment of the mother and baby in the immediate postnatal period. There must be sufficient staff to enable ongoing assessment if the situation arises where the mother or baby require observation for longer than one to six hours after the birth. **Rationale**: Sudden unexpected early neonatal deaths (SUEND) is an increasingly recognized problem. Risk factors include unassisted skin-to-skin contact, inexperienced mothers and mothers being left unassisted in the immediate postnatal period. Midwives comprise the main category of health professionals in the primary role of managing the care of mothers and their babies in the immediate postnatal period. Who ever is providing this care must be capable of carrying out this responsibility confidently, and have immediate access to additional support when required. For the purposes of this document, the immediate postnatal period is defined as the first one to two hours after the birth, although this time may extend beyond this if required. It is important to note that mothers are less able to ensure a safe environment for breastfeeding or sleeping when they have experienced a long or complicated labor and birth, are under the influence of medications, drugs, or alcohol, or have some medical conditions. Family are also less able to ensure a safe environment for mother and baby when they are tired after supporting the mother through a long or complicated labor and birth. Babies are more at risk of respiratory difficulties from a compromised airway when their mother or family have been or are exposed to medications, drugs, alcohol, and/or smoking. All mothers and babies are at risk in the immediate postnatal and neonatal period regardless of whether additional risk factors are present. **Ongoing assessment of the baby** includes:

Newman, J. (2009). Importance of Skin-to-Skin Contact. Posted on Facebook by Janel Martin Feb. 23, 2010. This is a summary of the effects of KMC and it is interesting that he is using special words used by speakers without acknowledging who the original authors were, and he does not cite any references for any of the studies reviewed. I think this is an ad for people to visit his breastfeeding practice. Available at Natural Child Project website which is: www.naturalchild.org/guest/jack_newman2.html . Accessed 9/11/2011. Review, FT, PT.


New York Daily News, 2010 (August 26). Miracle at Birth: Mother Revives Dead Infant with Kangaroo Care. See CNN 2010 for the full story as I know it. FT, Case study, Life threatening event – dead baby revitalized, Birth KC.

Ngush, S.B., Wobil, P.N., Obeng, R., Yakubu, A., Kerber, K.J., Lawn, J.E. &Plange-Rhule, G. (2011). Perception and practice of Kangaroo Mother Care after discharge from hospital in Kumasi, Ghana: A longitudinal study. BMC Pregnancy Childbirth, 11(1), 99-107. Published on line. A longitudinal study of 202 mothers and their inpatient LBW neonates was conducted from November 2009 to May 2010. Mothers were interviewed at recruitment to ascertain their knowledge of KMC, and then oriented to its practice. After discharge, the mothers reported at weekly intervals for four follow up visits where data about their perceptions, attitudes and practices of KMC were recorded over the first month of life. A repeated measure logistic regression analysis was done to assess variability in the binary responses at the various review visits. At recruitment 23 (11.4%, 95%CI: 7.4 to 16.6%) mothers knew about KMC. At discharge 95.5% were willing to continue KMC at home with 93.1% willing to practice at night. 95.5% thought KMC was

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beneficial to them and 96.0% beneficial to their babies. 98.0% would recommend KMC to other mothers with 71.8% willing to practice KMC outdoors. At first follow up visit 99.5% (181) were still practicing in either intermittent or continuous KMC. This proportion did not change significantly over the four weeks (OR: 1.4, 95% CI: 0.6 to 3.3, p-value: 0.333). Over the four weeks, increasingly more mothers practiced KMC at night (OR: 1.7, 95% CI: 1.2 to 2.6, p=0.005), outside their homes (OR: 2.4, 95% CI: 1.7 to 3.3, p=0.001) and received spousal help (OR: 1.6, 95% CI: 1.1 to 2.4, p=0.007). Household chores and potentially negative community perceptions of KMC did not affect its practice. With odds of 0.8 (95% CI: 0.5 to 1.2, p=0.282) and 1.0 (95% CI: 0.6 to 1.7, p=0.934) respectively. During the follow-up period the neonates gained 23.7g (95% CI: 22.6g to 24.7g) per day. Maternal knowledge of KMC was low at outset. Once initiated mothers continued practicing KMC in hospital and at home with their infants gaining optimal weight. Continued KMC practice was not affected by perceived community attitudes. PT, Descriptive study, one group, home KC/ community/ambulatory KC, Nighttime/Sleeping in KC., home visits, maternal perception of KC, weight, 3rd World. 

Nieldvilen H, Feeley N, Axelin A. (2017-Feb). Hospital routines promote parent-infant closeness and cause separation in the birthing unit in the first 2 hours after birth: A pilot study. Birth 2017, 1-6. doi: 10.1111/birt.12279. Despite the evidence of multiple benefits of early skin-to-skin contact, it does not always happen and infants are separated from their parents because of different hospital practices. The aim of this study was to explore parent-infant closeness and separation, and which factors promote closeness or result in separation in the birthing unit in the first 2 hours after birth from the point of view of mothers. This qualitative descriptive pilot study was conducted in one university hospital in Finland in December 2014. Midwives and auxiliary nurses working in the birthing unit were eligible for the study. The data were collected with a new application downloaded on mobile phones. The participants were asked to record all the closeness and separation events they observed between the infants and parents using the application. The application was used during 20 work shifts by 14 midwives or auxiliary nurses. The participants described more closeness than separation events. Our findings indicated that the staff of the birthing unit aimed for mother-infant closeness, and father-infant closeness was a secondary goal. Closeness was mostly skin-to-skin contact and justified as a normal routine care practice. Infants were separated from their parents for routine measurements and because of infants’ compromised health. Routines and normal care practices both promoted parent-infant closeness and caused separation. Parent-infant closeness and separation were controlled by staff members of the birthing unit. PT, descriptive evaluative study, separation and closeness, Birth KC. Not on charts 2-20-2017


Nimbalkar, S.M., Chaudhary, N.S., Gadhavi, K.V., & Phatak, A. (2013, Jan). Kangaroo mother care in reducing pain in preterm neonates on heel prick. Indian Journal of Pediatrics, 80(1):6-10. doi: 10.1007/s12098-012-0760-0. RCT double-masked crossover trial of 50 PT (32-36+6day wks gestation) infants who got 15 mins of KC prior to heel stick with 26 guage needle. All weighed <2500g. and got heel stick within 10 days of birth, vital signs were stable, breathing without assistance or on CPAP, no neurological signs, no sedative/analgiesa within 24 hrs of test and not fed within last 30 min. HR, behavior, facial scores significantly lower in KMC group; SaO2 did not differ between groups, PIPP was 4.85 points lower in KC group (p=0.0001). Short duration KC has benefits. PT, R cross over, CPAP, HR, Crying/grimace, SaO2, Pain, PIPP

Nimbalkar AS, Patel DV, Nimbalkar SM, Patel VK, Patel DN, Phatak AG. (2016-Dec). Infant and Young Child Feeding Practices in Infants Receiving Skin to Skin Care at Birth: Follow-up of Randomized Cohort. J Clin Diagn Res. 10(12):SC09-SC12. doi: 10.7860/JCDR/2016/22930.9003. Skin to Skin Care (SSC) in neonatal period influences immediate breastfeeding outcomes in early childhood, especially the duration of exclusive breastfeeding. We investigated influence of 17 hours of SSC given from day one of life on Infant and Young Child Feeding (IYCF) practices through one year of life. Follow-up of a Superiority Randomized Control Trial (RCT) (CTRI/2015/06/003790) conducted in a teaching hospital located in central Gujarat, India. Mothers of 100 neonates (48 girls, 52 boys) from previous study cohort of RCT on SSC were followed. A survey on IYCF practices during the first year of life was administered after the end of infancy. In RCT, 50 neonates had received SSC beginning of 30 min-1 hour after birth for average 17 hours on day 1 of life. In the control group, 50 newborn were placed next to the mother and conventional care was provided. There was a significant difference between hypothermia incidences in these groups in the first two days of life. There was no difference in the groups as far as the duration of exclusive breastfeeding, number of times breastfed per day, or stoppage of night feeds. No baby in either group received bottled feeds but about 53 received some form of extra lacteal feeds in the first 6 months without significant group difference. Fewer SSC mothers reported difficulties with breastfeeding or extra lacteal supplementation. All mothers who faced problems contacted physicians for advice and 20 were advised top milk and 6 given other foods. At one year of life 66% mothers were giving less than the recommended five food servings. There was no difference in practices related to hand washing, food preparation

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and storage, feeding habits of child and illness episodes in the children. IYCF practices in this small group were not as per guidelines. Few positive trends were seen with fewer SSC mothers facing problems related to breastfeeding. The study was underpowered to detect differences in IYCF practices in relation to SSC. PT, RCT, BirthKC, early but not very early KC, duration of KC, exclusive BF, hypothermia, dev, 1 yr feeding. Not on charts 2-22-2017

Nimbalkar SM, Patel VK, Patel DV, Nimbalkar AS, Sethi A, Phtatak A. (2014). Effect of early skin-to-skin contact following normal delivery on incidence of hypothermia in neonates more than 1800 g: randomized control trial. J Perinatol. 2014 Feb 20; doi: 10.1038jp.2014.15. [Epub ahead of print]. To investigate the impact of early skin-to-skin contact (SSC) provided for first 24 h on incidence of hypothermia in stable newborns weighing 1800 g or more during first 48 h of life. Stable newborns (term and late preterm: Mean gestational age 37.7 (1.35) weeks, range 34-40 weeks) having birth weight 1800 g or more (Mean weight 2605.6 (419.8) grams) were randomized into early SSC (intervention group) and conventional care (control group). Initial care in the delivery room for few minutes immediately after birth in both the groups was given under radiant warmer. In the intervention group, newborns were provided SSC by their mother started between 30 min and 1 h after birth for first 24 h with minimal interruption and were provided conventional care other than SSC for next 24 h of life. In the control group, newborns were kept with their mother and received conventional care other than SSC for first 48 h. Temperature and heart rate of newborns were recorded at 30 min, 1, 2, 3, 4, 5, 6, 12, 24 and at 48 h of life in both the groups. Independent samples t-Test and relative risk were used to analyze the data. Result: Both groups had 50 neonates each with similar baseline characteristics. Heart rates were in normal range in both the groups. The intervention group provided an average (s.d) of 16.98 (0.28) h of SSC over the first 24 h period. The mean temperature was significantly high in the SSC group at all time intervals starting from 1 to 48 h (P<0.05 for all). In the SSC group only two newborns (4%) had mild hypothermia (cold stress), and, of these two newborns, one had two episodes of hypothermia. All these three episodes of hypothermia occurred within first 3 h of life. In the control group 16 newborns (32%) developed hypothermia (temperature<36.5°C) during first 48 h of life. Of them, 11 newborns had single episode, 4 newborns had two episodes and one newborn had three episodes of hypothermia. Of these 22 hypothermic episodes, 20 occurred in the first 6 h of life and 2 episodes occurred at 48 h of life. Moderate hypothermia was seen in two newborns, whereas rest had mild hypothermia. The relative risk of developing hypothermia in the control group as compared with the SSC group was 8.00 (95% CI 1.94-32.99). There was no seasonal variation in incidence of hypothermia in both the groups. Newborns in the SSC group achieved rapid thermal control as compared with the control group. Early SSC for 24 h after birth decreases incidence of hypothermia for initial 48 h of life. Early SSC needs to be aggressively promoted in term and late-preterm newborns to reduce incidence of hypothermia. Late Preterm/F, RCT, Temp, HR, 247 KMC, Birth KC at 30 mins, stability, hypothermia. Not on charts 4/4/2014

Nirmala, P, Rekha S., & Washington, M. (2006). Kangaroo mother care: effect and perception of mothers and health personnel. J Neonatal Nursing. 12, 177-184. KMC tested on LBW babies nursed in NICU (n=31) or in OB unit (n=19) in 3rdlevel NICU in INDIA. NICU infants were mean GA of 33.88 wks and OB units were 36.41 wks. Mean weight of NICU was 1790 (400) grams and OB was 2310 (130 grams). Non-random purposive sampling of one group of 50 stable LBW babies 29-41 weeks GA (1070-2460 gm birth weight). Data were collected in four sets per infant, observation just before starting KMC, 30 minutes after KMC started, just before ending KMC and 30 minutes after ending KMC on one day of study. Each infant had 4 sessions of KMC that lasted for a mean of 43.43 (SD 15.61) minutes per day for 4.55 (2.91) days in NICU starting at 9.48 (18) days of age and in OB unit they got 1.14 (0.23) sessions per day that lasted 44.36 (34.88) minutes/session for 3.32 (0.95) days starting at 2.32 (1.53) days of age. Effect on physiologic variables comparing routine care pretest and posttest to two measures taken during KC. Axillary temp in NICU were higher than in OB unit for all time intervals (just B4 KC, 15 minutes into KC, just before discontinuing KC, and 30 minutes after KC ended. Temps dropped in NICU group (pretest = 97.7 and KC =97.5) but stayed within normal limits and no differences between periods. Temp in OB unit rose from 97.1 pretest to 97.3 and was 97.2 at posttest. Mean HR increased by 4-5 beats/min from preKC to KC 15 minutes after start of KC and then rose again by 1-2 beats/min from 15 mins of KC to end of KC and then dropped by 5-6 beats/min in posttest in NICU group (OB unit HR rose by 3-4 in first 15 mins of KC then another 4-5 beats/min til end of KC and then dropped 4-5 beats/min in posttest and there were no difference between the periods for either group (pg. 181); oxygen saturation increased during KMC for both NICU and OB units and dropped in posttest but stayed within normal limits and no differences between periods (pg. 181). Similar findings as sa02 were found for RR (NICU pretest=44.43; KC = 46.02; OB=46.81 and postKC=43.78; OB unit was 43.27-45.38KCI – 46.8 at KC 2 -44.08 at postKC. Change in weight from time of KC start to discharge showed weight change was within normal limits, no adverse effects of KMC on weight. No changes occurred in any parameter across the four periods. Mothers and health personnel had positive perceptions (73% respondents for 6 weeks reported “makes baby feel secure” (21.2%), provided warmth (78.9%), aided weight gain (51%), improved bonding (100%), increased milk production (33.3%), made mother more confident (45.6%) and more satisfied (72.7%) . KMC is feasible with stable, 1000 grams or more infants. No descriptions of routine care in NICU and OB unit. PT, repeated measures descriptive study pretest-posttest, HR, RR, Sa02, Temp, weight, staff perceptions, maternal feelings, 3rd world, Late Preterm/Nearterm, residual effects.

more open, more interactive, and calmer using the Karolinska Scales of Personality due to oxytocin and prolactin levels which are released by skin-to-skin contact. See also Uvnas-Moberg K, Widstrom A-M, Nissen E, Bjorvell H. 1990. Personality traits in women 4 days postpartum and their correlation with plasma levels of oxytocin and prolactin. J Psychosomatic Obst & Gyn, 11: 261-273. Full terms, maternal personality, delivery or birth KC, cesarean, oxytocin. Maternal interactive, maternal calm. Get this we don’t have.

Nissen E, Lilja G, Widstrom AM, & Uvnas-Moberg K. (1995). Elevation of oxytocin levels early postpartum in women. Acta Obstetrica & Gynecologica Scandinavica 74, 530-533. It is highly probable that skin-to-skin contact by itself stimulates oxytocin release. Thus, KC may assist in delivery of placenta and involution when used in early postpartum. The aim of this study was to determine plasma levels of oxytocin in women immediately after delivery. Oxytocin was measured in 18 healthy women at 15 minute intervals after normal vaginal deliveries with healthy infants. The mothers had their infants put skin-to-skin on their chests immediately after birth. The infants stayed there up to two hours post partum. There were significant elevations of oxytocin 15, 30 and 45 minutes after delivery (p = 0.007, 0.02 and 0.02 respectively) when compared with average pre partum levels sampled approximately 7-15 minutes before partus. This elevation of oxytocin coincided with the expulsion of placenta. In most women this first elevation was followed by repeated elevations of oxytocin. Oxytocin levels returned to pre partum levels at 60 minutes post partum. Oxytocin is known to play a role in maternal bonding in animals. Earlier studies indicate that there is a sensitive period for bonding the first hour after giving birth even in women. Our study demonstrates a coincidence of this putative 'sensitive period' and high levels of oxytocin. There is peak in plasma oxytocin in mothers in the first hour after birth.

FT, RCT??: sounds descriptive, one group, Oxytocin, delivery KC. Get this we don’t have.


Randomized controlled trial of 50 live repeat cesarean section births >37 weeks which were given treatment during intraoperative and immediate postpartum periods (care in postanesthesia care unit). NIMS (n=25) or control (n=25). NIMS was Nursing Intervention to Minimize Separation and on page 433 the procedure is clearly spelled out. NIMS was baby never more than 8 feet away from mom, and mom could see infant at all times. When infant handed to nurse, infant taken to radiant warmer for resuscitation, drying, and stabilization for 10 min. Then mom given infant to look at en face intraoperatively for 5-15 seconds, then placed cheek to cheek for at least 3 minutes as nurse held infant, then infant held by nurse within 8 feet of mom or given to mom to hold for rest of surgery. Baby put in cot and rolled to recovery (PACU) beside mother so always within 8 feet and can see each other. Transfer took 5 minutes. In PACU baby put in radiant warmer for routine weighing, banding etc while mother’s admission to PACU assessment was made (10-15 minutes). Then KC began (beginning >30 minute post birth) either ventral to ventral or ventral to lateral contact, or modified cradle contact (lateral contact in maternal axilla). Control was infant not in the same room with mom at all. One NIMS mom reported no shaking. KC infants had better HR, RR, and temp stabilization and lower cortisol levels than controls. KC moms had less anxiety and more satisfaction with their care. GET REST OF RESULTS Full Term, RCT, Intermediate KC, Cesarean section, maternal staining, infant salivary cortisol, separation, Temp, HR, RR, maternal satisfaction, maternal anxiety, really a PACU study where KC began and one definition of KC was on mother’s side in MODIFIED CRADLE CONTACT.

Nommensen-Rivers, L. (2003). Early skin to skin contact: Does duration matter? Human Lactation, 12 (3), 331-332. This is a review of Mikael-Kostyra et al., 2002 study. Cites Baby Friendly’s guideline that step 4 is to “help mothers to initiate BF within 30 minutes of birth.” She states that in Mikael’s study the duration of KC was very brief, lasting only 1-4 minutes for 58% of the mothers. Only 6% had KC for 20 minutes or more, 76% had it for 1-19 mins, and 18% had no early contact at all. Irrespective of the duration of KC, 97% initiated KC within 10 minutes of birth. Duration does affect EXCLUSIVITY OF Breastfeeding: no contact group had an exclusive BF duration of 2.47 months, Group who had 1-19 mins of KC had 2.77 months exclusive breastfeeding, and >20 minutes had 3.82 months; any BF had similar pattern: no KC = 6.97 months, 1-19 minutes of KC = 8.33 months, and >20 minutes of KC = 9.07 months; >30 minutes KC = 10.07 months of BF. KC >20 minutes and education beyond high school were significant predictors of EXCLUSIVE BF duration. FT, REVIEW OF OTHER STUDY, VEKC. Exclusive BF, See Mikael-Kostyra et al. 2002

Norris-Grant, D.M. & Jagger, C. (2014). A multidisciplinary approach to improving skin-to-skin contact immediately after birth. Journal of Obstetric, Gynecologic and Neonatal Nursing, 43(Suppl 1), S29 DOI. 10.1111/j.1552-6909.12402. A descriptive evaluative study of a quality improvement project to educate labor and delivery nurses to increase skin-to-skin contact at birth so Baby Friendly designation can be obtained by the hospital which has >6000 births per year. The goal was that 90% of newborns would remain undisturbed for at least one hour after birth in skin-to-skin contact. This was a difficult task and many challenges were faced. Success in making this change required co-operation and flexibility of all disciplines. Results of evaluation were that skin-to-skin rate increased dramatically and there was a significant increase in maternal satisfaction with birth and an increase in staff satisfaction. FT, Evaluative study, quality improvement, implementation, maternal satisfaction, staff satisfaction, skin to skin rate. Not on charts 6/18/2014

FT, RCT, maternal anxiety, cesarean

Nye, C. (2008). Transitioning premature infants from gavage to breast. Neonatal Network, 27(1), 7-13. A review of methods to transition infant to breastfeeding. Measures that help transition to the breast are KC, nonnutritive sucking, avoidance of bottles, and consistent and supportive staff. On page 9 there is a section on KC, states start KC as soon as infant is off ventilator. Says effects of KC on weight gain remain unclear according to Dodd 2005 who cites improved weight gain by Charpak (but not by Rojas). She states that “placing the infant in KC shows faith in parents’ current and future ability to care for their infant, and the intimacy and respect in the NICU environment may explain the greater sense of competence, improved breast milk production, and breastfeeding success seen in mothers who kangaroo their infants” (pg.9). On page 11 there is Table 1 - a NO Bottle protocol for BF premature infants <34 weeks Gestational Age, and KC is in 4 steps: “For the use of KC in this protocol. When the infant is physiologically stable, he will participate in KC with his mother.” “The mother will pump her breasts prior to time spent with the infant in KC.” “During KC, the infant will be placed in a breastfeeding position and allowed access to the breasts for nonnutritive sucking.” And “The infant will be provided with a pacifier during all gavage feedings when the mother is not present to provide KC.” PT, review, ventilator KC, breastfeeding. Not on charts yet.

Nyqvist, KH. (2004). How can Kangaroo Mother Care and high technology care be compatible? J Human Lactation, 20(1), 72-74. This is an implementation article that answers the questions, How can someone work with NICU staff to overcome barriers, whether perceived or real, to implementing KC? Answer is 1) educate everyone KC’s + effects, and 2) reach an interdisciplinary agreement about practical, evidence-based guidelines that ensure safe and consistent care. This article includes the policy at Children’s Hospital in Uppsala, Sweden. PT, Implementation, Policy/Guidelines.

Nyqvist, KH. (2005). Breastfeeding support in neonatal care: An example of the integration of international evidence and experience. Newborn and Infant Nursing Reviews, 5 (1), 34-48. Components of a successful Swedish Breastfeeding program in which 97% of lowbirthweight infants were fed breastmilk upon discharge are conveyed. On page 36 is a section entitled “Kangaroo Mother Care” under the heading “Models of care that support breastfeeding.” In this section she reiterates previous work showing that KMC has high BF success rate. On page 40 she has a section entitled “skin-to-skin contact” under “Feeding policy: A Swedish Example.” in which she states that infants who are ventilated are provided KMC as soon as they show adequate physiological stability in connection with transfer out of and back into incubator.” For micropreemies, they avoid KMC during first week of life for infants <1000 grams to prevent hypothermia. Other than signs of severe bradycardia, apnea, or desats, there are no restrictions for KMC in frequency and duration. Clinical report, Preterm, BF, Ventilated, Guidelines, sxs of apnea, micropreemies, sxs of bradycardia, sxs of desats, transfer of ventilated infants.

Nyqvist, KH. (2008). Early attainment of breastfeeding competence in very preterm infants. Acta Paediatrica 97(6), 776-781. KMC helps with early attainment of BF competence. A prospective descriptive study of 15 infants and their mothers (26-31 wks Gestation) using the Preterm Infant Breastfeeding Behavior Scale for daily assessment of oral motor behavior in hospital. BF was initiated at 29 weeks postmenstrual age and routine, areolar grasp, and short sucking bursts were present at 29 weeks and occasional long sucking bursts and repeated swallowing appeared at 31 weeks. Full BF was attained at median 35 weeks (Range was 32-38 weeks). On page 776, the article relates “Although there are numerous reports of early discharge of ully breastfed preterm infants who were treated with Kangaroo Mother Care mentioning benefits of this method of care on lactation and breastfeeding, these studies did not provide any data on the development of infants’ oral motor competence” and she cites Ruiz-Pelaez, Charpak, & Cuervo, 2004 and Cattaneo, Davanzo, Worku, Surjono, Echeverria, Bedri et al., (1998). On page 780 it states “There is sufficient evidence that the KMC model, applied in its fullness with continuous skin to skin care (or as much SSC as possible) is the optimal method for infant thermoregulation (cites Ruiz-Pelaez et al., 2004). As shown in several studies, extended SSC also facilitates the mother’s milk production and earlier attainment of breastfeeding (citing Whitelaw et al., 1988 and Hurst et al, 1997). On page 780 she states that the mother’s presence should be taken for granted and adequately supported in her capacity as optimal/natural caregiver and the optimal ‘place’ for her infant’s care.” pg. 780 PT, Breastfeeding, micropreemies, KMC is PLACE of care. NOT ON CHARTS 5/24/2011

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Nysvist, K.H., (2016-Apr). Given the benefits of Kangaroo mother care, why has its routine uptake been so slow? Acta Paediatrica, 105(4): 341–342. DOI: 10.1111/apa.12386. The cover of this issue shows KMC with a preterm infant and it is a lovely picture (below).

Nyqvist KH, Anderson GC, Bergman N, Cattaneo A, Charpak N, Davanzo R, Ewald U, Ludington-Hoe S, Mendoza S, Pallas-Allomos C, Pelaez JG, Sizun J, Widstrom A-M. (2010a). State of the art and recommendations. Kangaroo mother care: application in a high-tech environment. *Acta Paediatrica* 99(6), 812-819. Or DOI:10.1111/j.1651-2227.2010.01794.x. pgs. 1-8. These are additions to the WHO's practical guidelines so that the book has universal appeal and can be used to guide KMC implementation world wide, just like WHO started the Baby Friendly movement. But WHO's practical guidelines have not included KMC in advantaged settings, such as NICUs in developed countries. So these add those components. Has an historical overview of neonatal care in affluent settings, then why KMC in these settings matters (to avoid maternal-infant separation, provides a thermally controlled environment, improves maternal well-being and less chance of depression, has many physiological benefits to moderately preterm and full term infants, and then states that after the first week of life, infants born at 22-25 wks gestation tolerate KMC well but could not find any published reports with infants less than moderately preterm – pg 2). The next section is Aims of KMC (support infant’s optimal adaptation to extraterine life, provide optimal neurosensory environment for brain development, facilitate maternal-infant bonding and attachment, empower mother as primary caregiver, facilitate initiation of lactation and breastfeeding, prepare a successful discharge. pg. 2). They proceed to “Information for parents” (give it before delivery, should know benefits, how and when it is practiced, who can do it (i.e. father during cesarean section), and provide follow-up conversations (pg. 3). When to start KMC has 3 sections (>32 wks [cared for continuously in KMC, initial assessment performed on mother’s chest in delivery (preterm birth KC) when possible or in connection with stabilization, introduce KMC immediately after initial stabilization in infants with mild problems provided infant is stable enough to tolerate care in the KC position and that this is permitted by the infant’s needs”(pg. 3). After initial stabilization, infants with CPAP treatment can be transported to the mother’s bed in the delivery unit. A nurse lifts the infant and places her/him in the kangaroo position on the mother’s chest”(pg. 3). 28-31 wks [KMC can sometimes be initiated immediately after the initial assessment, provided that the infant is considered stable enough and that care in the kangaroo position is permitted by the infant’s condition and requirements for technological support (pg.3)],and 26-27 wks [KMC can be applied during the first week of life based on current assessment by attending neonatologists”(pg. 3). Infants born <25 wks GA:

*KMC can be applied during the first four weeks of life based on ongoing assessment by attending neonatologists*”(pg. 3). When to start KMC after cesarean section/maternal surgery or illness “infant may be cared for in the kangaroo position by the father/substrate from birth. When the mother is not under general anesthesia during the cesarean section and it is feasible considering the mother’s care, the infant can be placed skin-to-skin on the mother’s chest for a short period of time before being placed on the father’s chest. When the infant does not need ventilator assistance and is born at a GA of at least 28 weeks, the infant can be transferred to the NICU in the kangaroo position on the father’s chest (pg. 4). When the mother requires treatment in another hospital ward, such as adult intensive care, the infant can be transported to her in the kangaroo position by the father . . . who stays with the infant for observation and care as long as possible, and offer the mother skin-to-skin contact to the extent that this is possible, considering the infant’s and the mother’s condition”(pg.4). KMC clothing (tube top, binder, blouse/shirt are available and types of clothing) should be demonstrated for the mother and the mother should be given assistance in putting them on if she wishes. The infant should wear a warm cap and a diaper.” pg. 4. The next section is *Transport of the infant in kangaroo position* from the delivery/operating room to the NICU (whenever possible on the mother’s chest, or on chest of father/other family member; KMC clothing is brought to the delivery room (binder, tube top etc, and a hat for the infant in a special bag that is included in the standard equipment on the transport incubator), and depending upon clinical stability the possibility of KMC transport is assessed by the attending neonatologist regardless of gestational age (pg. 4).” The next sections are “transfer between incubator and mother with standing sitting, and ventilator assistance KCBib 2018
transfers addressed. Infant instability and KMC (only severe instability during handling (apnea, brady and desaturation during repositioning and touch during routine caregiving) should be considered an obstacle to KMC. Guide parent in recognizing signs of infant instability.” Pg.5). When infant is in Kangaroo position, be sure top is tight, plan infant care with parents, calm and quiet environment, offer mirror, and when short interruptions cannot be avoided, place infant on a water bed on the parent bed instead of in an incubator or crib/cot. Feeding and Nutrition are next, facilitation of KMC in infants with intensive care, physiologic monitoring, caregiving activities in the kangaroo position, staff responsibility, documentation, KMC in special situations, KMC and infant instability. Policies for NICU KC should include specific criteria for initiation, the proper KC position, transfer to/from KMC, transport in the KC position, KC nutrition, parents’ role, modification of the NICU environment, performance of care in KMC, and KMC in case of infant stability. **International GUIDELINES, Birth KC even for preterm, cesarean, transport, stability, transfer, clothing, extremely preterm, micropreemie, moderately preterm, full term, paternal KC, surrogate KC.** Not on charts as of 3/20/2010.


Nyqvist, K.H., Häggkvist, A-P, Hansen MN, Kyllberg E, Frandsen AL, Maastrup R, Ezeonodo A, Hannula L, Koskinen K, & Haiek, L.N. (2012). Expansion of the Ten Steps to Successful Breastfeeding in neonatal intensive care: Expert group recommendations for three guiding principles. *Journal of Human Lactation, 28*(3), 289-296. doi: 10.1177/0890334412441862. The 2009 update of the Baby Friendly Hospital Initiative (WHO/United Nations Children’s Fund, 2009 citation) called for expansion of baby friendly into NICUs, not just maternity units. A team of experts put together a proposal that was discussed at the meeting in Uppsala in Sept. 2011 and the experts suggested the addition of three “Guiding Principles” to the Ten Steps to support this vulnerable population of mothers and infants. 1) The staff attitude to the mother must focus on the individual mother and her situation, 2) the facility must provide family-centered care, supported by the environment, and 3) the health care system must ensure continuity of care, that is, continuity of pre-peri- and postnatal care and post discharge care. Their goal is create a final document entitled Baby Friendly Hospital Initiative for Neonatal Units that will include standards and criteria for each of the three principles and to develop KCBib 2018
tools for self-appraisal and monitoring compliance with the guidelines required to be designated Baby Friendly. PT, Guidelines, breastfeeding, Baby Friendly NICU

Nyqvist, K (actually listed as Hedberg Nyqvist, K.) & Heinemann, A.-B. (2011). Kangaroo Mother Care: Optimal support of preterm infant’s transition to extra-uterine life in the high tech. NICU environment. Current Women’s Health Reviews, 7(3), 278-287. doi:10.2174/157340411796355171. This article describes practical guidelines for 24/7 KMC in a tertiary level NICU in Sweden (Uppsala). The guidelines are based on the norm of parent-infant non-separation and infant care in the kangaroo position and were based on observations and research of infant’s and parents’ responses during gradual implementation of components in the guidelines. Ideally KMC is initiated and continues uninterrupted in infants born at ≥ 32 weeks, also after cesarean and this is also possible at 28-31 wks gestational age. For infants <27 weeks Gestation, intermittent KMC can be introduced during the first week of life based on individual assessment. The guidelines describe initiation, infants and parents positions, transport, transfer instability, support of the parental role, and early discharge. KMC, as continuous as possible, should be the norm for preterm infants. PT, review, guidelines, c/s, transport, transfer, early discharge micro-preemies, NICU environment, family support, non-separation. GET THIS TO FINISH REVIEW

Nyqvist KH, Nyqvist KH, Häggkvist A-P, Hansen MN, Kylberg E, Frandsen AL, Maasrud R, Ezeonodo A, Hannula L, Haiek LN. (2013). Expansion of the Baby-Friendly Hospital Initiative Ten Steps to Successful Breastfeeding into Neonatal Intensive Care: Expert Group Recommendations. J Human Lactation. Aug 29(3):300-309. doi: 10.1177/0890334413489776. In the World Health Organization/United Nations Children’s Fund document Baby-Friendly Hospital Initiative: Revised, Updated and Expanded for Integrated Care, neonatal care is mentioned as one area that would benefit from expansion of the original Ten Steps to Successful Breastfeeding. The different situations faced by preterm and sick infants and their mothers, compared to healthy infants and their mothers, necessitate a specific breastfeeding policy for neonatal intensive care and require that health care professionals have knowledge and skills in lactation and breastfeeding support, including provision of antenatal information, that are specific to neonatal care. Facilitation of early, continuous, and prolonged skin-to-skin contact (kangaroo mother care), early initiation of breastfeeding, and mothers' access to breastfeeding support during the infants' whole hospital stay are important. Mother's own milk or donor milk (when available) is the optimal nutrition. Efforts should be made to minimize parent-infant separation and facilitate parents’ unrestricted presence with their infants. The initiation and continuation of breastfeeding should be guided only by infant competence and stability, using a semi-demand feeding regimen during the transition to exclusive breastfeeding. Pacifiers are appropriate during tube-feeding, for pain relief, and for calming infants. Nipple shields can be used for facilitating establishment of breastfeeding, but only after qualified support and attempts at the breast. Alternatives to bottles should be used until breastfeeding is well established. The discharge program should include adequate preparation of parents, information about access to lactation and breastfeeding support, both professional and peer support, and a plan for continued follow-up. PT, Baby Friendly NICU, separation, duration of KMC, breastfeeding, Baby Friendly NICU

Nyqvist, K.H., Sjoden, P.O., & Ewald, U. (1994). Mother’s advice about facilitating breastfeeding in neonatal intensive care units. Journal of Human Lactation, 10(4), 237-243. 178 mothers felt that deprivation of early contact with infants was a cause of BF failure. “Ample opportunities for early skin-to-skin contact should be offered both mothers delivered vaginally and by cesarean section in order to compensate the delayed physical contact with the infant.” p.240. Descriptive, BF, cesarean section, separation, FT, PT

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O’Brien K, Bracht M, Macdonell K, McBride T, Robson K, O’Leary L, Christie K, Galarza M, Dicky T, Levin A, Lee SK, (2013). A pilot cohort analytic study of Family Integrated Care in a Canadian neonatal intensive care unit. BMC Pregnancy Childbirth. 2013;13 Suppl 1:S2. doi: 10.1186/1471-2393-13-S1-S2. We have developed a Family Integrated Care (FIC) model for use in a neonatal intensive care unit (NICU) where parents provide most of the care for their infant, while nurses teach and counsel parents. The objective of this pilot prospective cohort analytic study was to explore the feasibility, safety, and potential outcomes of implementing this model in a Canadian NICU. Infants born ≤ 35 weeks gestation, receiving continuous positive airway pressure or less respiratory support, with a primary caregiver willing and able to spend ≥ 8 hours a day with their infant were eligible. Families attended daily education sessions and were mentored at the bedside by nurses. The primary outcome was weight gain, as measured by change in z-score for weight 21 days after enrollment. For each enrolled infant, we identified two matched controls from the previous year’s clinical database. Differences in weight gain between the two groups were analyzed using a linear mixed effects multivariable regression model. We also measured parental stress levels using the Parental Stress Survey; NICU, and interviewed parents and nurses regarding their experiences with FIC. This study included 42 mothers and their infants. Of the enrolled infants, matched control data were available for 31 who completed the study. The rate of change in weight gain was significantly higher in FIC infants compared with control infants (p < 0.05). There was also a significant increase in the incidence of breastfeeding at discharge (82.1% vs. 45.5%, p < 0.05). The mean Parental Stress Survey: NICU score for FIC mothers was 3.06 ± 0.12 at enrolment, which decreased significantly to 2.30 ± 0.13 at discharge (p < 0.05). Feedback from the parents and nurses indicated that FIC was feasible and appropriately implemented. This study suggests that the FIC model is feasible and safe in a Canadian healthcare setting and results in improved weight gain among preterm infants. In addition, this innovation has the potential to improve other short and long-term infant and family outcomes. A multi-centre randomized controlled trial is needed to further evaluate the efficacy of FIC in the Canadian context. PT, pilot descriptive with retrospective chart review for matched controls, parents as providers, family integrated care, weight, parental stress, staff issues, parental feelings/perceptions, BF.

O’Brien K, Bracht M, Robson K, Ye XY, Mirea L, Cruz M, Ng E, Monterrosa L, Soraisham A, Alvaro R Narvey M, Da Silva O, Lui K, Tarnow-Mordi W, Lee SK (2015). Evaluation of the Family Integrated Care model of neonatal intensive care: a cluster randomized controlled trial in Canada and Australia. BMC Pediatr. 2015 Dec 15;15(1):210. doi: 10.1186/s12887-015-0527-0. Admission to the neonatal intensive care unit (NICU) may disrupt parent-infant interaction with adverse consequences for infants and their families. Several family-centered care programs promote parent-infant interaction in the NICU; however, all of these retain the premise that health-care professionals should provide most of the infant’s care. Parents play a mainly supportive role in the NICU and continue to feel anxious and unprepared to care for their infant after discharge. In the Family Integrated Care (FICare) model, parents provide all except the most advanced medical care for their infants with support from the medical team. Study done in CANADA. Our hypothesis is that infants whose families complete the FICare program will have greater weight gain and better clinical and parental outcomes compared with infants provided with standard NICU care. FICare is being evaluated in a cluster randomized controlled trial among infants born at ≤ 33 weeks gestation admitted to 19 Canadian, 6 Australian, and 1 New Zealand tertiary-level NICU. Trial enrollment began in April, 2013, with a target sample size of 675 infants in each arm, to be completed by August, 2015. Participating sites were stratified by country, and by NICU size within Canada, for randomization to either the FICare intervention or control arm. In intervention sites, parents are taught how to provide most of their infant’s care and supported by nursing staff, veteran parents, a program coordinator, and education sessions. In control sites standard NICU care is provided. The primary outcome is infants’ weight gain at 21 days after enrollment, which will be compared between the FICare and control groups using Student’s t-test adjusted for site-level clustering, and multi-level hierarchical models accounting for both clustering and potential confounders. Similar analyses will examine secondary outcomes including breastfeeding, clinical outcomes, safety, parental stress and anxiety, and resource use. The trial was designed, is being conducted, and will be reported according to the CONSORT 2010 guidelines for cluster randomized controlled trials. By evaluating the impact of integrating parents into the care of their infant in the NICU, this trial may transform the delivery of neonatal care. PT, RCT, parents as providers, family integrated, weight.

Obu HA & Chinawa JM. (2014). Neonatal analgesia: A neglected issue in the tropics. Niger Med J. 2014 May;55(3):183-7. doi: 10.4103/0300-1652.132034. This is a review paper that relates the pathophysiology of pain and simply states that Kangaroo Care as been used to relieve pain by the following quote: Gray et al. 2002 found that 10-15 min of kangaroo care between mothers and their term newborns reduced crying, grimacing and heart rate during heel-stick procedures. Similarly Johnston et al., 2008 showed that kangaroo care significantly reduced the acute pain responses of pre-term neonates at 32-36 weeks' gestation. This article does also explain sensorial saturation and claims it to be useful and easy to use and recommends it in the conclusion. This article does have the ChHP pain scale in it and I have downloaded it to the pain chart. It does not endorse KC’s use at all in the

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conclusion, so, as of 2014, in Nigeria, Kangaroo care for pain relief is known but not really considered as something that should be tried, in SML’s opinion. The article is free on the Pubmed service.  FT, PT, pain

Odent, M. (1989). Natural caregiving in home births. Mothering Winter. 72-73. Get complete citation Clinical impressions over 70 homebirths in which KC occurred continuously in an intimate environment with unlimited BF access over the first hours and days after home birth. 33% of homebirth babies and continuous immediately KC with BF in KC do not lose birthweight while birth weight loss is regular phenomenon in Netherlands where they have restricted KC in homebirths. He even says that sustained KC outside the familiar home environment is inadequate to prevent birthweight loss. He proposes that KC in a familiar birthing context produces less infant stress (physiologic stress of newborn is immediately alleviated by arms of ectastic mother, minimizing energetic output and stopping wt loss. Another mechanism to prevent birth weight loss is that babies take in more colostrums than thought possible and colostrums has lots of IgA antibodies (proteins with huge osmotic charge(can hold lots of water), so when baby takes colostrum, he increases his capacity for water retention, and colostrums has enzymes important to metabolism, large bioavailability of zinc (and these are growth related substances), and normal colostrums ejection reflexes (let down) don’t work if we separate the infant right after birth (pg. 73). Birth weight loss is not a physiologic necessity. Clinical report, weight, KCBF, FT antibodies in milk, stress, separation

Odent, M. (2006). From Homo Super-predator to Homo Ecologics. Available from http://www.wombecology.com/homo.html#top. This is a theory and review article on the human’s ecology that Odent first published in 1979. The natural ecology is for the infant to be skin-to-skin with the mother. Primal health is a branch of epidemiology that brings together studies exploring correlations between what happens during the primoral period (fetal life, perinatal period and the year following birth) and what occurs later in life in terms of health and personality traits. Such studies are compiled in the Primal Health Research Data base at www.primalthriftgroups.com FT, ecology, separation

Ogi S, Arisawa K, Takahashi T, Akiyama T, Goto Y, Fukuda M, Odent, M. (2006) 20.04.06. Available from http://www.wombecology.com/homo.html#top. The developmental effects of an early intervention program for very low birthweight infants: No To Hatation. 33 (1), 31-36. KC group got NBAS as intervention at 40 weeks PCA and then 44 wks (or may be from 38-44 wks for treatment) of KC starting at 38 weeks PCA. NBAS used at 44 wks. Bayley at 12 months. KC group scored higher on orientation, motor performance, state range & regulation tasks, supplementary on NBAS, lower scores in intensity and higher scores in Mood on Carey at 6 months; at 12 month KC infants had higher Bayley Mental and Motor Scales. KC promotes neonatal behavioral organization and developmental outcome over 1st year of life. Development, NBAS, PT, Temperament. Longitudinal non-randomized as KC grp compared to historical control, state regulation.


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Comparison of kangaroo care and standard care: behavioral organization, development, and temperament in healthy, low-birth-weight infants through 1 year. *J. Perinatology*, 22 (5), 374-379. 26 KCers (healthy LBW 1500-2100 gms birthweight, singleton, no prob, no single moms, no wellfare moms) got 20min-2 hours of KC per day from 33 wk-40 wks PCA and were compared to 27 controls who got no KC (were studied in years before KC started in hospital, therefore not a randomized controlled trial). Birthweights were between 1501-2099 gms. Maternal or Paternal KC started at 1-3 days age and first KC were 20-30 min long and then extended to 1-2 hours. KCers showed significantly higher scores in orientation [animate visual, auditory and visual-auditory orientation, alertness, cuddliness, self-quieting, attention, irritability (decreased)], state regulation and on supplementary items on NBAS, lower scores in Intensity and higher scores on MOOD at 6 months on Infant Temperament Questionnaire than 27 standard care infants. At 12 months, KC scored higher on Bayley Mental (significant) and Motor (but not significant). KC effectively promoted neonatal behavioral organization and enhanced developmental outcome over 1 st year of life. HOME scale also conducted at home visits at 6 and 12 months (no differences between groups). So, at 40 weeks, KCers were more alert, more responsive, less irritable, less fussy, had better state control, could concentrate their attention and orientation responses better, had higher capability for state regulation, had less stressful reactions in autonomic, state and motor systems. Non-randomized trial with historical control, NBAS@ 40wks, Bayley and Carey Temperament @ 6.12 mos. Development, autonomic nervous system, HOME, orientation, attention, PT, calming, relaxation, attention, state regulation

Ohio-Department of Health. (2008). *Hold me, Mom.* Columbus, Oh: Ohio Dept. of Health Printing. Warehouse # 3977.23. Has breastfeeding cards that WIC is giving out and the words are “Hold me, Mom. Babies who are held skin-to-skin on their mother’s chest right after birth are happier and less likely to cry, are more likely to latch on and breastfeed well, have better heart rates, have better temperatures than under a warmer, have better blood sugars, burn less calories than under a warmer. So, be sure to tell your doctor and the hospital nurses that you want to hold your baby for at least the first hour after the birth, skin-to-skin (baby naked, not wrapped in a blanket). That’s the best way to introduce your baby to the world.” Available from EMORROW@ohiohealth.com, FT, pamphlet

Okan, F., Ozdil, A., Bulbul, A., Yapici, Z., & Nuhoglu, A. (2010). Analgesic effects of skin-to-skin contact and breastfeeding in procedural pain in healthy term neonates. *Annals of Tropical Pediatrics, 30*(2), 119-128. DOI: 10.1179/146532810X12703902516121. A randomized controlled trial of 3 groups: breastfed in KC (n=55); held in KC but no breastfeeding (n=35), and lying on table, during and after heel stick (n=36). Mean birthweight was 3355 gms (SD=270), GA of 39.5 wks(SD=0.5), mean postnatal age was 33.1 (SD=5) hours when heel stick occurred. NO difference in group characteristics and time spent doing heel stick. HR, SaO2, and crying length were significantly reduced in breastfeeding in KC and KC without BF groups compared to no intervention; no differences between KC+B breastfeeding and KC without BF groups, but KC alone group had less grimacing than controls. Full TERM, RCT, HR, SaO2, crying, grimacing, Pain, BF+KC, KCBF CHECK on CHARTS

Olanders, M. (2011). Kangaroo Mother Care. An interview with Dr. Nils Bergman. Available from [http://home.mweb.co.za/to/tonrgren/eng-berg.html](http://home.mweb.co.za/to/tonrgren/eng-berg.html). Mother’s body is the only natural, healthy environment for a new baby and he talks about protest despair separation (separation), the right environment also means free breastfeeding, the developmental of the brain is benefitted and normalized by skin contact, and that mothers need support. Not on charts 9/15/2011. FT: brain dev, BF, separation.


Olausson, H., Lamarre, Y., Backlund, H., Morin, C., Wallin, B.G., Starck, G., Elholm, S., Strigo, I., Worsley, K., Vallbo, A.B., & Bushnell, M.C. (2002). Unmyelinated tactile afferents signal touch and project to insular cortex. *Nature Neuroscience, 5*(9), 900-904. Human hairy skin has dual tactile innervation: fast conducting myelinated A-afferent fibers, and slow conducting unmyelinated (C) afferents that respond to light, caressing touch. Activation of C tactile (CT) afferents produced faint sensation of pleasant touch. Activation of CTactile fibers in skin activate the insular cortex (limbic system), not somatosensory areas of S1 and S2. CTactile Afferents is a system for limbic touch that underlines the emotional, hormonal, and affiliative responses to caress-like, skin-to-skin contact between individuals. Touch physiology: KC as pleasant experience: Brain studies

Olausson, H., Wassberg, J., Morrison, I., McGlone, F., & Vallbo, A. (2010). The neurophysiology of unmyelinated tactile afferents. *Neuroscience and Biobehavioral Reviews, 34*, 185-191. NOT a KC study, but the physiology of the c- afferents that KC’s skin-to-skin contact stimulate. Need 3 centimeters of exposure to be activated, they are exquisitely sensitive. (See also Bystrova, 2009; Loken, LS et al., 2009; and Bjornsdotter M et al., 2009; Lindgren et al. 2011). Brain studies, c-afferents.
Olsson E, Ahlström G, Eriksson M. (2016-Apr). Skin-to-skin contact reduces near-infrared spectroscopy pain responses in premature infants during blood sampling. Acta Paediatr. 2016 Apr;105(4):376-80. doi: 10.1111/apa.13180. This study investigated if skin-to-skin contact could provide pain relief, measured with near-infrared spectroscopy (NIRS), during venepuncture in premature infants. Ten infants born at 26-35 weeks of gestation were examined during a blood-sampling procedure with venepuncture under two different conditions: in skin-to-skin contact with their mother or lying in their incubator or crib. A double-channel NIRS device was used, and oxygen saturation and heart rate were measured using pulse oximetry. The infant's face and the pulse oximetry values were videotaped throughout the procedures, so that we could carry out a pain assessment using the Premature Infant Pain Profile-Revised (PIPP-R). We found a significantly smaller increase in oxygenated haemoglobin on the contralateral side during venepuncture when the infants were in skin-to-skin contact with their mothers, compared to when they were lying in their incubator or crib. When venepuncture was compared with a sham procedure, oxygenated haemoglobin increased significantly more with the infant in the incubator or crib than held skin-to-skin, but no significant differences could be seen in the PIPP-R results between the two groups. This study showed that skin-to-skin contact between premature infants and their mothers during venepuncture had a pain-relieving effect. PT,RCT???, experimental pain, NIRS, PIPP-R. (Not on Charts)

Olsson E, Andersen, R.D., Axelin, A., Jonsdottir, R.B., Mastrup, R., Eriksson, M. (2012). Skin-to-skin care in neonatal intensive care units in the Nordic countries: a Survey of attitudes and practices. Acta Paediatrica. 101(11), 1140-1146. doi:10.1111/j.1651-2227.2012.22802.x. Heavy workload, insufficient staff education, insufficient staff experience, lack of organizational support, absence of clear protocols and professional performance expectations, safety issues in the infant, and resistance from health care professionals are barriers to KMC. Even though 77% of units had space for parents to stay and sleep in private rooms, the physical environment of the units limited the use of SSC. Medical risks of infant were considered the main barrier for further implementation of SSC, while general development and early interaction were most frequently mentioned benefits. PT, descriptive survey qualitative?, staff issues, barriers, implementation, attitudes.

Olsson E, Eriksson M, Anderzén-Carlsson A. (2017-Mar). Skin-to-Skin Contact Facilitates More Equal Parenthood - A Qualitative Study From Fathers' Perspective. J Pediatr Nurs. 2017 Mar 29. pii: S0882-5963(17)30130-6. doi: 10.1016/j.pedn.2017.03.004. [Epub ahead of print]. A descriptive design was used where 20 fathers of premature infants were interviewed using a semi-structured interview-guide. The guide contained the following five topics: the fathers' feelings about and experiences of using skin-to-skin contact (SSC), the physical environment at the Neonatal Intensive Care unit, staff attitudes, and whether SSC had any impact on the relationship with their partner and other children in the family. The interviews were analyzed using directed qualitative content analysis and the results compared with those of a qualitative systematic review by Anderzén-Carlsson and colleagues. The result shows that the fathers' overall experience of SSC was positive and as in the aforementioned review, they described experiences that were both gratifying and challenging. They felt more included and just as important as the mother because SSC and the demands placed on them by the premature birth helped them to achieve more equal parenthood. The fathers' overall experiences of SSC were positive as they felt included in their infants' care and just as important as the mothers. To a great degree the theoretical model tested was supported, although some weaknesses and differences were identified. It is important to include fathers in neonatal care and recognize that they feel equally important as mothers in caring for premature infants. PT, qualitative study, paternal KC, paternal feelings. Not on charts 4-28-2017

Oliveira V, Angel J, Tavener K, Hickey A. (2014). PB.06 Supporting early breast milk expression in the Neonatal Unit - are we doing enough? Arch Dis Child Fetal Neonatal Ed. 2014 Jun;99 Suppl 1:A34-5. doi: 10.1136/archdischild-2014-306576.99. When breastfeeding gets delayed, prompt breast milk expression facilitates establishment and maintenance of lactation. On neonatal units, the recommended UNICEF target of all mothers achieving early milk expression within 6 h of birth is often not achieved. For critically ill infants, breast milk is particularly beneficial due to its nutritional and immunological benefits. Clinical practices that positively affect timely initiation are poorly described. A cross-sectional survey was performed on a tertiary neonatal unit to assess lactation and breastfeeding support provided to mothers of term and preterm infants. Anonymous questionnaires were distributed, between days 3-7 postpartum. Of 79 participants, 53% were advised about breast-milk antenatally. Overall, 90% of mothers were helped to hand-express but only 11% within 6 h of birth. Breastfeeding nurses and midwives provided most advice but neonatal nurses were involved in only 10% of episodes. The likelihood of early expression was lower for mothers of preterm infants and in mothers who had not done kangaroo care, but not significantly lower. Maternal perception of support was positive in 90% of cases. The survey demonstrated a large discrepancy between recommended levels of support and actual practice. Questions about the feasibility of UNICEF recommendations in neonatal units remain. Further analysis of the factors that impeded early expression is needed. It may well be that in mothers whose infants require neonatal care, there are entirely valid reasons for some delay in initiation of expression. PT, FT, descriptive, early BF initiation, Birth KC, NICU BF

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Mode of delivery may influence neonatal responsiveness to maternal separation. Early Hum Dev. 2013 May;89(5):339-42. doi: 10.1016/j.earlhumdev.2012.11.005. Epub 2012 Dec 21. Maternal-infant separation (MIS) is a highly stressful situation for the neonate. A study was conducted to observe and describe the reactions of term neonates to brief maternal separation and restoration of skin contact within the first 48 h of life, and to assess whether the mode of delivery influences neonatal responsiveness. A brief maternal-infant separation situation was videotaped to observe the reactions of the newborns within the first 12-48 h of life.

Characteristics observed in the newborns were: the Moro reflex, spreading out arms and feet, looking at the mother, presence/lack of crying, and some dichotomous variables (present or lacking); in mothers: adult speech, "motherese" speech, speaking to another adult present in the room, singing, clicking, tapping on the diaper, rocking, kissing the baby, touching toes, touching hands, changing position, making loving comments, calling the newborn by his/her name and touching his/her back. Crying on restoration of contact was measured. Ten neonates born by planned C-section and 21 neonates born by oxytocin-induced vaginal delivery were included. No behavioral differences were observed according to the mode of delivery. Neonates born by vaginal delivery took longer (64.8±8.6 s) to calm down than those born by C-section (0.9±1.4 s) (p=0.004). A correlation was observed between cortisol concentrations at birth and the time required to calm the baby down (r=0.41; p=0.02) (the higher the cortisol level, the longer it took infants to calm down). So separation induced higher cortisol levels and KC reduces the agitation and crying and cortisol associated with separation.

Neonates born by a planned C-section cried much less on maternal separation, which might indicate an altered attachment behavior and altered response to stress. Further studies are needed to determine the potential long-term implications of variations in mother-infant attachment during the first days of life.

PT, separation, agitated movements, crying, cortisol, agitation, cesarean, maternal behaviours, attachment. Not on charts 8/6/2015

Oras P, Blomqvist YT, Nyqvist KH, Gradin M, Rubertsson C, Hellström-Westas L, Funkquist EL. (2015-Aug). Breastfeeding Patterns in Preterm Infants Born at 28-33 Gestational Weeks. J Hum Lact. 2015 Aug;31(3):377-85. doi: 10.1177/0898361515586406. Studies of breastfeeding patterns during preterm infants' first year of life are scarce but are important for providing breastfeeding mothers of preterm infants with optimal support. This study aimed to describe breastfeeding patterns in preterm infants up to 1 year of corrected age. As part of a larger study on kangaroo mother care in Sweden, a 24-hour breastfeeding diary was sent home after discharge from hospital, and at 2, 6, and 12 months of the infant's corrected age. Eighty-three mothers responded to the follow-up questionnaires, and the number of respondents to the breastfeeding diary was 48 at discharge, 43 at 2 months, 22 at 6 months, and 8 at 12 months. Infants were born at a median (range) gestational age of 32 (28-33) weeks. Breastfeeding patterns were analyzed according to durations, frequencies per 24 hours, and intervals between sessions. In exclusively breastfed infants, the median (range) breastfeeding session frequency was 14 (8-26) times per 24 hours including 4 (1-9) times per night after discharge (n = 24) and 10 (6-25) times per 24 hours including 2 (0-5) times per night at 2 months (n = 23). In partially breastfed infants, the median (range) frequency was 5 (1-14) times per 24 hours including 2 (0-4) times per night at 6 months (n = 20) and 5.5 (1-12) times per 24 hours including 2 (0-3) times per night at 12 months (n = 8). Mothers reported large variations in breastfeeding patterns, with higher median breastfeeding session frequencies than previously described in term infants in affluent settings.

PT, descriptive evaluative study, BF, Not on charts 3-25-2018

Oras PT, Nyqvist KH, Gradin M, Rubertsson C, Hellström-Westas L, Funkquist EL. (2016-July). Skin-to-skin contact is associated with earlier breastfeeding attainment in preterm infants. Acta Paediatr.. 105(7):783-789, doi: 10.1111/apa.13431. This study investigated the effects of skin-to-skin contact on breastfeeding attainment, duration and infant growth in preterm infants, as this has not been sufficiently explored. A prospective longitudinal study on Kangaroo mother care was carried out, comprising 104 infants with a gestational age of 28+0 to 33+6 and followed up to one year of corrected age. Parents and staff recorded the duration of skin-to-skin contact during the stay in the NICU (N=53). Medical data were collected through patient records and follow-up questionnaires were filled in by parents. The 53 infants who attained full breastfeeding in the NICU did so at a median (range) of 35+0 (32+1 to 37+5) weeks of postmenstrual age and skin-to-skin contact was associated with earlier attainment of exclusive breastfeeding. PT, regression analysis, BF, growth, KC duration monitored, Exclusive BF, not on charts 4/28/16 New to bibliometric study

Oras P, Blomqvist YT, Nyqvist KH, Gradin M, Rubertsson C, Hellström-Westas L, Funkquist EL. (2016-April). Skin-to-skin contact is associated with earlier breastfeeding attainment in preterm infants. Acta Paediatr. 2016 Apr 21. doi: 10.1111/apa.13431. [Epub ahead of print] This study investigated the effects of skin-to-skin contact on breastfeeding attainment, duration and infant growth in preterm infants, as this has not been sufficiently explored. A prospective longitudinal study on Kangaroo mother care was carried out, comprising 104 infants with a gestational age of 28+0 to 33+6 and followed up to one year of corrected age. Parents and staff recorded the duration of skin-to-skin contact during the stay in the neonatal intensive care unit (NICU). Medical data were collected through patient records and follow-up questionnaires were filled in by parents. The 53 infants who attained full breastfeeding in the NICU did so at a median (range) of 35+0 (32+1 to 37+5) weeks of postmenstrual age and skin-to-skin contact was associated with earlier attainment of exclusive breastfeeding. PT, regression analysis, BF, growth, KC duration monitored, Exclusive BF, not on charts 4/28/16 New to bibliometric study
skin contact was the only factor that influenced earlier attainment in the regression analysis ($R^2$ 0.215 p<0.001). The daily duration of skin-to-skin contact during the stay in the NICU did not affect the duration of breastfeeding or infant growth after discharge. Furthermore, infant growth was not affected by the feeding strategy of exclusive, partial breastfeeding or no breastfeeding. A longer daily duration of skin-to-skin contact in the NICU was associated with earlier attainment of exclusive breastfeeding.

PT, regression analysis, BF, BF duration, BF exclusivity, growth, duration of KC in NICU.

Not on charts 7-8-16. New to bibliography

Ortenstrand A, Westrup B, Broström EB, Sarman I, Akerström S, Brune T, Lindberg L, Waldenström U. (2010-Feb). The Stockholm Neonatal Family Centered Care Study: effects on length of stay and infant morbidity. Pediatrics.125(2):e278-85. doi: 10.1542/peds.2009-1511. Parental involvement in the care of preterm infants in NICUs is becoming increasingly common, but little is known about its effect on infants’ length of hospital stay and infant morbidity. Our goal was to evaluate the effect of a new model of family care (FC) in a level 2 NICU, where parents could stay 24 hours/day from admission to discharge. A randomized, controlled trial was conducted in 2 NICUs (both level 2), including a standard care (SC) ward and an FC ward, where parents could stay from infant admission to discharge. In total, 366 newborns born between 37 weeks postmenstrual age and 33 weeks postmenstrual age were randomly assigned to FC or SC on admission. The primary outcome was total length of hospital stay, and the secondary outcome was short-term infant morbidity.

The analyses were adjusted for maternal ethnic background, gestational age, and hospital site. Total length of hospital stay was reduced by 5.3 days: from a mean of 32.8 days (95% confidence interval [CI]: 29.6-35.9) in SC to 27.4 days (95% CI: 23.2-31.7) in FC ($P = .05$). This difference was mainly related to the period of intensive care. No statistical differences were observed in infant morbidity, except for a reduced risk of moderate-to-severe bronchopulmonary dysplasia: 1.8% in the FC group compared with 6.0% in the SC group (adjusted odds ratio: 0.18 [95% CI: 0.04-0.8]). Providing facilities for parents to stay in the neonatal unit from admission to discharge may reduce the total length of stay for infants born prematurely. The reduced risk of moderate-to-severe bronchopulmonary dysplasia needs additional investigation.

PT, RCT, parents as providers, family integrated care, length of stay, morbidity, BPD risk.


The perinatal asphyxia represented 19.8% of admissions. The sex ratio was 1.3. Parental involvement in the care of preterm infants in NICUs is becoming increasingly common, but little is known about its effect on infants’ length of hospital stay and infant morbidity. Our goal was to evaluate the effect of a new model of family care (FC) in a level 2 NICU, where parents could stay 24 hours/day from admission to discharge. A randomized, controlled trial was conducted in 2 NICUs (both level 2), including a standard care (SC) ward and an FC ward, where parents could stay from infant admission to discharge. In total, 366 newborns born between 37 weeks postmenstrual age and 33 weeks postmenstrual age were randomly assigned to FC or SC on admission. The primary outcome was total length of hospital stay, and the secondary outcome was short-term infant morbidity.

The analyses were adjusted for maternal ethnic background, gestational age, and hospital site. Total length of hospital stay was reduced by 5.3 days: from a mean of 32.8 days (95% confidence interval [CI]: 29.6-35.9) in SC to 27.4 days (95% CI: 23.2-31.7) in FC ($P = .05$). This difference was mainly related to the period of intensive care. No statistical differences were observed in infant morbidity, except for a reduced risk of moderate-to-severe bronchopulmonary dysplasia: 1.8% in the FC group compared with 6.0% in the SC group (adjusted odds ratio: 0.18 [95% CI: 0.04-0.8]). Providing facilities for parents to stay in the neonatal unit from admission to discharge may reduce the total length of stay for infants born prematurely. The reduced risk of moderate-to-severe bronchopulmonary dysplasia needs additional investigation.

PT, RCT, parents as providers, family integrated care, length of stay, morbidity, BPD risk.

Louguéa, C., Ouédraogoa, R., & Yéa, D. (2015). Profil à risque et pronostic néonatal de l’asphyxie périnatale en milieu hospitalier à Ouagadougou. (Risk profile and neonatal prognosis of perinatal asphyxia in a pediatric hospital in Ouagadougou). Journal de pédiatrie et de puériculture (2015) 28, 64—70. Doi: 10.1016/j.jpp.2015.02.003. Introduction. — Newborn health remains a concern in low-income countries. This work aims to analyze the profile and neonatal prognosis of perinatal asphyxia in an urban health structure south of the Sahara. Patients and methods. — This is a prospective cross-sectional study from June 1 to December 30, 2013, on term newborns hospitalized for perinatal asphyxia in pediatric medical department of pediatric teaching hospital Charles de Gaulle. Results. — The perinatal asphyxia represented 19.8% of admissions. The sex-ratio was 1.6. Amniotic fluid was abnormal in 61 cases (71.8%). General signs were dominated by respiratory distress and hyperthermia with 65.9% and 45.9%, respectively. All newborns presented neurological manifestations dominated by aphaic reflexes abnormalities (92.9%), followed by hypotonia (88.2%) and seizures (35.3%). According to Sarnat classification, stage 2 was dominant with 45.9%. Renal failure, which was often transient, was noted in 38 infants (44.7%), of which 26 (30.6%) had neurological distress stage 2. Metabolic disorders were dominated by hypoglycemia (37.6%) and hyperpyrexia (28.2%). Transfontanellar and abdominal ultrasound were abnormal with 17 (20%) and 6 cases (7.1%). The mortality rate was 6 (7.1%) with four newborns kidney failure. Conclusion. — Perinatal asphyxia remains a serious pathology. The high mortality recalls the need to strengthen prevention by preparation of an efficient and satisfactory resuscitation.

PT, FT, Birth and Early postpartum, life threatening/SUPC events. Not on charts 10/12/2016

Page, J. (1995). Kangaroo Care: Enhancing infant and parent well-being in the NICU. Perinatal Newsletter, 12(1), 5-8. Provides limited review of KC (does not identify all studies, such as Ludington-Hoe’s 1992 paternal KC study) and then talks about Page’s proposed study of cardiorespiratory effects with Canadian infants. Does include Protocol for KC. PROTOCOL, policy, guidelines, Preterm.

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Palencia, D., Mendoza, C.J., Torres, J., & Echandia, C.A. (2009). Kangaroo mother program: physical growth and morbidity in a cohort of children, followed from 30 weeks of postconceptional age until first year. Colombia Medica, 40(3), 292-299. This is 40 wks-12 months follow up of KMC program LBW infant at Universitario del Valle. 390 infants <2000 g were admitted to KMC program and 5.4% were readmitted to hospital for anemia and apnea before 40 wks. After 40 wks, 13% were readmitted for bronchopneumonia, acute diarrhea. They had better size than weight. Cumulative incidence for age at 13 months for morbidity was 22%. LBW infants need iron and folic acid. PT, descriptive, follow-up, morbidity, growth (length), readmissions, weight, 3rd world. (See also Torres 2006 article for similar study of infants at same institution.) NOT ON CHARTS.

Pallaro A, Polzin K. (2016 Mar-April). [The midwife-child health nurse collaboration, a link between the maternity unit and neonatology]. Sons Pediatr Pueric. 37(289):42-44. doi: 10.1016/j.spp.2016.01.011. Collaborative work forms part of the well-treatment and improvement of quality of care approach. It is also of benefit to the medical and paramedical teams. Within the parent-child unit of Libourne hospital, the midwife and child health nurse collaborate throughout the pregnancy, and especially during the post-partum period. The teams work together notably around the care of “high-risk” births and in particular when the newborn is hospitalised in a Kangaroo care unit. PT, clinical report, teamwork, not on charts 4-4-2016. New to Biblio study.

Pallas-Alonso, R.C., Lopez-Maestro, M. (2011). Human milk and Kangaroo Mother Care. Current Women’s Health Reviews, 7(3), 262-269. doi:10.2174/157340411796355207. Human milk has many benefits to the preterm infant and KMC has been shown to be helpful in initiating and maintaining breast milk feedings, so personal breastfeeding education and support by skilled nurse should be given. KMC is low cost and has consistent benefits, so use it. PT, Review, Breastfeeding, BF.

Pallas-Alonso, C.R., Losacco, V., Maraschini, A., Greisen, G., Pierrat, V., Warren, I., Haumont, D., Westrup, B., Smit, B.J., Sizun, J., Cutini, M. for the European Science Foundation Network. (2012). Parental involvement and kangaroo care in European national intensive care units: A policy survey in eight countries. Pediatric Critical Care Medicine, 13(5):568-577. A prospective descriptive survey by questionnaire mailed to 362 European NICUs in which 78% responded to determine the policies and practices regarding parental involvement and holding of babies in KC as well as differences in tasks mothers and fathers are allowed to do. Only NICUS with ≥ 50 VLBW annual admissions were included. Facilities for parents such as reclining chairs near the babies’ cots, beds, and a dedicated room were common, but less o in Italy and Spain. All units in Sweden, Denmark, UK, and Belgium reported encourage parental participation in the CARE of the babies, whereas policies were more restrictive in Italy (80% of units), France (73%), and Spain (41%). Holding babies in KC was widespread, but in UK, France, Italy, Spain many units applied restrictions regarding KC frequency (sometimes on parent request only, rather than routinely), method (conventional rather than skin to skin), and clinical conditions (especially mechanical ventilation and presenceof umbilical lines that would preclude its practice). In these countries, fathers were routinely offered KC less frequently than mothers and less often it was skin to skin. Conclusion: this study showed that, although the majority of European units in all countries reported a policy of encouraging both parents to take part in the care of their babies, the intensity and ways of involvement as well as the role played by mothers and fathers varied within and between countries. PT, parents as primary providers/caregivers, frequency of KC, ventilated KC, umbilical lines, routine use, parental KC, practice survey, separation


Parikh TB, Udani RH, Nanavati RN & Rao S. (2004). Kangaroo Mother Care Initiative in India – Where are We? Presentation at “Workshops on KMC at Neoncon 2004. XXIV NNF Annual Convention at Chandigarh, 28October, 2004” Available from file:///E:/KangarooMotherCareInitiative(KMCI).htm. A pretest-posttest study of knowledge among 95 participants (65 pediatric and ob nurses, 30 pediatrics and obstetricians who were not doing KC at their institutions) All were given one day skill-based awareness program. Given questionnaire the morning of the program and posttest questionnaire at end of the day. Minority participants had heard of KMC knowledge improved significantly after the one day class on components of KMC: benefits of KMC, KMC adaptation, thermoregulation in newborns, growth in preterms, preterm milk, monitoring of baby, discharge criteria, and KMC follow-up, but only 80% of participants knew one area at end of day, so authors concluded that present knowledge about preterm, LBW babies and KMC is

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unsatisfactory in Mumbai (Bombay) and that more education is needed. Descriptive, Preterm, 3rd world, doctors and nurses knowledge.

(Not yet on charts)

Parker HK, Choi BS, Lee SJ, Son IA, Seol JJ, Lee HJ (2014 March) Practical application of kangaroo mother care in preterm infants: clinical characteristics and safety of kangaroo mother care. Journal of Perinatal Medicine, 42(2), 239-245, doi: 10.1515/jpm-2013-0066. To determine the clinical characteristics and safety of kangaroo mother care (KMC) according to the gestational age (GA) or postmenstrual age (PMA). Methods: We conducted a prospective clinical study in 31 infants between 25 and 32 weeks' GA. The subjects were categorized into two groups (25-28 weeks' and 29-32 weeks' GA groups) to compare the clinical characteristics associated with KMC. Heart rate, respiratory rate, oxygen saturation, blood pressure and body temperature (BT) were longitudinally assessed for 60 min with respect to the PMA group (29-32 weeks' and 33-36 weeks' PMA groups). Results: The authors analyzed 70 sessions with 31 infants (25-32 weeks' GA, birth weight 760-1470 g, 29-36 weeks' PMA). All infants had statistically significant higher temperatures during KMC than before KMC within clinically acceptable limits (P<0.001). We found a significantly lower variation of BP in the 25-28 weeks' GA group compared with the 29-32 weeks' GA group at 33-36 weeks' PMA, suggesting accelerated skin maturation in more premature infants (P<0.001). Our intermittent KMC was a safe and feasible method for preterm infants. Notably, at the same PMA, preterm infants in the lower-at birth GA group showed an advanced maturation of thermoregulation compared with those in the higher GA group. PT, descriptive evaluative study, safety, micropreemie, HR, RR, SaO2, BP, Temp, sicker, smaller infants did better in temp than older infants. Pretest-KC periods only, one group divided by GA.

Parker L, Anderson GC. (2002). Kangaroo (skin-to-skin) care for adoptive parents and their critically ill preterm infant, MCN, Am J Mat Child Nurs, 27 (4), 230-232. Infant that couple was going to adopt was delivered prematurely at 27 wks Gestation and went to NICU where she needed ventilator assistance by mechanical ventilation. KC began on DAY 3 of five days of ventilation for a 917 g preterm infant. Adoptive parents both felt immediate and intense connection and began to know infant during KC. PT, Case study, VENT KC. ADOPTIVE KC. End of life KC? Also reported in Anderson, Donbrowski, & Swinth, 2001.

Parmar VR, Kumar A, Kaur R, Parmar S, Kaur D, Basu S, Jain S & Narula S. (2009). Experience with Kangaroo Mother Care in a neonatal intensive care unit (NICU) in Chandigarh, India. Indian J Pediatrics, 76(1), 25-28. Clinical evaluation of implementation of KC by determining feasibility and acceptability of KMC by mothers, family members, and health care workers and to determine effect of KMC on HR, RR, SaO2, temperature, hypothermia, apnea. Not really KMC which is 24/7 KC, these infants had to complete 4 hours of KC day. 32 weeks' GA groups) than before KMC within first week (< 3 days for 21%; 4-7 days for 26%; 8-15 days in 31% ; >15 days in 22%) once out of critical illness but still on IVs and oxygen support). Babies wore head cap, booties and diaper for KC. Mean duration of KC was 7 days (3-48 was range). 60 mothers gave KMC, 40 fathers, 32 mothers-in-law, and 21 close relatives. Vital signs recorded before and every half hour of KC. HR dropped by 3-5 bpm, respirations stabilized for all, no apnea occurred, SaO2 increased by 2-3%, temp rose from 36.75±0.19 to 37.23±0.25, no episodes of hypothermia. Vital signs remained within clinically acceptable limits (pg. 26). KMC was accepted by 96% of moms, 84% of fathers, 84% of other family members. 94% of mothers felt empowered to handle infants at home and agreed to continue KC at home. 18% of moms thought KC interfered with their routine activities (toilet, bathing) and 6% had concerns about privacy. 85% of the 30 health care workers (14 doctors, 16 nurses) reported a decline in use of heating devices and 79% of staff said it did not increase their work load. PT, Clinical evaluation, HR, RR, apnea, SaO2, hypothermia, temp, paternal KC, surrogate KC, maternal confidence, maternal stress, stabilization, acceptance, work load, micropreemie-not really but close Not on charts 5/3/09.

Parsons, C.E., Young, K.S., Murray, L., Stein, A., & Kringelbach, M.L. (2010). The functional neuroanatomy of the evolving parent-infant relationship. Progress in Neurobiology, 91, 220-241. This is major review of how the brain changes and develops in presence of nurturing interaction and attachment with parents. "It is clear tha t the parent and the environment created by the parent has an impact on neurodevelopment" pg. 224. "Construction of the infant brain is heavily dependent on learning and the interaction of environmental factors with gene-expressions " pg. 224 and cites Shenoff 2009 for this statement. The newborn brain has he same number of neurons as mature adult brain, but the connections between the synapses are not fully established (Nowakowski 2006). If synapses not formed neurons die off and decrease in number through the 3st decade of life.(pg. 224) Synaptic plasticity is the most important mechanism that allows environmental factors to influence brain development throughout the lifespan. Plasticity refers to changes that increase or decrease the strength, efficacy or number of synapses (pg 224). When brain is at rest it is in default mode and is called default mode of brain function. Default mode is immature in prematures and at term (Gao et al. 2009).KC content begins on page 228 and
after

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birth. Maternal, infant, event characteristics and outcome data were collected. Twenty thoroughly investigated. Infants were >35 weeks of gestation, had an Apgar score >8 at 10 min and collapsed within 24 hours a infants during a 30

hypothermia treatment.

- Visitation information and encouragement to begin with.

- Inappropriate settings. With education and helpful management, neonatal nurses can advocate for KC for all babies. Parents ma

Barriers to KC for neonates may include a lack of training improving clinical outcomes, temperature control, breastfeeding rates and child

scored higher than group without visitor. Median score of package + visitor group was 15.44 (N=17 hospitals and all demonstr

long and was held 6 weeks after launch and helped professionals go through a workbook on KMC (did not give lectures, only answered

questions and facilitated discussion based on workbook). 2nd visit was 8 weeks later and only facilitation. 3rd visit was to the site and took 2

to score implementation, answer questions, and give advise on issues raised by site. Evaluation done 8 months after initiation and were scored on the progress monitoring tool (See Bergh et al., 2005). Evidence of practice (score >10) was success. Group with visits scored higher than group without visitor. Median score of package + visitor group was 15.44 (N=17 hospitals and all demonstrated practice), only 12/17 in control group demonstrated practice and score was 11.33. Successful implementation can be achieved better with supportive visits. RCT, PT Implementation.

- Tele-facilitation in the Ukugona Outreach: a viable alternative to conventional face-to-face facilitation? Under review. PT Haven’t seen it in pub as of 4/15/09

- Patterson RC, Arsalo I, Bergh A-M, Malan AF, Patrick M, & Phillips N. (2005). Implementation of kangaroo mother care: A randomized trial of two outreach strategies. Acta Paediatrica 94, 924-927. RCT to test if educational package alone or educational package + visits by facilitator increased KMC implementation. 34 hospitals in KwaZulu-Natal Province. Visits were done 3 times – first was 3 hour long and was held 6 weeks after launch and helped professionals go through a workbook on KMC (did not give lectures, only answered questions and facilitated discussion based on workbook). 2nd visit was 8 weeks later and only facilitation. 3rd visit was to the site and took 2 hours to score implementation, answer questions, and give advise on issues raised by site. Evaluation done 8 months after initiation and were scored on the progress monitoring tool (See Bergh et al., 2005). Evidence of practice (score >10) was success. Group with visits scored higher than group without visitor. Median score of package + visitor group was 15.44 (N=17 hospitals and all demonstrated practice), only 12/17 in control group demonstrated practice and score was 11.33. Successful implementation can be achieved better with supportive visits. RCT, PT Implementation.

- Patterson RC, Bergh AM, Malan AF, & Prinsloo R. (2006). Does Kangaroo Mother Care Save Lives? Journal Tropical Pediatrics 52(6): 438-441. Descriptive study of 40 hospitals (neonatal mortality rate was 88.14/1000 live births before KMC) and results of 11 hospitals that reported mortality rates before (87.72/1000 live births) and after (60.76/1000) implementation of KMC. This is large and significant reduction in neonatal mortality rate for infants between 1000-1999 grams birth weight. KMC reduces mortality. Descriptive, PT, mortality. Not on charts yet.


- Pearson J, & Andersen K. (2001). Evaluation of a program to promote positive parenting in the neonatal intensive care unit. Neonatal Network: J. of Neonatal Nursing, 20(1), 43-48. Not a study of KC per se, but a qualitative study of a parent support groups use to promote parenting. On page 46 under the theme “Awareness of Cues and Optimizing Interaction” three comments from parents are reported: “KC is interesting”, “KC, I love this idea!!!!”, and “They talked about KC and parents then want to do it.” Preterm, Qualitative Evaluation of Program that included KC but was not focused on KC, implementation, maternal feelings

- Penn S (2015-June 10). Overcoming the barriers to using kangaroo care in neonatal settings. Nurs Child Young People. 27(5):22-7. doi: 10.7748/nccypp.27.5.22.e596. Skin-to-skin contact, or kangaroo care (KC), has benefits for babies and parents, improving clinical outcomes, temperature control, breastfeeding rates and child-parent bonding; it reduces morbidity and mortality. Barriers to KC for neonates may include a lack of training for nurses, lack of time, maternal or child physical or mental ill health, and inappropriate settings. With education and helpful management, neonatal nurses can advocate for KC for all babies. Parents may need information and encouragement to begin with. Therefore, nurses can improve the experiences of their patients and, in the long run, free time to perform clinical procedures. PT, Rev, barriers, knowledge is needed, parents need knowledge, little being done, visitation, implementation. Not on charts?

- Pejovic,N.J., & Herlenius, E. (2013). Unexpected collapse of healthy newborn infants: risk factors, supervision and hypothermia treatment. Acta Paediatrica, 102(7), 680-688. doi: 10.1111/apa.12244. Prospective descriptive study. To determine the occurrence and risk factors of sudden unexpected postnatal collapse (SUPC) in presumably healthy newborn infants. All live-born infants during a 30-month period in Sweden, in five major delivery wards in Stockholm, were screened and possible cases of SUPC thoroughly investigated. Infants were >35 weeks of gestation, had an Apgar score >8 at 10 min and collapsed within 24 hours after birth. Maternal, infant, event characteristics and outcome data were collected.Twenty-six cases of SUPC were found among 68 364

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live-born infants, an incidence of 38/100,000 live births. Sixteen of these cases of SUPC required resuscitation with ventilation > 1min and 14 of these remained unexplained (21/100,000). Fifteen of the 26 children were found in a prone position, during skin-to-skin contact, 18 were primipara and 13 occurred during unsupervised breastfeeding at < 2 hours of age. Three cases occurred during smart cellular phone use by the mother. Five developed hypoxic ischemic encephalopathy (HIE) grade 2 and 4 underwent hypothermia treatment. Twenty-four infants had a favorable outcome. SUPC in apparent healthy babies is associated with initial, unsupervised breastfeeding, prone position, primiparity and distractions. Guidelines outlining the appropriate monitoring of newborns and safe early skin-to-skin contact should be implemented. FT, prospective descriptive, Life-threatening events, BF, Birth KC, Cell Phone use

Penalva, O. & Schwartzman, J.S. (2006). Descriptive study of the clinical and nutritional profile and follow-up of premature babies in a Kangaroo Mother Care Program. Jornal de Pediatria (Rio Jornal). 82(1). Jan-Feb., 33-39. Descriptive study of 70 preterm infants given KC at least 3 days of KC when 32.5 weeks GA and if their birthweight was 1560 grams or more in Brazil. Preterms were discharged from KC weighing 3000 gms and followed up at one year. Birthweight, GA, APGAR scores were determinants of entry into the KC program. After discharge, 8.6% were readmitted for apnea. Exclusive BF started at 35.5 weeks postmenstrual age (mean postpartum age was 18.6 days). At discharge, infants were a mean 29 days old, and 85.7% were exclusively BF. 60.3% were predominantly breastfeeding up to 6 months post-birth age, and motor disorders occurred in 42.8% and then 14.3% by one year, with cerebral palsy in 6.9% of population, and retarded motor development in 6.9%. KMC proved itself a good breastfeeding instrument. PT, descriptive, apnea, BF, exclusive breastfeeding, cerebral palsy, motor development.

Penfold, S, Hill Z, Mirsho M, Manzi F, Tanner M, Muhinda H, Schellenberg D, & Schellenburg JRMA (2010). A large cross-sectional community-based study of newborn care practices in Southern Tanzania. Plos ONE, 5(12), e15593. DOI:10.1371/journal.pone.0015593. 213,220 women’s (13-49 yrs age and 92% participated) had 22,224 deliveries were followed. 41% delivered in health center and 57% at home with skilled attendants at 40%. 10% dipped baby in cold water immediately after delivery and KC was RARELY practiced. 83% of women breastfeed within 24 hrs of delivery, only 18% within first hour of delivery. Over 1/3 of infants were wrapped within 5 minutes of birth Delivery practices need to be changed. FT, PT, 3rd world, Community-based KC, Birth KC.

Penfold S, Willey BA, Schellenberg J. (2013-Nov). Newborn care behaviours and neonatal survival: evidence from sub-Saharan Africa. Tropical Medicine and International Health.18(11):1294-316. doi: 10.1111/tmi.12193 To review evidence from sub-Saharan Africa for the association between the practice or promotion of essential newborn care behaviours and neonatal survival. We searched MEDLINE for English language, peer-reviewed literature published since 2005. The study population was neonates residing in a sub-Saharan Africa country who were not HIV positive. Outcomes were all-cause neonatal or early neonatal mortality or one of the three main causes of neonatal mortality: complications of preterm birth, infections and intrapartum-related neonatal events. Interventions included were the practice or promotion of recommended newborn care behaviours including warmth, hygiene, breastfeeding, resuscitation and management of illness. We included study designs with a concurrent comparison group. Study quality was assessed using the Cochrane EPOC or Newcastle-Ottawa tools and summarised using GRADE. Eleven papers met the search criteria and most were at low risk of bias. We found evidence that delivering on a clean surface, newborn resuscitation, early initiation and exclusive breastfeeding, Kangaroo Mother Care (KMC) for low-birthweight babies, and distribution of clean delivery kits were associated with reduced risks of neonatal mortality or the main causes of neonatal mortality. There was evidence that training community birth attendants in resuscitation and administering antibiotics, and establishing women’s groups can improve neonatal survival. There is a remarkable lack of robust evidence from sub-Saharan Africa on the association between practice or promotion of newborn care behaviours and newborn survival. PT, essential newborn care, 3rd world, mortality, infections, preterm birth NOT ON CHARTS as of 10/16/2013

Penn, S. (2015). Overcoming the barriers to using kangaroo care in neonatal settings. Nurs Child Young People. 2015 Jun;27(5):22-7. doi: 10.7748/ncyp.2015.27.5.22.e596 Skin-to-skin contact, or kangaroo care (KC), has benefits for babies and parents, improving clinical outcomes, temperature control, breastfeeding rates and child-parent bonding; it reduces morbidity and mortality. Barriers to KC for neonates may include a lack of training for nurses, lack of time, maternal or child physical or mental ill health, and inappropriate settings. With education and helpful management, neonatal nurses can advocate for KC for all babies. Parents may need information and encouragement to begin with. Therefore, nurses can improve the experiences of their patients and, in the long run, free time to perform clinical procedures. PT, Rev, staff issues, barriers, implementation, need for education. New for Bibliostudy. Not on charts 2-22-2016

how skin-to-skin contact improves clinical outcomes, breastfeeding rates and mortality, and strengthens the parent-child bond. Nursing children and young people, 27(5), 22-27. GET THIS

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Perlman JM, Wyllie J, Kattwinkel J, Atkins DL, Gansburg R, Hazinski MF, Morley C, Richmond S, Simon WM, SinghlaN, Szyld E, Tamura M & Velaphi S. (2010). *Resuscitation and Emergency Cardiovascular Care Science With Treatment Part 11: Neonatal Resuscitation: 2010 International Consensus on Cardiopulmonary Recommendations*. Circulation, 122:S516-S538 doi: 10.1161/CIRCULATIONAHA.110.971127. This is a report of the new NRP recommendations for 2010. On the first page (pg. S516) it states “Newborn infants who are born at term and are breathing or crying and have good tone must be dried and kept warm. These actions can be provided with the baby lying on the mother’s chest and should not require separation of mother and baby.” The article goes on to discuss the issues with resuscitation, ie. the steps are dry the infant, warm the infant, position him, assess airway, stimulate to breathe in 30 seconds. Step 2 is to ventilate the infant with mask and bag or CPAP starting at room air. Step 3 is chest compressions (two thumbs embracing the chest and compressing one third of the way down of the anterior-posterior diameter) and the ration is 3 ventilations to one compression. Always use HR as primary indicator of need to proceed but also use RR. They recommend pulse ox rather than color because color is not reliable. Start ventilation with room air, not 100% O2, do not cut cord for one minute to bring up iron stores but remember anytime you delay cord clamping, you are increasing the risk of bilirubin therapy. Temperature of the delivery room should be 26 degrees CENTIGRADE for newborns <28 weeks (who should NOT be dried and should be placed in bag up to their neck and resuscitated through the plastic bag. A 26 degree centigrade Delivery room “maintains temperature of infant most effectively” (about 2/3 way through article under the section entitled Supportive Therapy – Temperature Control. SML did not have PDF files to quote page number for this quote). Article then goes into the latest literature on skills lab and simulations and why these enhance learning: PT, FT, Guidelines, NRP, separation, skills lab, education. Not on Charts. BUT PDF file of this article for page numbers See also Kattwinkel article which is part I of this review.


Peters, C, Becher,J.C, Lyon, A.J., Midgley,P.C. (2009). Who is blaming the baby? *Archives of Diseases in Childhood Fetal Neonatal Edition*, 9(5), F377-F378. DOI: 10.1136/adc.2008.143628 Case study of sudden collapse in healthy newborns. Sudden unexplained collapse within the first 12 hours of life is a RARE but recognized event. The association between positioning the infant prone and apparent life-threatening events (ALTE) in the early newborn period is well described in Hays S 2006 (on this bib). Over 2 years, 5 infants were found collapsed in the maternity unit in Edinburgh in the care of primiparous mothers. All died, four during the first month and the other at 18 months. Two were found prone on mother’s chest, two were in their sleeping mother’s bed, one in mother’s arms. All had postmortems. Baby #1 was found supine on bed next to mother at 2 hr, 9 min by father who said baby looked blue. He died at 25 hours of age and postmortem showed widespread glosis and micromineralisation of the brain, representing extensive brain injury of several days predating labour and delivery. Baby #2: male who was prone in skin-to-skin contact. At 1 hr 3 min he was collapsed in same position while mother was still in lithotomy position having episiotomy sutured. Baby died at 79 hours age. Postmortem showed severe hypoxic-ischemia at time of collapse. Baby #3: female in KC for breastfeeding. At 1 hr, 42 min during episiotomy repair with local aesthetic, mom said baby had slipped beneath her breast. Midwife found baby floppy, apnic, and bradycardic. MRI at 3 months showed cerebral atrophy with loss of white matter volume, enlarged ventricles and thin cortex. She developed spastic quadriplegia, blindness, deafness, seizures before dying at 18 months. No postmortem. Baby #4: born to primigravid mom with APGARs of 10. Found collapsed at 36 mins of life in mother’s arms. Severely acidotic, resuscitated and NICU care. Died within 4 days from severe encephalopathy and multorgan failure. Postmortem showed severe hypoxic damage at birth or time of collapse. Baby #5: primigravid mom with APGARS of 10. Collapsed at 8 hours of age while lying in a lateral position on mother’s bed. Everything else same as baby #4. Rate of sudden unexplained collapse was 0.4/1000 live births here (was 0.06/1000 live births in Polberger S, 1985 and 0.5/1000 live births in Rodriguez-Alarcon et al., 1994 on this bib) and for this unexplained collapse group mortality is 50% with significant neurological sequelae in a majority of survivors. No cause for collapse was identified. Even in postmortem exams. All were cared for by primiparous mothers, unsupervised by staff, first time” moms have less experience in normal behavior of infant and may not recognize abnormal appearance or activity of infant “(pg. KCBib 2018
Their awareness may be impaired by fatigue and effects of anaglesia or distracted by simultaneous painful procedures. The authors postulate that some infants with an underlying vulnerability may maladapt to extrauterine life following a hypoxic stressor possibly caused by positional airway obstruction. Confirms other reports of association between birth KC and ALTE, and bed-sharing is not recommended before 6 months because airway obstruction occurs more frequently on maternal bed than in cot (Ball HL, Ward-Platt MP, Hestop E et al., 2006. Randomised trial of infant sleep location on the postnatal ward. Arch Dis Childh 91, 1005-1010). Adapting to extrauterine life is a critical period, and some vulnerable infants who have antenatal brain injury may maladapt to a hypoxic stressor, precipitated by positional airway obstruction when prone or breastfeeding, both of which are almost universal features of such infants reported in literature.

**Full term, Case study, Birth KC, life threatening events, mortality, morbidity, antenatal brain injury.** Not on charts 11/12/2011. See also Hennmann et al., in this bib for excellent physiology report of positioning and pulmonary dynamics.

Phillips Bl & Jean-Marie S. (2007). *African American Women and Breastfeeding.* The Courage to Love Infant Mortality Commission. DC: Joint Center for Political and Economic Studies. 1-16. Available from Joint Center for Political and Economic Studies, 1090 Vermont Ave. NW, Suite 1100, Washington, DC 2005 or from www.jointcenter.org. This is a major review of how lack of breastfeeding relates to the high infant mortality rate in African American infants and then focuses on factors influencing their low breastfeeding rate and promising models and practices such as WIC, use of Doulas, peer counselor programs, Rush Mother’s Milk Club, Baby Friendly Initiative, and National Breastfeeding Awareness campaign. On page 10 under Rush Mother’s Milk Club it states “Criteria 2 of Rush Mother’s Milk Club is: Skin-to-skin(kangaroo) care and suckling at the empty breast as tactile stimulation and ‘practice’ for the infant” (pg. 10). On page 11 it states “The routine in a Baby-Friendly hospital is for mothers to be given their babies to hold in skin-to-skin contact immediately after birth (OR AS SOON AS MOTHER AND BABY ARE ABLE). This takes advantage of the alert period in a baby’s first hours of life and facilitates a successful first breastfeed. Review, Breastfeeding, Disparities, African- American, Birth KC, Baby Friendly


Phillips, C., & Bulmer, J. (2012). Postpartum care of a woman with cerebral palsy and deep vein thrombosis. A case study. *Nursing for Women’s Health, 16*(1), 36-44 DOI:10.1111/j-1751-486X.2012.01698.x. NOT A KC study (reference to it only).. This is a case study of a fullterm birth in a women with cerebral palsy and thrombosis but it covers couplet care and on page 42 it says “...facilitating maternal newborn attachment is a priority. Despite their complex care needs, these women, like all new mothers, need close physician proximity to their infants, which allows them to interact with their newborns and respond to their cues. Supportive nursing care can include rooming-in, skin-to-skin care with the newborn, and infant massage (Karl,D., Beal, J., O’Hare, C.& Rasmille,P. 2006.). FT, Case Study, NOT KC. Reference only, attachment. Testimony that KC is becoming standard postpartum practice.

Phillips, R.M. (2013). The sacred hour: uninterrupted skin-to-skin contact immediately after birth. *Newborn and Infant Nursing Reviews, 13*(2), 67-72. Review of literature of importance of skin-to-skin contact during first hour postbirth. “The events surrounding birth have the potential to set the stage for patterns of subconscious thought processes and behaviors that persist for a lifetime. Our first impression of life outside the womb, the welcome reception we receive immediately after birth, may color our perceptions of life as difficult or easy, peaceful or comforting, frightening or reassuring, cold and lonely or warm and welcoming.”…. There are many accounts of young (usually up to about age 3-5 years) who remember events around the time of their birth and the feelings they experienced” (pg. 67). The comparison of birth stories from 10 mothers with the birth memories of their children showed that children remember many specific and unique details in common with their mother’s accounts, validating children’s birth memories (Chamberlain, David. Babies Remember Birth and Other Extraordinary Scientific Discoveries About the Mind and Personality of Your Newborn... NY NY: Ballantine Books, 1990 and David Chamberlain, 2013.Windows to the Womb Revealing the Conscious Baby from Conception to Birth. Berkley, CA: North Atlantic Books.) So, babies and even fetuses are, indeed, capable of forming memories that remain in the subconscious for life, so how they are treated at birth and their early experiences outside the womb matter more than previously thought! Raylene Phillips says that the first hour after Birth is a Sacred Hour because it is an honored, cherished, and protected event. “Yet, in many hospital settings, this once-in-a-lifetime process is routinely interrupted for details that can easily wait until after the new baby has had time to adjust to life outside the womb in the loving arms of the mother, and after the baby and parents have had time to meet each other as a new family…. After birth, the mother’s body and breasts take over the function of the uterus and placenta in providing warmth, protection, nutrition, and support for optimal oxygenation, as well as close and continual proximity to the mother’s heart and voice. Being skin-to-skin with the mother is the newborn infant’s “NATURAL HABITAT” – the one place where all his needs are meet. “ She next relates that STSC provides physiologic stability, thermal synchrony and promoted maternal attachment behaviours (hormones known to influence attachment behaviors are increased by skin-to-skin contact). oxytocin increases relaxation, attraction, facial recognition & maternal caregiving behaviors. Oxytocin is increased during skin-to-skin contact and levels spike whenever the newborn’s hand massages mother’s breasts (Matthiesen et al. 2001. Postpartum maternal oxytocin release by newborns: effects of infant hand massage and sucking. Birh, 28; 13-19.), and protects from negative effects of separation (cold, starvation, potential harm, death and 10 times the # of cries and 40 times the duration of crying…and frantic crying is NOT GOOD for newborns. It impairs lung functioning, increases intracranial pressure, jeopardizes KC Bib 2018
the closure of the foramen ovale, nad increases stress hormones” (pg. 68). “Short periods of separation resulting in protest is not thought to be harmful to the developing brain, bu repetitive and prolonged separation resulting in ‘despair has been well documented as harmful with lifelong consequences” (pg.68-69). “Primates who are separated from their mothers invariably became deeply depressed within a few days and remained socially withdrawn. They often became pathologically violent in adolescence.” (pg. 69). “Separation produces enough stress to see profound and often permanent changes in the organ system being studied that persist to adulthood” (pg. 69). Foals who were gently handled by humans for 1st hour after birth with mothers in close proximity, never socialized well and were more aggressive during adolescence and adulthood than foals who were just left with mother (Henry S et al., 2009. Neonatal handling affects durability bonding and social development. PLoS One, 4:e5216). Graven has said “It is a serious mistake for professionals who provide care for neonates to assume that the principles derived from careful animal studies do not apply to human infants. The risk of suppression or disruption of needed neural process...is very significant and potentially lasts a lifetime.” (p. 210 in Graven S. 2004. Early neurosensory visual development of the fetus and newborn. Clin Perinatal 31, 199-216). STSC supports optimal brain development (newborn brain is immature, only 25% of adult size, many processes not complete-myelination, synaptogenesis- but STSC affects AMYGDALA development which is part of limbic system involved in emotional learning, memory modulation, and activation of sympathetic nervous system. AMYGDALA is in critical period of maturation during the first 2 months post birth and STSC activates the amygdala via the prefronto-orbital pathway (Schore A. 2001. Effects of a secure attachment relationship on right brain development, affect regulation, and infant mental health. Infant Mental Health J, 22, 7-66), Touch and motion are critical for normal neurointegration of the cerebellum-limbic-prefrontal cortex, so maternal holding and carrying throughout infancy is essential for ongoing brain development” (pg. 69) (Mason W & Berkson G. 1974. Effects of maternal motility on the development of rocking and other behaviors in Rhesus monkeys: a study with artificial mothers. Dev Psychobiol, 8, 197-211; Prescott J. 1975. Body Pleasure and the origins of violence. Bull Atomic Sci, 10-20). “Dr. Prescott speculated that there is a sensitive period during infant brain development when pleasurable touch and movement are necessary and protective against depression and violence. Using skin-to-skin during the first hour after birth sets a pattern of behaviors between mothers and infants that supports continued body contact and carrying, and thus normal brain development of the infants” (pg.69 and cites Bowlby 1979). Newborn ability to self-regulate is a function of mother-infant attachment and non- separation. “The interaction between mom and newborn controls and modulates the newborn’s exposure to environmental stimuli and by doing so serves as a regulator of the developing individual’s internal HOMEOASTIC ASIS” (pg. 69 & Cites Ovt-scharoff WJ et al. 2001 and then Schore A 2001 The effects of early relational trauma on right brain development, affect regulation, and infant mental health. Infant Mental Health J, 22, 1201-269), “The regulatory function of mother-newborn interaction may be an essential promoter of synaptic connections and functional brain circuits in the newborn brain (Ovt-scharoff , W.J. & Braun, K. 2001.Maternal separation and social isolation modulate the postnatal development of synaptic composition in the infralimbic cortex of Octodon degus. Neuroscience, 104, 33-40)”(pg. 69). Then she cites the Bystrova work showing that full term infants who got KC for the first 1-2 hours after birth had self-regulation and were less easily frustrated and better able to calm themselves at one year (Bystrov, et al. 2009 in Birth, & increases breastfeeding. Birth KC for cesarean poses challenges: sterility, maternal and infant safety, resuscitation requirement, and physical space and once these hurdles have been resolved, skin to skin may provide a level of stability for both mother and baby and enhance maternal infant attachment, perception of birth experience, breastfeeding and maternal perception of pain and anxiety during the surgical procedure. Pain and Anxiety may be reduced because maternal focus switches to infant BirthKC should be encouraged. FT, Review, Natural habitat, Place of Care, birth memories, Stability, thermal synchrony, attachment, separation, oxytocin, crying, stress, amygdala, brain development, violence, cesarean section Check on CHARTS

Phillips, R.M. (2015-Sept). Neuroprotection in the NICU. Newborn and Infant Nursing Reviews. 15(13), 80-81. PT, Review, Neuroprotection. New to Biblio Study not on charts 9/5/2016 See also in same issue and on this KC bib Altimier; Russell, Weaver & Vogel; Rhoads et al., Danner-Bowman et al., White; Harrison et al.; Narendran, Pickens, Visscher, Hoath; Cross; Cardin et al.; Bergman).


Pierrat, V., Coquelin, A., Cuttini, M, Khoshnood, B., Giorieuz, J., Clariss O., Darox, M., Kaminski, M., Angel, P.Y., Arnaud, C., and the EPIPAGE-2 Neurodevelopmental Care Writing Group. (2016-Aug). Translating neurodevelopmental care policies into practice: The experience of neonatal ICUs in France-The EPIPAGE-2 Cohort Study. Pediatric Critical Care Medicine, epub ahead of print. To describe the implementation of neurodevelopmental care for newborn preterm infants in neonatal ICUs in France in 2011 and to analyze changes since 2004, and investigate factors associated with practice, a prospective national cohort study of all births before 32 weeks of gestation of newborns in all neonatal ICUs (n = 66) in 25 French regions was conducted by questionnaire. Neonates surviving at discharge (n = 3,005) had their parents queried. Neurodevelopmental care policies and practices were assessed by structured questionnaires. Neurodevelopmental care was defined as INITIATION OF KC DURING THE FIRST WEEK OF LIFE and breastfeeding during hospitalization. Proportions of neonates initiating kangaroo care during the first week of life and those whose mothers expressed breast milk were measured as neurodevelopmental care practices. Multilevel logistic regression analyses were used to investigate relationships between kangaroo care or breast-feeding practices and unit policies, taking into account potential

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confounders. Free visiting policies, bed availability for parents, and kangaroo care encouragement significantly improved between 2004 and 2011 but with large variabilities between units. Kangaroo care initiation varied from 39% for neonates in the most restrictive units to 68% in less restrictive ones (p < 0.001). Individual factors associated with kangaroo care initiation were gestational age (odds ratio, 5.79; 95% CI, 5.49-7.48 for babies born at 27-31 wk compared with babies born at 23-26 wk) and, to a lesser extent, single pregnancy, birthweight above the 10th centile, and mother’s employment before pregnancy. At unit level, policies and training in neurodevelopmental care significantly influenced kangaroo care initiation (odds ratio, 3.5; 95% CI, 1.8-7.0 for Newborn Individualized Developmental Care and Assessment Program implementation compared with no training). Breast milk expression by mothers was greater in units with full-time availability professionals trained for breast-feeding support (60% vs 73%; p < 0.0001). Dissemination of neurodevelopmental practices occurred between 2004 and 2011, but large variabilities between units persist. Practices increased in units with supportive policies. Specific neurodevelopmental care training with multifaceted interventions strengthened the implementation of policies. PT, dev care, BF, implementation. Not on Charts 8/25/2016

Pignotti MS, & Rubaltelli FF. (1997). Kangaroo Care: Parents’ answers and staff problems. Riv Ital Pediatr 23, 1054-1057. In three years 95% of LBW and VLBWs (580-2000 gm. 25-38wGA) got KC. Nurses had difficulty with organization and surface space and time for mothers; mothers firmly believe in KC and its help in forming relationship with infant and nurses. Italian with English Abstract, PT

Pignotti MS, Rapisardi G, & Rubaltelli FF. Kangaroo mother care: Parents’ and nurses’ opinions and problems. ITALY Need complete citation from Rapisardi on the researcher’s list or at ghurapi@italia.it

Pillai Riddell RT, Racine N, Turcotte K, Uman L, Horton R, Din Osmun L, Ahola Kohut S, Hillgrove-Stuart J, Stevens B, Liss D. (2011b, Oct.) Nonpharmacological management of procedural pain in infants and young children: an abridged Cochrane review. Pain Res Manag. 2011 Sep-Oct; 16(5):321-30. Acute pain and distress during medical procedures are commonplace for young children. To assess the efficacy of nonpharmacological interventions for acute procedural pain in children up to three years of age. Study inclusion criteria were: participants <3 years of age, involved in a randomized controlled or crossover trial, and use of a ‘no treatment’ control group (51 studies; n=3396). Additional studies meeting all criteria except for study design (eg, use of active control group) were qualitatively described (n=20). For every intervention, data were analyzed separately according to age group (preterm-born, term-born neonate and older infant/young child) and type of pain response (pain reactivity, immediate pain-related regulation). The largest standardized mean differences (SMD) for pain reactivity were as follows: sucking-related interventions (preterm: -0.42 [95% CI -0.68 to -0.15]; neonate -1.45 [95% CI -2.34 to -0.57]), kangaroo care (preterm -1.12 [95% CI -2.04 to -0.21]), and swaddling/facilitated tucking (preterm -0.97 [95% CI -1.63 to -0.31]). For immediate pain-related regulation, the largest SMDs were: sucking-related interventions (preterm -0.38 [95% CI -0.59 to -0.17]; neonate -0.90 [95% CI -1.54 to -0.25]), kangaroo care 0.77 (95% CI -1.50 to -0.03), swaddling/facilitated tucking (preterm -0.75 [95% CI -1.14 to -0.36]), and rocking/holding (neonate -0.75 [95% CI -1.20 to -0.30]). The presence of significant heterogeneity limited confidence in nonsignificant findings for certain other analyses. Although a number of nonpharmacological treatments have sufficient evidence supporting their efficacy with preterm infants and healthy neonates, no treatments had sufficient evidence to support efficacy with healthy older infants/young children. PAIN meta-analysis. It is on the charts. See Cochrane that follows.

Pillai Riddell RR, Racine NM, Turcotte K, Uman LS, Horton RE, Din Osmun L, Ahola Kohut S, Hillgrove Stuart J, Stevens B, Gerwitz-Stern A. (2011a, Oct 5). Non-pharmacological management of infant and young child procedural pain. Cochrane Database Syst Rev, 2011 Oct 5(10):CD006275. doi: 10.1002/14651858.CD006275.pub2. Infant acute pain and distress is commonplace. Infancy is a period of exponential development. Unrelieved pain and distress can have implications across the lifespan. To assess the efficacy of non-pharmacological interventions for infant and child (up to three years) acute pain, excluding breastfeeding, sucrose, and music. Analyses accounted for infant age (preterm, neonate, older) and pain response (pain reactivity, pain-related regulation). We searched CENTRAL in The Cochrane Library (2011, Issue 1), MEDLINE (1966 to April 2011), EMBASE (1980 to April 2011), PsycINFO (1967 to April 2011), Cumulative Index to Nursing and Allied Health Literature (1982 to 2011), Dissertation Abstracts International (1980 to 2011) and www.clinicaltrials.gov. We also searched reference lists and contacted researchers via electronic list-serves. Participants included infants from birth to three years. Only randomized controlled trials (RCTs) or RCT cross-overs that had a no-treatment control comparison were eligible for inclusion in the analyses. We examined studies that met all inclusion criteria except for study design (e.g. had an active control) to qualitatively contextualize results. We refined search strategies with three Cochrane-affiliated librarians. At least two review authors extracted and rated 51 articles. Study quality ratings were based on a scale by Yates and colleagues. We analyzed the standardized mean difference (SMD) using the generic inverse variance method. We also provided qualitative descriptions of 20 relevant but excluded studies. Fifty-one studies, with 3396 participants, were analyzed. The most commonly studied acute procedures were heel-sticks (29 studies) and needles (n=10 studies). The largest SMD for treatment improvement over control conditions on pain reactivity were: non-nutritive sucking-related interventions (preterm: SMD -0.42; 95% CI -0.68 to -0.15; neonate: SMD -1.45, 95% CI -2.34 to -0.57), kangaroo care (preterm: SMD -1.12, 95% CI -2.04 to -0.21), and swaddling/facilitated tucking (preterm: SMD -0.97; 95% CI -1.63 to -0.31). For immediate
pain-related regulation, the largest SMDs were: non-nutritive sucking-related interventions (preterm: SMD -0.38; 95% CI -0.59 to -0.17; neonate: SMD -0.90, 95% CI -1.54 to -0.25), kangaroo care (SMD -0.77, 95% CI -1.50 to -0.03), swaddling/facilitated tucking (preterm: SMD -0.75; 95% CI -1.14 to -0.36), and rocking/holding (neonate: SMD -0.75; 95% CI -1.20 to -0.30). The presence of significant heterogeneity limited our confidence in the lack of findings for certain analyses. There is evidence that different non-pharmacological interventions can be used with preterms, neonates, and older infants to significantly manage pain behaviors associated with acutely painful procedures. Pain.meta-analysis

Pilai Riddell RR, Racine NM, Gennis HG, Turcotte K, Uman LS, Horton RE, Ahola Kohut S, Hillgrove Stuart J, Stevens B, Lisi DM. (2015-Dec). Non-pharmacological management of infant and young child procedural pain. Cochrane Database Syst Rev. 2015 Dec 2;12:CD006275. doi: 10.1002/14651858.CD006275.pub3 IN THIS ONE, THEY EXCLUDED KANGAROO CARE. Infant acute pain and distress is commonplace. Infancy is a period of exponential development. Unrelieved pain and distress can have implications across the lifespan. This is an update of a previously published review in the Cochrane Database of Systematic Reviews, Issue 10 2011 entitled ‘Non-pharmacological management of infant and young child procedural pain’. To assess the efficacy of non-pharmacological interventions for infants and child (up to three years) acute pain, excluding kangaroo care, and music. Analyses were run separately for infant age (preterm, neonate, older) and pain response (pain reactivity, immediate pain regulation). For this update, we searched the Cochrane Central Register of Controlled Trials (CENTRAL) in The Cochrane Library (Issue 2 of 12, 2015), MEDLINE-Ovid platform (March 2015), EMBASE-OVID platform (April 2011 to March 2015), PsycINFO-OVID platform (April 2011 to February 2015), and CINAHL-EBSCO platform (April 2011 to March 2015). We also searched reference lists and contacted researchers via electronic list-serves. New studies were incorporated into the review. We refined search strategies with a Cochrane-affiliated librarian. For this update, nine articles from the original 2011 review pertaining to Kangaroo Care were excluded, but 21 additional studies were added. Participants included infants from birth to three years. Only randomised controlled trials (RCTs) or RCT cross-over studies that had a no-treatment control comparison were eligible for inclusion in the analyses. However, when the additive effects of a non-pharmacological intervention could be assessed, these studies were also included. We examined studies that met all inclusion criteria except for study design (e.g. had an active control) to qualitatively contextualize results. There were 63 included articles in the current update. Study quality ratings and risk of bias were based on the Cochrane Risk of Bias Tool and GRADE approach. We analysed the standardized mean difference (SMD) using the generic inverse variance method. Sixty-three studies, with 4905 participants, were analysed. The most commonly studied acute procedures were heelsticks (32 studies) and needles (17 studies). The largest SMD for treatment improvement over control conditions on pain reactivity were: non-nutritive sucking-related interventions (neonate: SMD -1.20, 95% CI -2.01 to -0.38) and swaddling/facilitated tucking (preterm: SMD -0.89; 95% CI -1.37 to -0.40). For immediate pain regulation, the largest SMDs were: non-nutritive sucking-related interventions (preterm: SMD -0.45; 95% CI -0.63 to -0.23; neonate: SMD -0.90; 95% CI -1.34 to -0.25; older infant: SMD -1.34; 95% CI -2.14 to -0.54), swaddling/facilitated tucking (preterm: SMD -0.71; 95% CI -1.00 to -0.43), and rocking/holding (neonate: SMD -0.75; 95% CI -1.20 to -0.30). Fifty two of our 63 trials did not report adverse events. The presence of significant heterogeneity limited our confidence in the findings for certain analyses, as did the preponderance of very low quality evidence. There is evidence that different non-pharmacological interventions can be used with preterms, neonates, and older infants to significantly manage pain behaviors associated with acutely painful procedures. The most established evidence was for non-nutritive sucking, swaddling/facilitated tucking, and rocking/holding. All analyses reflected that more research is needed to bolster our confidence in the direction of the findings. There are significant gaps in the existing literature on non-pharmacological management of acute pain in infancy. NOT KC; but procedural pain, so when KC is not available, the best interventions are non-nutritive sucking, swaddling/facilitated tucking, and rocking/holding. This will be useful for the KC for cancer pain study at Elytra.

Pineda RG, Foss J, Richards L, & Pune CA. (2009). Breastfeeding changes for VLBW infants in the NICU following staff education. Neonat New 28(5), 311-319. This is NOT a study of KC but instead includes information about KC as apart of the educational program to change breastfeeding rates in an NICU. Med record data were extracted before and after the education (as pre-intervention and post-intervention groups) and significant improvements in breastfeeding rate occurred after the education (BF initiation Increased by 11% and breast milk feeding at discharge was up by 5%, but these increases failed to meet significance. On pg. 313 it says: “Foster continued pumping and skin-to-skin holding throughout each week.” And the education included “ Some prefeeding interventions included in the training were skin-to-skin care, …When KC cont ENISH THIS

Pineda R, Guth R, Herring A, Reynolds L, Oberle S, Smith J. (2016-Oct). Enhancing sensory experiences for very preterm infants in the NICU: an integrative review. J Perinatol. 2016 Oct 20. doi: 10.1038/jp.2016.179. [Epub ahead of print] Very preterm infants hospitalized in the neonatal intensive care unit (NICU) experience alterations in sensory experiences. Defining types, timing and frequency of sensory-based interventions that optimize outcomes can inform environmental modifications. The objective of this study was to conduct an integrative review on sensory-based interventions used with very preterm infants in the NICU to improve infant and parent outcomes. The data sources include MEDLINE, CINAHL, Cochrane Library and Google Scholar. Studies were

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identified that used sensory-based interventions in the NICU with preterm infants born <32 weeks gestation, were published in a peer-reviewed journal between 1995 and 2015, and measured outcomes related to infant and parent outcomes. Studies were extracted from electronic databases and hand-searched from identified reference lists. Eighty-eight articles were identified (31 tactile, 12 auditory, 3 visual, 2 kinesiestic, 2 gustatory/olfactory and 37 multimodal). There was evidence to support the use of kangaroo care, music and language exposure, and multimodal interventions starting at 25 to 28 weeks postmenstrual age. These interventions were related to better infant development and lower maternal stress, but not all findings were consistent. Limitations included lack of consistent outcome measures, study quality and gaps in the literature. Most research identified interventions that were done for short periods of time. It is unclear what the potential is for improving outcomes if positive sensory exposures occur consistently throughout NICU hospitalization. Until more research defines appropriate sensory-based interventions to use with infants born very preterm in the NICU, information from this review can be combined with expert opinion and parent/family values to determine best practice. Review, PT, Micropreemie, development, maternal stress.

PNP Daily News. Dec. 23 2015. Leading the News: Skin-to-skin infant care may improve survival rates of premature underweight newborns, study finds. (Reuters) (12/23, Rapaport) reports that a meta-analysis suggests that survival rates of premature and underweight babies may improve if they have prolonged skin-to-skin contact with their mothers. Researchers analyzed 124 published studies and found that so-called “kangaroo care,” which involves skin-to-skin contact, exclusively breastfeeding and early discharge after delivery and close follow-up home care, was associated with a 36 percent lower mortality rate compared to standard care. The findings were published in the journal Pediatrics. (The study is by Bounty and in on the bib). HealthDay (12/22, Norton) reports that the analysis revealed that newborns given kangaroo care “also had about half the risk of developing sepsis, a 78 percent lower risk of hypothermia, and an 88 percent lower risk of dangerously low blood sugar.” MedPage Today (12/22) also reports the story. PT, Review, see Boundy et al., 2016 for full results.

Poets, A., Steinfeldt, R., & Poets, C.F. (2011). Sudden deaths and severe apparent life-threatening events in term infants within 24 hours of birth. Pediatrics, 127(4), e699-e873 DOI: 10.1542/peds.2010-2189. Online version of article available at http://pediatrics.aappublications.org/content/127/4/e699.full.html. This is a prospective epidemiological study in Germany of sudden deaths and severe life-threatening events in full term infants within 24 hours of birth after being alerted to possible deaths during BIRTH KC in France. On page 870 they report that they observed two infants with severe ALTE in the delivery room in initially well-adapted term newborns while lying prone in skin-to-skin contact with their mother (pg.270) and an informal inquiry of neighboring hospitals reported several similar cases. Infants who had good apgar (≥ 8) and had good postnatal adaptation for 10 minutes were to be reported. In one year, 2009, 43 cases of Severe apparent life threatening events were reported. Of those 43, 17 met criteria of good apgar and good adaptation and that yielded an incident rate of 2.6 in 100,000 live births and there were 7 deaths (1.1/100,000), 6 of the 10 Severe-ALTE infants were neurologically abnormal at discharge. 12 infants were found lying on their mother’s chest or abdomen, or very close to and facing her; another infant was found while lying supine next to his mother and 2 others were lying supine in their own beds, and two infants became lifeless while being held in their father’s arm (pg.870). 2 mothers had delivered by cesarean and 2 mothers had had sedatives within 24 hours of birth. Nine events occurred in the first two hours postbirth; 7 were only noticed by health professional despite the mother being present and awake. NO where in this article does it say that babies died or had ALTEs during skin-to-skin contact or during Kangaroo Care but I am assuming that the 12 who were found lying on their mother’s chest or abdomen were in KC. It only mentions that “12 newborns were found lifeless while lying on their mother’s breast/abdomen or very close to and facing her” (pg. 870). Severe-ALTEs may occur in the first two hours postbirth, particularly within the first 2 hours of birth. The rate of 17 newborns with Severe ALTEs on first day of life was 2.6 every tenper 100,000 live birth (including 1.1 deaths per 100,000 live birth). Their data were similar to Branger’s data, but the number of events occurring on the first day of life seems relatively high. Events were often related to a potentially asphyxiating position – infant’s nose pressed against the breasts or mother’s abdomen may lead to acute upper airway obstruction (pg. 872) (12/17 events occurred in such a potentially asphyxiating position. WATCH FOR OVERWEIGHT MOTHERS ESPECIALLY. Many of the cases occurred in primipara women- maybe they don’t know how to position their babies safely. Or, postnatal fatigued of mother or child could contribute too (9/17 S-ALTEs occurred in the first 2 hours after birth and 5 when mother was asleep (with death as outcome in 4of the five sleeping mothers). Another cause may be the drop in sympathetic nervous activity in the newborn – a wavethat occurs right after birth and then diminishes and the infant is not responsive to potentially asphyxiating circumstances (SMl’s note: today we know that a decrease in sympathetic activity may be due to oxytocin in the infant too). “Parents may be too fatigued or otherwise not able to assess their infant’s condition correctly. Closer observation during these earliest hours seems warranted” (pg. 870). “We do not wish to imply that our observation should be interpreted as suggesting that mother and infant should be separated after birth. Our data only reveal that placing the infant to sleep in his own bed, preferably next to his mother, may be a somewhat safer sleep environment than placing him in close body contact to a fatigued mother.” Animal experiments indicate that experiences made shortly after birth may have lifelong consequences through experience-dependent chromatin plasticity. Thus, support of close proximity of mother and infant shortly after birth enables them to experience mutually beneficial physiology” (pg. e873). Need close surveillance of infant every 6-8 minutes throughout the first 2 hours of life and “the newborn should not lie on or be snuggled to the mother while she is sleeping; there should be a possibility to put the newborn in

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a bed if the mother is too exhausted after birth” (e873). Identified potentially asphyxiating positioning on chest an being a primip as major contributors to SUPCs. FT, ALTE, Descriptive, sudden infant collapse

Poets, A., Urshitz MS, Steinfeldt R., Poets CT. (2012). Risk factors for sudden unexpected deaths and severe apparent life threatening events. Archives of Disease in Childhood Fetal Neonatal Ed, 97(6): F395-F397. This is on life threatening event chart at the end of each chart. THIS LIST ALL RISK FACTORS. It may mention KC as a risk factor, but I have to get it and check this out.

Porges, S.W. & Furman, S.A. (2011). The early development of the autonomic nervous system provides a neural platform for social behavior: A polyvagal perspective. Infant & Child Development. 20(1), 106-118. This is a review article of the development of the autonomic nervous system and on page 5, 3rd paragraph from the top, it states “During the preterm period there is a monotonic increase in RSA (respiratory sinus arrhythmia) from 32-37 weeks gestational age. Opportunities for skin-to-skin contact (i.e. Kangaroo care) between mother and preterm (Feldman & Eiderman, 2003) enhance the development of RSA. Paralleling the enhanced vagal regulation, these authors also reported more rapid improvement in state organization and a more mature neurodevelopmental profile. However, the enhanced development of RSA was only relative to preterm controls not receiving skin-to-skin contact and was still substantially lower than reports of RSA in typically delivered fullterms (Porges, 1992). We present a biobehavioral model that explains the neurobiological mechanisms through which measures of vagal regulation of the heart (e.g., respiratory sinus arrhythmia) are related to infant self-regulatory and social engagement skills. The model describes the sequential development of the neural structures that provide a newborn infant with the ability to regulate physiological state in response to a dynamically changing postpartum environment. Initially, the newborn uses primitive brainstem-visceral circuits via ingestive behaviors as the primary mechanism to regulate physiological state. However, as cortical regulation of the brainstem improves during the first year of life, reciprocal social behavior displaces feeding as the primary regulator of physiological state. The model emphasizes two sequential phases in neurophysiological development as the fetus transitions to postpartum biological and social challenges: 1) the development of the myelinated vagal system during the last trimester, and 2) the development of cortical regulation of the brainstem areas regulating the vagus during the first year postpartum. Review, FT, PT, autonomic nervous system, development, heart rate variability, vagal tone, parasympathetic control, co-regulation.


Pozzati, F. (2010). From Tube to Breast. Minerva Pediatrics 62(3 Suppl 10, 211-212. (No DOI). WHO wants breastfeeding for first 6 months even for NICU infants. In the NICU, the following are needed for BF: precocious and frequent stimulation of the breast, counseling, NIDCAP, KMC, 24 hour open NICU, feeding consultant, teamwork in presence of these elements in NICU. PT, Clin report, F, NICU

Preer, G., Pusegwa, J.M., Cook, J.T, Henri, A.M. & Philipp, B.L. (2013-Dec.8). Delaying the bath and in-hospital breastfeeding rates. Breastfeeding Medicine, 8(6):485-90. doi: 10.1089/bfm.2012.0158. Until 2010, newborns at this institution were bathed in the nursery at approximately 2 hours of life. In May 2010, infant baths were delayed until at least 12 hours of life. Infants are now bathed in the hospital room with parents' participation and are placed skin-to-skin immediately after the bath. This study explored whether delaying the newborn's first bath correlated with increased in-hospital breastfeeding rates at their Baby-Friendly, urban safety-net hospital. A retrospective chart review compared in-hospital breastfeeding rates during the 6 months before and the 6 months after the bath was delayed. 702 infants who met inclusion criteria. Before the bath, delayed infants were bathed at an average of 2.4 hours of life. Afterward, infants were bathed at an average of 13.5 hours of life. In-hospital exclusive breastfeeding rates increased from 32.7% to 40.2% (p<0.05) after the bath was delayed. Multivariate logistic regression analysis showed that infants born after implementation of delayed bathing had odds of exclusive breastfeeding 39% greater than infants born prior to the intervention (adjusted odds ratio [AOR]=1.39; 95% confidence interval [CI] 1.02, 1.91) and 59% greater odds of near-exclusive breastfeeding (AOR=1.59; 95% CI 1.18, 2.15). The odds of breastfeeding initiation were 166% greater for infants born after the intervention than for infants born before the intervention (AOR=2.66; 95% CI 1.29, 5.46). Conclusions: In our cohort, a delayed newborn bath was associated with increased likelihood of breastfeeding initiation and with increased in-hospital breastfeeding rates. Fullterm, descriptive, KC for rewarming, temperature, bath, rooming-in, exclusive BF

Price, M., & Johnson, M. (2005). Using action research to facilitate skin-to-skin contact. British Journal of Midwifery, 13(3), 154-159. Action research is the combination of qualitative and quantitative appraisals of change in action-based settings such as medical and nursing practice. Action Research is also “study of social situation carried out by those involved in that situation to improve both their

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practice and the quality of their understanding” (Winter & Mann-Giddings, 2001) and the practitioners are involved in the research. In Britain, nurse-midwives are the labor, delivery, postpartum, and mother-newborn staff nurses. This is a report of focus group results with midwives related to starting the practice of uninterrupted skin to skin contact to increase initiation of breastfeeding by 2% a year (which is the British Health Dept.’s goal). Contact immediately after birth should be uninterrupted because hurray and interruptions minimize breastfeeding success (cites Richgard & Alade, 1990). Aims were to improve awareness of BF, awareness of importance of birth KC by educating midwives and also to improve women’s choices and facilitate the best practice known as BIRTH KC. The first 8 midwives and mothers who experienced Birth KC participated in focus group which encouraged ownership of the changes. Mothers reported improved relationship, and being “besotted” with infant after KC and thinking that KC is “lovely.” RNs needed reminders like a space on admission sheet saying “Birth KC discussed” and pictures in each patient room and a Table of Benefits of Birth KC in each patient room. They also started a newsletter. Birth KC practice started at 0%, and was 56% at month 10, 52% at month 11, and 80% at month 18. Full term, Descriptive, implementation, BF, Birth KC, Cesarean section. Action Research

Pritham UA (2013). Breastfeeding promotion for management of neonatal abstinence syndrome. Journal of Obstetric, Gynecologic and Neonatal Nursing, Sep-42(5):517-26. doi: 10.1111/1552-6909.12242. This is a review of the literature about the association between breastfeeding and neonatal abstinence syndrome (NAS) severity, need for pharmacologic treatment for NAS, and length of hospital stays in neonates with in-utero exposure to methadone or buprenorphine opioid replacement therapy. Breastfeeding can effectively decrease NAS symptoms because methadone and buprenorphine are transferred to the breast milk. Maternal contact while breastfeeding also plays a role in ameliorating the NAS symptoms. Interventions that also support breastfeeding in the treatment of NAS include skin-to-skin contact, swaddling, and rooming-in. Understanding the benefits of breastfeeding for opioid-dependent pregnant women and their neonates will enable clinicians to safely recommend breastfeeding for long-term health of these high-risk women and their infants. This review of the effects of in-utero exposure to opioids on infant development can assist clinicians to more effectively support opioid-dependent women to breastfeed their infants. Review, Neonatal abstinence syndrome,


Prochnik M & de Carvalho MR. (2001). Todo Mae: Desenvolvimento Economico e Social (Brazilian Development Bank: Rio de Janeiro)."Todo Mae: Desenvolvimento Economico e Social" is a book in English outlining the new paradigm for mothering premature infants known as Kangaroo Care. It relates Why it is done, how it will be done in Brazil, the mobilizing event that started KC in Brazil, the 10 steps to the KMC method in Brazil (Written policy, specially trained personnel, well-informed women, initiation of KC as quickly as possible, demonstration of KMC, skin-to-skin contact, bed for both mother and infant, accompanied breastfeeding, no pacifiers nor bottles, and assistance groups), and data collection forms that all hospitals in the country are using. The book also defines three phases of KMC: Phase One is KMC during intensive care of the LBW infant; Phase Two KMC is during Intermediate care of the LBW infant, and Phase Three is KMC at home. Early discharge to 247 KMC for the first 6 months of life is part of the national program of KMC in Brazil. PT, Implementation, Guidelines, and Phase Two based (KMC DURING INTERMEDIATE PRETERM CARE) data collection tools.

Prochianto RS, Mendes EW, Silveira RC. (2009). Massage therapy improves neurodevelopmental outcome at two years corrected age for very low birth weight infants. Early Human Development, 86(1), 7-11. doi:10.1016/j.earlhumdev.2009.112.001 RCT of VLBW infants in Brazil who got 247 KMC routinely who were compared to VLBW infants who got 15 minutes of maternal massage of extremities and face + kinesthetic simulation (passive limb exercises) 4 times a day every day beginning within 48 hours of birth and continuing until discharge and these developments were done up to 2 years later. MDI was significantly higher 85.1 ± 1.99 in KC+ Massage than KC alone (82.9±5.61) and PDI was moderately (but not statistically significant) higher in KC+ massage (86.2±2.14) than in KC alone (84.2±6.28) at two years. This is the same study as Mendes & Prochianto 2008, but this one reports only developmental outcomes. VLBW, RCT, massage, routine KC, 247 KMC, dev outcome, micropreemie.

Public Health Agency of Canada. (2009). What Mothers Say: The Canadian Maternity Experiences Survey. Ottawa, 2009. Ottawa: Public Health Agency of Canada. Chapter 2: Labor and Birth (pg. 107-168). Section 26 Mother-Infant Contact at Birth by Chalmers, B, O’Brien, B., & Boscoe, M. pages 157-184. has the following about KC on page 157: “Introduction. Early skin-to-skin contact between mother and infants has been shown to be beneficial. In addition to improving breastfeeding outcomes and early mother-infant attachment, studies indicate that skin-to-skin contact may reduce infant crying and increase infant cardiorespiratory stability, and has no adverse effects (cites Moore et al. 2007) It should not be momentary, but continue for the first hour or more after birth and as much as possible thereafter. Restriction of mother-infant contact and skin-to-skin contact after birth may have undesirable effects including breastfeeding failure and less affectionate behaviour by the mother toward her baby (Cite Enkin M, Keirse M, Neilson J, Crowther C, Dudley L, Hodnett E, et al., Mother and Baby, In: A guide to effective care in pregnancy and childbirth, 3rd Ed. Oxford: Oxford University Press,2000, p. 426-439).” On page 158, the report goes on: “Fewer than a third (31.1%, 95%CI: 29.8-32.3) of women reported holding their baby naked against their own naked skin (skin-to-skin contact) when first holding their baby. Skin-to-skin contact after birth ranged from 62.2% (95% CI 56.4-68.0) in Yukon and 50.2% (95%CI=47.4-53.0 in Quebec to 13.8% (95%ci: 10.8-16.8) in Prince Edward Island KCBib 2018
and 11.8% (95% CI: 8.1-15.3) in Newfoundland and Labrador. Younger women (15-19 yrs) were less likely to report skin-to-skin contact with their baby immediately after birth compared with older women. Similarly, women giving birth by cesarean were less likely to have skin-to-skin contact with their baby immediately after birth than women experiencing a vaginal birth. In Chapter 3: Postpartum Section 30 Baby-Friendly Hospital Initiative by Chalmers, B., & Royle, C. on pages 179-184. It states on page 179 that Step 4 of the Baby Friendly Hospital Initiative is: "Step 4 is clarified by the BFHI to include skin-to-skin mother-infant contact as soon as the baby is born, followed by breastfeeding when the baby shows signs of readiness to feed, usually within the first hour after delivery. Breastfeeding within the first five minutes after birth is usually not appropriate and is not recommended (cite Chalmers, B., Manguaterra, V., Porter, R., 2001. WHO principles of perinatal care: the essential antenatal, perinatal, and postpartum care course. Birth, 28(3), 202-207). In relation to Step 4, 19.8% of women reported putting their baby to breast for the first time within five minutes of giving birth, 21.5% of women first put their baby to the breast between six and 29 minutes, 26.6% between 30 minutes and less than two hours, and 21.6% two hours or more after the birth." (pg. 180). Descriptive study, FT, Essential care of newborn, FT, BF, Birth KC. CANADA results. Not on Charts 8/29/2011.

DO NOT PUT BABY TO BREAST IN FIRST 5 MINS OF LIFE, they are not ready to do so.

Puig G & Sguassero Y. (2007). Early skin-to-skin contact for mothers and their healthy newborn infants: RHL commentary (last revised: 9 November 2007). The WHO Reproductive Health Library: Geneva: World Health Organization. Available on line from http://apps.who.int/rhl/newborn/. This is WHO’s statement about KC with fullterm healthy infants and says that “SSC (skin to skin contact) begins immediately after birth by placing the naked newborn prone on the mother’s bare chest. This practice…may facilitate maternal infant behavior and interactions through sensory stimuli such as touch, warmth, and odor. Moreover, SSC is considered a critical component for successful breastfeeding initiation. This updated review examined RCTs or quasi-RCTs of SSC starting within first 24 hours of life versus routine neonatal care in both healthy full term and late preterm (34-37wk GA) babies. Principal outcome of interest was breastfeeding. 30 trials (29 RCTs) were included, mostly from developed countries, but 8 were from developing countries. KC improves breastfeeding at discharge and positive impact on duration of BF in the first four months, but no data could determine impact on BF at 4-6 and 12 months. KMC also reduces infant crying, improves maternal infant interaction, keeps baby warmer, (end of page 1 quote) and helps mother breastfeeding successfully and no important negative effects were identified.” (page 2 quote). “Extra tactility, odour, and thermal cues provided by skin-to-skin contact may stimulate babies to initiate breastfeeding more successfully. So, this practice (SSC) should be seen as a beneficial, low cost, and feasible intervention to promote lactation after delivery especially in settings that lack sanitation and safe water where breastfeeding can be life-saving. 16% of neonatal deaths could be saved if all infants were breastfed from day 1 and 22% if breastfeeding started within the first hour.” (p. 2, citing a Ghana study Edmond KM et al., 2006. Delayed breastfeeding initiation increases risk of neonatal mortality. Pediatrics 117(3): e380-e386 – also cited under Textbooks with KC Hale and Hartmann’s book.) “Early SSC should be considered as a routine health care intervention after delivery both in developed and and developing country settings.”

“Appropriate definition of SSC is apriority…taking into account specific timing, frequency, and duration…Well conducted RCTs are warranted to demonstrate the real impact of early SSC on maternal and infant health, including preterm babies and mothers who deliver by Cesarean section and in different settings.” (pg. 2) Review, FT, Late PT, Breastfeeding, mortality, crying, interaction, no negative effects, temperature, warmth, Birth KC, Cesarean section,.. Guidelines

Paopolo, et al., (2016). Children’s Hospital of Philadelphia team working on a standard protocol to deal with SUPC after witnessing one SUPC in a fullterm infant that who was found blue and apneic in first two hours postbirth at CHOP. Stopped all KC then formed Safe Neonatal Transition initiative with two care maps, with KC being DEFAULT treatment and continuing KC if 1 min apgar is ≥ 5 and if 5 min Apgar and all later apgars are ≥ 8. If neonatologist at delivery, baby goes to warmer for 1 min Apgar and if 1 min apgar is ≥ 8 baby can go to KC and stay there if no Poor Neonatal Transition signs are present.

Quasem I, Sloan NL, Chowdhury A, Ahmed S., Winikoff B, & Chowdhury AMR. (2003). Adaptation of Kangaroo Mother Care for community-based application. J Perinatology 223(8, Dec. 2003), 646-651. 35 expectant or newly delivered moms were taught about KMC, did it and at 1 month postpartum were interviewed to kMC experience. 77% of moms initiated KMC and 85% with LBW babies did not. Moms delayed newborn bath and some slept upright with babies for 24hr/day KC. KMC was quickly and popularly adopted. 3rd world. Includes simple guidelines for choosing infants appropriate for KMC. Descriptive, PT/FT, Implementation, community-based, maternal experience.

Rajaashri R, Adhisivam B, Vishnu Bhat B, Palanivel C. (2017-Mar), Maternal perceptions and factors affecting Kangaroo mother care continuum at home: a descriptive study. J Matern Fetal Neonatal Med. 6:1-4. doi: 10.1080/14767058.2017.1293035. To estimate the proportion of mothers who continued to practice Kangaroo mother care (KMC) at home and evaluate potential factors influencing this practice. This descriptive study was conducted in a tertiary care teaching hospital in south India. Mothers of preterm and low birth weight infants were trained in KMC during hospital stay. During follow up after 45 days, data regarding their perceptions and the practice of KMC at home and the factors influencing them were collected using questionnaires. Among 200 mothers interviewed, 82.5% continued to practice KMC at home after discharge. The mean total duration of KMC was 30.2 days and average duration per day was 1.3 h. Support of family members was facilitatory in 70% KCBib 2018
and lack of privacy at home was hindering in 25%. After KMC training in hospital, majority of the postnatal mothers were able to continue the practice satisfactorily at home despite hindering factors including lack of privacy. KMC training modules should emphasize continuing the practice at home after discharge and address the potential barriers for KMC continuum in the community. PT, 3rd world India, descriptive evaluative study, home KC, duration of KC, frequency of KC, barrier, support of KC at home get this and complete the barriers list. Teaching KC should include continuing KC at home.


Raiksa A, Axelina T, Toome L, Caballero S, Tandberg BS, Montirosso R, Normann E, Hallberg B, Westrup B, Ewald U, Lehtonen L (2017- Feb). Parents’ presence and parent-infant closeness in 11 NICUs in six European countries varies between and within the countries. Acta Paediatr. 2017 Feb 24. doi: 10.1111/apa.13798. [Epub ahead of print]. Little is known about the amount of physical parent-infant closeness in neonatal intensive care units (NICUs) and this study explored that issue in six European countries. The parents of 328 preterm infants were recruited in all 11 NICUs in Finland, Estonia, Sweden, Norway, Italy and Spain. They filled in daily diaries about how much time they spent in the NICU, in skin-to-skin contact (SSC) and holding their babies in the first two weeks of their hospitalisation. The parents’ NICU presence varied from a median of 3.3 (minimum 0.7-maximum 6.7) to 22.3 (18.7-24.0) hours per day (p<0.001). SSC varied from 0.3 (0-1.4) to 6.6 (2.2-19.5) hours per day (p<0.001) and holding from 0 (0-1.5) to 3.2 (0-7.4) hours per day (p<0.001). Longer SSC was associated with singleton babies and more highly educated mothers. Holding the baby for longer was associated with gestational age. The most important factor supporting parent-infant closeness was the opportunity to stay overnight in the NICU. Having other children and the distance from home to the hospital had no impact on parent-infant closeness. Parents spent more time in NICUs if they could stay overnight, underlining the importance that these facilities play in establishing parent-infant closeness. PT, Evaluative descriptive study, duration of KC, maternal involvement, barriers to closeness, separation. Not on charts, 3/3/2017


Ramanathan K, Paul VK, Deorari AK, Taneja U, & George G. (2001). Kangaroo mother care in very low birth weight infants. Indian J Pediatrics, 68(11), Nov. 1019-1023. Stable pretermers <1500gm BW were randomized into KMC (n=14) for at least 4hr/day in not more than 3 sittings starting once stable and in intermediate (incubator) care and continued at home) or control (n=14) who got standard care in incubator. KMC’s had better wgt gain 15.9±4.5 gm/day vs. 10.6±4.5 gm/day, and earlier discharge (27.2 vs. 34.6 days) than controls. # of moms exclusively BF at 6 wks postdischg was double for KMC (12/14) than control (6/14). PT, RCT, BF, HOME, WGT gain, length of stay, Exclusive BF, 3rd World

Rangey PS, Sheth M. (2014-May). Comparative Effect of Massage Therapy versus Kangaroo Mother Care on Body Weight and Length of Hospital Stay in Low Birth Weight Preterm Infants. 2014-434060. doi: 10.1155/2014/434060. Epub 2014-May 28. Massage therapy (MT) and kangaroo mother care (KMC) are both effective in increasing the weight and reducing length of hospital stay in low birth weight preterm infants but they have not been compared. Aim. Comparison of effectiveness of MT and KMC on body weight and length of hospital stay in low birth weight preterm (LBWPT) infants. Method. 30 LBWPT infants using convenience sampling from Neonatal Intensive Care Unit, V.S. hospital, were randomly divided into 2 equal groups. Group 1 received MT and Group 2 received KMC for 15 minutes, thrice daily for 5 days. Medically stable babies with gestational age < 37 weeks and birth wgt < 2500 g were included. Those on ventilators and with congenital, orthopedic, or genetic abnormality were excluded. Outcome measures, body weight and length of hospital stay, were taken before intervention day 1 and after intervention day 5. Level of significance was 5%. Result. Data was analyzed using SPSS16. Both MT and KMC were found to be effective in improving body weight (P = 0.001, P = 0.001). Both were found to be equally effective for improving body weight and reducing length of hospital stay (P = 0.908). Conclusion. MT and KMC were found to be equally effective in improving body weight and reducing length of hospital stay. Limitation. Long term follow-up was not taken. PT, massage, length of stay, weight, Not on charts.

Rangey PS, Sheth M. (2014). Comparative Effect of Massage Therapy versus Kangaroo Mother Care on Body Weight and Length of Hospital Stay in Low Birth Weight Preterm Infants. International Journal of Pediatrics, 2014-434060. doi: 10.1155/2014/434060. India study. Massage therapy (MT) and kangaroo mother care (KMC) are both effective in increasing the KCBib 2018
weight and reducing length of hospital stay in low birth weight preterm infants but they have not been compared. Aim. Comparison of effectiveness of MT and KMC on body weight and length of hospital stay in low birth weight preterm (LBWPT) infants. Method. 30 LBWPT infants using convenience sampling from Neonatal Intensive Care Unit, V.S. hospital, were randomly divided into 2 equal groups. Group 1 received MT and Group 2 received KMC for 15 minutes, thrice daily for 5 days. Medically stable babies with gestational age < 37 weeks and birth weight < 2500 g were included. Those on ventilators and with congenital, orthopedic, or genetic abnormality were excluded. Outcome measures, body weight and length of hospital stay, were taken before intervention day 1 and after intervention day 5. Level of significance was 5%. Result. Data was analyzed using SPSS16. Both MT and KMC were found to be effective in improving body weight (P = 0.001, P = 0.001). Both were found to be equally effective for improving body weight (P = 0.328) and reducing length of hospital stay (P = 0.868). Conclusion. MT and KMC were found to be equally effective in improving body weight and reducing length of hospital stay. Limitation. Long term follow-up was not taken. /\ NOT ON CHARTS 8/6 14

Ransjo-Arvidson AB, Mattiesen AS, Lilja G, Nissen E, Widstrom AM, & Uvnas-Moberg K. (2001). Maternal analgesia during labor disrupts newborn behaviors: Effects on breastfeeding, temperature, and crying. Birth, 28(1), 5-12. 28 FULLTERM newborns were placed in KC immediately after birth and videotaped. Grp 1(n=10)=no anesthesia; grp2 (n=6)= mepivacaine via pudendal block, grp 3(n=12)= pethidine, bupivacaine or multiple analgesia – hand movements, hand-to-mouth movements, touching nipple with hands prior to sucking, lacking movements, and sucking breast all less in grp 3, nearly 40% of grp 2 and 3 infants did NOT breastfeed in first 2.5 hours of life. Grp 2 & 3 infants had higher temp (intracapular temp went from 35.5-35.6 to 36.3-36.5 in analgesic groups (went from 35.4 to 35.8 over first 120 minutes of KC) and cried more (for longer periods) especially group 3. Reports that analgesia during labor makes mothers hyperexcite, and this may make infants too warm, or increased crying can make infants warmer. FULLTERM, BF, Comparative Survey, Birth KC,analgesia, temp, crying.

Rao PNS, Udani R, & Nanavati R. (2008). Kangaroo mother care for low birth weight infants: a randomized controlled trial. Indian Pediatrics 45(1), 17-23. 206 neonates with birth weight <2000 grams in western India received either KMC (n=103) or conventional incubator care (n=103). KC given as much as possible but at least one hour at a time. Mean duration of KMC was 13.5 hr/day. Average daily weight gain and anthropometric measures (head circumference, chest circumference, mid-arm circumference, foot length) at 40 weeks postmenstrual age and at 2500 grams in term SGA infants. All babies were exclusively breastfed + calcium+phosphorus+multivitamins. Babies who had problem or bilirubinemia were temporarily withdrawn from KC. KMC babies had better average daily weight gain (kmc=23.99 g, control= 15.58 gm, p<0.0001). Weekly increments in head circumference (KMC =0.75 cm, controls =0.49 cm, p<0.02) and length (KMC =0.99 cm vs control = 0.7 cm, p,0.008) were higher in KMC infants. Significantly more control infants suffered from hypothermia, hypoglycemia, and sepsis but no difference in length of stay. KMC significantly reduced the incidence of apnea in VLBW infants. More KMC were exclusively breastfeeding at end of study (KMC = 98% vs 76% in controls). KMC was acceptable to most mothers and families at home without any adverse events (pg. 21). One of KMC and 5 control infants died during study. Had mothers complete diary of home KC. KMC improves growth and reduces morbidities in LBW infants. KMC can be continued at home. Preterm, FT (SGA), RCT, 3rd world, wgt, head circumference, growth, hypothermia(temp), hypoglycemia, infection, apnea, length of stay, mortality, exclusive breastfeeding, home KC, diary, maternal feeling, 1hr sessions of KMC. Not on chart yet.

Rasaily R, Ganguly KK, Roy M, Vani SN, Kharood N, Kuilkarni R, Chauhan S, Swain S, Kanugo L (2107). Community based kangaroo mother care for low birth weight babies: A pilot study. Indian J Med Res. 2017 Jan;145(1):51-57. doi: 10.4103/imr.IMR_03_15. Kangaroo mother care (KMC - early continuous skin-to-skin contact between mother and infants) has been recommended as an alternative care for low birth weight infants. There is limited evidence in our country on KMC initiated at home. The present study was undertaken to study acceptability of KMC in different community settings. A community-based pilot study was carried out at three sites in the States of Odisha, Gujarat and Maharashtra covering rural, urban and rural tribal population, respectively. Trained health workers provided IEC (information, education and communication) on KMC during antenatal period along with essential newborn care messages. These messages were reinforced during the postnatal period. Outcome measures were the proportion of women accepting KMC, duration of KMC/day and total number of days continuing KMC. Focus group discussions and in-depth interviews were also carried out. KMC was provided to 101 infants weighing 1500-2000 g; 57.4 per cent were preterm. Overall, 80.2 per cent mothers received health education on KMC during antenatal period; family members (68.3%) also attended KMC sessions along with pregnant women and 55.4 per cent of the women initiated KMC within 72 h of birth. KMC was provided on an average for five hours per day. Qualitative survey data indicated that the method was acceptable to mothers and family members; living in nuclear family, household work, twin pregnancy, hot weather, etc., were cited as reasons for not being able to practice KMC for a longer duration. It was feasible to provide KMC using existing infrastructure, and the method was acceptable to most mothers of low birth infants. FT, LBW, survey, maternal feelings, duration, birth KC at home, community KC, barriers to community KC, 3rd world- India. Not on chart 6-19-17


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was to describe the timing, type and duration of initial infant contact and associated demographic and clinical factors in addition to investigating the impact of early contact on breastfeeding and maternal health and well being after birth. Data from a recent population survey of women birthing in Queensland, Australia were used to describe the nature of the first hold and associated demographic characteristics. Sample size was 4574. Initial comparisons, with subsequent adjustment for type of birthing facility and mode of childbirth, were used to assess associations between timing, type and duration of initial contact and outcomes. Further analyses were conducted to investigate a dose-response relationship between duration of first contact and outcomes. Women who had an unassisted vaginal birth held their infant sooner, and for longer than women who had an assisted vaginal birth or caesarean and were more satisfied with their early contact. Multivariate models showed a number of demographic and clinical interventions contributing to timing, duration and type first contact with type of birthing facility (public/private), area of residence, and assisted birth as prominent factors. For women who had a vaginal birth: early, skin-to-skin, and longer duration of initial contact were associated with high rates of breastfeeding initiation and breastfeeding at discharge, but not breastfeeding at 13 weeks. Some aspects of early contact were associated with improved maternal well being. However, these associations were not found for women who had a caesarean birth. With longer durations of first contact, a dose-response effect was found for breastfeeding. Results of the study provide a description of current practice in Queensland, Australia and factors impacting on early contact. For vaginal births, findings add to the evidence in support of early skin-to-skin contact for an extended period. It is suggested that all research in this area should consider the effects of early contact separately for women having vaginal and caesarean births. Care providers should consider extending the period of early contact in routine care following vaginal birth and explore the way in which women having a caesarean birth might be better supported in benefitting from early contact with their infant. FT, evaluative survey, birth KC; BF, Exclusive BF, BF at discharge, duration of BF, maternal feelings, maternal satisfaction, cesarean birth, dose response. Not on charts 4/3/2014

Reeg, J.L., & Lott, T. (2012). Implementing skin-to-skin care in a Baby Friendly community hospital. Journal of Obstetric, Gynecologic and Neonatal Nursing, 41(Suppl 1): S41. Report of quality improvement project to implement skin-to-skin care in a Baby Friendly community hospital’s LDRP units (Cape Canaveral Hospital) because KC is an evidence-based practice. First, they educated the staff about Birth KC, patient instructions (first in small group interactive session –discussion, and then in videos and discussion format. Patient education pamphlets were distributed to women in LABOR, and KC shirts for holding the infant were loaned to mothers for whole stay. KC was encouraged at birth and throughout hospital stay. Families were encouraged to keep infant in KC for 6 hrs/day for about 2 hours each day for first month. Anyone could do KC. Benefits of KC conveyed to parents. Over one year (2010-2011) 90% of mothers had KC immediately after birth and within the first hour of life and documentation that mothers were educated about the benefits of KC were completed. Many mothers verbalized intent to continue KC at home. During lactation visits in clinic after discharge, mothers are encouraged to continue with KC. KC is THE BEST practice. FT, Birth KC, BF, Postpartum ke, HOME KC, implementation, quality improvement project. Not on charts 1-2-2013.

Reid, C. (2004). Kangaroo care. Neonatal Network, 23 (2), 53. This is an author’s reply to some comment.PT

Renfrew, M., Craig, D., Dyson, L., McCormick, F., Rice, S., King, S., Misso, K., Stenhouse, E. & Williams, A. (2009). Breastfeeding promotion for infants in neonatal units: a systematic review and economic analysis. Health Technology Assessment, 13(40), 1-179. Available at [http://www.hra.ac.uk/1611](http://www.hra.ac.uk/1611). Wow, what a long article. The abstract is long, too. 48 studies met criteria for breastfeeding, but no studies met criteria for economic analysis. Short periods of KC, up to one hour at all visits “There is strong evidence that short periods of kangaroo skin to skin contact increased the duration of any breastfeeding for one month after discharge (relative risk 4.76 [95% confidence interval 1.19-19.10]and for more than 6 weeks (relative risk:1.95[95% confidence interval 1.03-3.70]) among clinically stable infants in industrialized settings. Multidisciplinary staff training may increase knowledge. Kangaroo skin to skin contact, peer support, simultaneous breastmilk pumping, multidisciplinary staff training and the Baby Friendly initiative have been shown to be effective. Length of stay for KC was 66-386 pounds less than for incubator infant. Systematic review, meta-analysis of meta-analyses, BF, duration of Breastfeeding, education is needed, cost, knowledge. FT, PT


Renfrew MJ, Lang S, Woolridge MW. (2003). Early versus delayed initiation of breastfeeding (Cochrane Review). In: The Cochrane Library, Issue 1, 2001. Oxford: Update Software. Available from [http://www.update-software.com/abstracts/ab000043.htm](http://www.update-software.com/abstracts/ab000043.htm). Three studies reviewed comparing early skin contact with late skin contact and BF. Early contact and BF was associated with greater communication between mothers and infants but not with BF duration or % of women BF after birth. The studies reviewed are from 1978,79 and 90 (before KC really became established) and the first one does not say they did KC at all, but just put baby to breast. The other two are clearly KC studies. Breastfeeding, Birth KC, Review, fullterm

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Rey, E.S. Martinez, H.G. (1983). Manejo Racional del Nino Prematuro (In Spanish). Bogota, Colombia: Corso de Medicina Fetal. Universidad Nacional. This was the first presentation of Kangaroo Care from the Bogota scientists and this was a presentation at this meeting. No published report is available. Talks about their origin of KC practice (does not mention the 1970 and 1972 publications of skin to skin contact with premature infants published by Klaus), how preterm mortality dropped by 70% in the first year of its use, and how the abandonment of preterm infants by their mothers and families had decreased and showed how they were practicing it with mothers and criteria for sending babies home (breathing by self, pink color, taking food at the breast, gaining weight over three consecutive days. PT, weight, mortality, procedure. Not on Charts.

Reynolds, L.C., Duncan, M.M., Smith, G.C., Mathur, A., Neil, J., Inder, T., & Pineda, R.G. (2013-Aug). Parental Presence and Holding in the Neonatal Intensive Care Unit and Associations with Early Neurobehavior. *J Perinatol.* **33**(8): 636–641. doi: 10.1038/jp.2013.4 To investigate the effects of parental presence and infant holding in the NICU on neurobehavior at term equivalent. Prospective cohort enrolled 81 infants born <30 weeks gestation. Nurses tracked parent visitation, holding, and skin-to-skin care throughout the NICU hospitalization. At term, the NICU Network Neurobehavioral Scale was administered. Associations between visitation, holding, and early neurobehavior were determined using linear and logistic regression. Majority of infants were visited five or fewer days/week with visits decreasing significantly as hospitalization got longer. Less than 1/3 of the sample was visited six or more days/week. The median of 14 hrs/hospitalization in this study is much lower than in other studies (i.e. OHIO study reported that parents visited 78% of time (Gonya & Nielen, 2012 on this bib) and indicates that infants were visited 5% of hospitalization time. The mean hours/week of parent visitation was 21.3±20.88 (median= 13.90; interquartile range 10.10–23.60). Infants were held an average of 2.29±1.47 days/week (median= 2.00; interquartile range 1.20–3.10). KC holding was 0.71 ± 0.94 days per week (median was 0.3 days per week) from birth to term age. KC holding during weeks 1-2 of hospitalization was 0.94 days/week; over weeks 3-4 it was 1.10 days/week; over weeks 5-7 it was 0.72 (Table 2 data, pg. 13). Thus, KC holding peaked in 3-4th week and then declined while traditional holding increased. The rate of KC was median of 0.3 days/week which is much less than Whitelaw, Sleath et al., 1985 study in Bogota and less than the 2 times/week reported in Ohio by Gonya. Over the admission, visitation hours decreased (p=0.01), while holding frequencies increased (p<0.001). More visitation was associated with better quality of movement (p=0.02), less arousal (p=0.01), less excitability (p=0.03), more lethargy (p=0.01) and more hypotonia (p<0.01). More holding was associated with improved quality of movement (p<0.01), less stress (p<0.01), less arousal (p=0.04) and less excitability (p<0.01). KC holding was associated with improved quality of movement (p<0.05), more hypotonia (p<0.03), less arousal (p<0.03), and less excitability (p<0.04) (Table 5 data). Infants of caregivers who were visited and held more often and did KC more often in the NICU had differences in early neurobehavior by term equivalent, which supports increased early parenting in the NICU. The importance of parental presence cannot be overemphasized. These results show that there is a need or parents to be present in the NICU and to engage in the care of their infant because neurobehavioral differences occur then. Better quality of movement is demonstrated by fewer tremors, smoothness of movements, maturity, modulation of arm and leg movements, decreased startles, fluid movements, and no more than average amounts of spontaneous and elicited motor activity (ref 21, Boukydis et al. 2004). KC was associated with less hypertonia. Hypertonia can interfere with the acquisition of movement, inhibit reflexes, and interfere with overall gross and fine motor development (ref. 22). Hypertonicity is associated with exposure to intrauterine cocaine and opioids. Parental visits were assoc. with increased hypotonia, suggesting that increased stimulation from parental holding can result in fatigue and infant shutdown in relation to state but it could also indicate that infants who are visited and held more are more relaxed, content, and fluid PT. Descriptive evaluation, stress, development, agitation, motor dev, arousal/alertness, duration of KC, visits, very little KC being done. Not on charts 12/31/2015 Consider reading the Hsiao and Anderson report of amount of SSC during Anderson’s NIH study.


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breast modulating infant temperature, regulated HR and RR's and coherence (wrongly cited as 4 weeks of growth when it is really two wks of growth), increased growth, improved sleep. PT, Review of Ludington talk, Maternal-Neonatal Thermal Synchrony. REVIEW only

This is same study that resulted in a Cochrane review that follows as Pillai Riddell (below)

Pillai Riddell RR, Racine NM, Turcotte K. Uman L.S., Horton R.E., Din Osman, L., Ahoda Kohut, S., Hillgrove Stuart, J., Stevens, B., & Gerwitz-Stern, A. (2011). Non-pharmacologic management of infant and young child procedural pain. Cochrane Database Systematic Review, 2011 Oct 5;(10):CD006275. doi: 10.1002/14651858.CD006275.pub2. Department of Psychology, York University, 4700 Keele Street, OUCH Laboratory, Atkinson College, Toronto, Ontario, Canada, M3J 1P3. Infant acute pain and distress is commonplace. Infancy is a period of exponential development. Unrelied pain and distress can have implications across the lifespan. To assess the efficacy of non-pharmacological interventions for infant and child (up to three years) acute pain, excluding breastfeeding, sucrose, and music. Analyses accounted for infant age (preterm, neonate, older) and pain response (pain reactivity, pain-related regulation). We searched CENTRAL in The Cochrane Library (2011, Issue 1), MEDLINE (1966 to April 2011), EMBASE (1980 to April 2011), PsycINFO (1967 to April 2011), Cumulative Index to Nursing and Allied Health Literature (1982 to 2011), Dissertation Abstracts International (1980 to 2011) and www.clinicaltrials.gov. We also searched reference lists and contacted researchers via electronic list-serves. Participants included infants from birth to three years. Only randomized controlled trials (RCTs) or RCT cross-overs that had a no-treatment control comparison were eligible for inclusion in the analyses. We examined studies that met all inclusion criteria except for study design (e.g. had an active control) to qualitatively contextualize the results. We refined search strategies with three Cochrane-affiliated librarians. At least two review authors extracted and rated 51 articles. Study quality ratings were based on a scale by Yates and colleagues. We analyzed the standardized mean difference (SMD) using the generic inverse variance method. We also provided qualitative descriptions of 20 relevant but excluded studies. Fifty-one studies, with 3396 participants, were analyzed. The most commonly studied acute procedures were heel-sticks (29 studies) and needles (n = 10 studies). The largest SMD for treatment improvement over control conditions on pain reactivity were: non-nutritive sucking-related interventions (preterm: SMD -0.42, 95% CI -0.88 to -0.15; neonate: SMD -1.45, 95% CI -2.34 to -0.57), kangaroo care (preterm: SMD -1.12, 95% CI -2.04 to -0.21), and swaddling/facilitated tucking (preterm: SMD -0.97; 95% CI -1.63 to -0.31). For immediate pain-related regulation, the largest SMDs were: non-nutritive sucking-related interventions (preterm: SMD -0.38; 95% CI -0.59 to -0.17; neonate: SMD -0.90, 95% CI -1.54 to -0.25), kangaroo care (SMD -0.77, 95% CI -1.50 to -0.03), swaddling/facilitated tucking (preterm: SMD -0.75; 95% CI -1.14 to -0.36), and rocking/holding (neonate: SMD -0.75, 95% CI -1.20 to -0.30). The presence of significant heterogeneity limited our confidence in the lack of findings for certain analyses. Kangaroo care standardized differences were greater than in any other method and in comparison to controls nearly twice as much difference in pain was seen. There is evidence that different non-pharmacological interventions can be used with preterms, neonates, and older infants to significantly manage pain behaviors associated with acutely painful procedures. Comment in PT, FT, PAIN, not on charts 8/7/2012 THIS IS SAME AS RIDDELL above

Ridky, J. (2012). Nonpharmacological alleviation of pain in neonates. Neonatal Network, 31(6), 426-427. This is a review of several articles about nursing strategies for pain relief. The first study it reviews (Harrington JW, Logan S, Harwell C et al., 2012. Effective analgesia using physical interventions for infant immunizations. Pediatrics, 129(5): 815-822) tested the 5 S’s (swaddling, side/stomach position, shushing, swinging, and sucking) on 2 and 4 month old infants and resulted in decreased crying time and decreased pain scores for infants getting immunizations. The addition of sucrose did NOT lessen pain scores or crying further (given 2 ml water or 2 ml of 24% sucrose before immunization and either parental comfort or the 5 S’s after immunization. The 5 S group had lower pain scores than parental comfort group and no diff between SS’s with water and 5 S’s with sucrose. Pain reduction from physical intervention was significantly greater than pain reduction from sucrose alone. Chik & Sluka found that massaging arms and ands of infants for two minutes before heel stick reduced pain scores. Swaddling during a painful intervention also reduced pain. PIPP scores immediately after intervention returned to baseline as did baseline heart rate and oxygen saturation at two minutes in swaddled group but not in control (no swaddling). No swaddling group had higher PIPP and took 6 minutes for HR and SaO2 to return to baseline. And then she reviews the Pillai Riddell Cochrane review & says “The greatest improvement as evidenced by a lower pain reactivity score was seen with non-pharmacological sucking, Kangaroo Care, and facilitated tucking. Immediate pain-related regulation was best achieved with nonnutritive sucking, kangaroo care, swaddling/facilitated tucking and rocking/holding.” (pg. 427). Sucrose does not appear to improve pain scores and may have serious gut side effects in preterm infants.Although physical interventions for pain reduction require additional nursing time, it is time well spent because it lessens pain and diminished unrelieved pain over one’s lifespan. Pain, immunizations

Ridley, K. (2000 or 1994? Probably 1994). NICU offers high-touch in a high-tech world: Kangaroo Care. Inside, 10-12. This reports RECOVERY, RESUSCITATION, or CONSOLATION KC, in which dying preterm is given to parents tohold and then physiologic recovery takes place. SaO2 rose dramatically and parents continued 24hr/day KC for 3 days and then every night of hospitalization. Tells of 14 infants given KC at Brigham & Women’s hospital in Boston. No date on article which is hospital newsletter, KCBib 2018
but Jennifer Wallace reported this at the 1993 National Council of Nurse Researcher’s meeting in Los Angeles in Feb. 1994 and Wallace-Ridpath wrote an article on it too. I wrote and asked for year and got no response. Clinical report of 14 infants given

RESUSCITATION KC, compassionate KC, end of life KC, PT?

Richard L. (2008). The baby is breastfeeding –not the mother. Birth 35(1), 1-2. This is a guest editorial that relates that we should tell moms that they don’t have to have anxiety about not being able to breastfeed, and there should be no more unreason in health care professionals about asking the mother to breastfeed – because it is up to the baby to decide! Let newborns spontaneously crawl and latch because it is the infant that feeds, not the mother. This editorial also says on page 1 “The starting point is already the first hour after a normal delivery. The prerequisites are that the newborn baby is not affected by drugs given to the mother and that he/she is allowed to be in continuous skin-to-skin contact with the mother during the first hour after birth at least… The first examination of the baby can be done without disturbing the skin-to-skin contact. Remember that one prerequisite for the crawling and first latching on is that the baby is NOT taken away from the mother! Weighing and measuring can easily wait. Early cutting of the cord cannot be recommended because it might stress the baby. In normal physiological birth in native people, both baby and placenta are born before anything happens to the cord. In normal birth, just leave the cord to finish pulsating before being cut, that is, wait at least 4 to 5 minutes after birth. This step gives baby approximately 100 ml extra blood” (pg. 1) (Montgomery TL. 1960. The umbilical cord. Clin Obstet Gynaecol, 3, 900-910). FT, Review, BF, crawl, cord cutting, Choice about BF etc. if YOU ARE NOT SUPPORTING BREASTFEEDING YOU SHOULDN'T BE IN MAT-CHILD HEALTH Nurs. (SEE ALSO Miracle DJ & Fredland V, 2007. Provider Encouragement of Breastfeeding: Efficacy and Ethics, J. Midwifery and Women’s Health, 52(6), 545-548. This article reports “health care workers caring for expectant and new mothers have an ethical obligation to discuss all appropriate and all applicable issues related to breastfeeding. Health care providers are also obligated to disclose the evidence of potential harm related to infant feeding method (pg. 546)."

Physicians, Pediatricians

Richard L., & Alade, M.O. (1990). Effect of delivery room routines on success of first breast feed. The Lancet. 336, 1105-1107. Comparison of fullterm infants who lay on mother’s belly for 20 min. immediately after delivery (n=34)(separation group) and were then removed were compared to those who stayed nude on belly and chest for at least 1 hour (n=38)(contact group = KC contact). The KC contact infants began crawling to the breast at 20 min, began rooting, and at mean 50 minutes after birth most were sucking at breast. 17 KC infants completed the breast crawl, none needed help latching on, and all of them moved to the nipple. More KC contact infants had correct sucking technique (24/38 vs. 7/34). FT, KCBF, BF, crawling, separation, spontaneous latch


Riordan, J., & Wambach, K. (2010). Breastfeeding and Human Lactation, 4th Ed. Sudbury, MA: Jones and Bartlett. On page 216 of chapter 7: Under section of Early Feedings, there is a statement that “Following a vaginal birth the infant should be dried and placed on the mother’s abdomen, or in case of cesarean birth, on her chest (and shows picture of baby on abdomen). Mother and father have their first bonding experience with the new baby and it is usually very emotional. If the perineum needs to be repaired it can be done while the baby is skin to skin. The baby is placed on the mother’s breast and gently encouraged to seek out and grasp his mother’s nipple. Early (in the first hour after birth) and frequent breastfeedings are encouraged for optimal functioning of both the infant and the mother because it colonizes the infant with protective bacteria, the infant’s sucking causes uterine contractions, helps in expulsion of placenta and helps control maternal blood loss, mothers will BF for longer duration, etc.” and “Breastfeeding and skin to skin contact colonizes harmless bacteria to protect the infant from pathogenic bacteria including MRSA. The colonization rate of MRSA in the mouth of LBW infants could be lowered by spreading the mother’s breast milk over and into the mouth of such an infant immediately upon entrance to the NICU.” (pg. 216-217). In Chapter 7 (J. Riordan and K. Hoover, Perinatal and Intrapartum Care), on page 222-223, it has a whole section entitled Skin-to-Skin (Kangaroo) Care. States that infants do not have hypothermia and that even twins can be held in KC without hypothermia, and KC is now recommended for all babies and it was previously just recommended for preterms. She states risks of NOT USING KC: shorter duration of exclusive Breastfeeding, more maternal stress with less satisfaction with breastfeeding, greater stress of being born in the baby, demonstrated by high vasocostriction in the periphery and more crying, less desire by mother to hold her infant (Anderson, 2004), less ability of baby to smell maternal milk scent (Marlier & Schaal, 2005), longer hospital stay in preterm babies (Rainhaul, Saliba & Porter, 2007), greater pain and more crying during procedures (Johnston, 2003). In chapter 13 (Breastfeeding the preterm infant, N.M. Hurst & Paula P. Meier authors, page of chapter 425-470) on page 436-437 the section entitled Skin-to-Skin Care deals with preterm infants, the duration of BF is higher for KC infants than incubator infants. KC moms have significantly greater milk volume between 2 and 4 weeks of life (Hurst et al., 1997), KC holding triggers production of milk antibodies to specific pathogens in the infant’s environment through mechanisms in the entero-mammary pathway. Additionally, KC is positively correlated with improved maintenance of milk expression, as evidenced by continued pumping frequency (Lau et al., 2007). Mothers whose infants are in KC report noticing their infant’s rooting and mouthing movements and moving toward the nipple during KC (Hurst et al., 1997). Directly following KC, moms noted that they could feel the milk ejection, leaking, and expressing higher milk volumes; Nasal oxytocin prior to pumping does NOT increase milk production (p. 436, Frewtrell et al., 2006). Apparent effects of release of exogenous oxytocin produce positive social
interactions (Uvnas-Moberg, 1997; 1998). Oxytocin is released by pleasant stimuli such as warmth, touch, and odors and it can become conditioned to emotional states and images. Conditioning of this response is harder for the preterm mother and is usually conditioned by walking into NICU, using breast pumps, dealing with hospital situations, so KC ameliorates these forces effects on oxytocin release (Feldman, et al., 2002). There is no scientific reason to restrict the duration of skin to skin care unless the infant becomes physiologically unstable while on the mother’s chest” (g. 436). “Typically a skin to skin session is terminated on the mother’s availability rather than infant criteria. The position of the infant in skin to skin care is important to maintain physiologic stability and recliners are ideal in achieving this position. The infant should be placed upright between the mother’s breasts with the side of the infant’s face placed against the internal surface of one breast (and shows figure 13.3 which show the recliner at 45.65 degree angle from the floor.) A mirror is positioned to allow the mother to see her infant’s face and is helpful during these sessions. Skins to skin sessions of two or more hours are ideal (pg. 437). And it is not uncommon for infants to display behaviors that suggest autonomic instability when returned to the incubator following skin to skin care (Kristin, Bergman, & Hann, 2001). Chapter 24, The Cultural Context of Breastfeeding, pages 799-816, on page 808 it says under Infant Care “Swaddling or bundling is an ancient practice….In parts of the world that do not have intensive care nurseries, premature infants who are clinically stable go directly to the mother as early as 2-3 hours after birth by being held in an upright position, skin to skin between their mother’s breasts, they are kept warm (Anderson, Marks, Wahlberg,1986; Anderson , 1992). This practice has spread to intensive care units worldwide in many countries and is now known as Kangaroo Care.” BF, oxytocin, pleasant touch, scent, milk production, BF, BF initiation, maintenance, programming of oxytocin. BF, Birth KC, VEKC, attachment, bonding, Not on charts


Roberts, K.L., Paynter, C.& McEwan, B. (2000). An RCT comparison of Kangaroo Mother Care and Conventional Cuddling Care. Neonatal Network, 19(4), 31-35. Australia RCT of 30 healthy preterms, ≥30wk GA (KC BW = 1562 ad GA= 31.70), control = 1481 and GA=, no O2 help, with stable temp for 24 hrs, in crib or incubator randomly assigned to 2 hrs/day X Sdays/wk x 4 wks of KMC (n=16) or holding while clothed (n=14). Control group got some swaddled holding. No differences in weight gain, temperatures, duration of BF, parental stress (PSS-NICU) score KMC= 3.3, 4.0, 4.4, 4.8 while controls = 3.2, 4.0, 3.4, 4.31, or parental expectations score. Also measured Parental Expectations Survey (KMC= 8.4 controls = 8.8) Limitations were clinician values for temp & wt gain, no calibration of scales or interrater reliabilities, small sample size, and inability to do inferential stats because of small sample size.Says Holding while Clothed is not a Control. Shorter length of stay in KC group than controls. PT, RCT, Preterms, PARENTAL KC. Length of Stay, Paternal KC, Weight, BF, parental stress, temperature. SEE TURNER COMMENTS.

Robiquet P, Zamiara PE, Rakza T, Deruelle P, Mestdagh B, Blondel G, Turck D, Subtil D. (2016-Mar). Observation of Skin-to-Skin Contact and Analysis of Factors Linked to Failure to Breastfeed Within 2 Hours After Birth. Breastfeed Med. 11(3), 126-132. doi; 10.1089/bfm.2015.0160 Successful breastfeeding at birth seems to be associated with skin-to-skin contact between mother and newborn and newborn suckling, both within the first 2 hours of life. In practice, knowledge about the number and cause of interruptions of this contact has to be increased.To measure the actual time of skin-to-skin contact in the first 2 hours after birth, the events that occur during this period, and search for factors linked to failure to breastfeed. Thirty women wishing to breastfeed gave their consent for us to observe and analyze the first 2 hours of the baby’s life during skin-to-skin contact.Mean total duration of skin-to-skin contact for the 30 newborns during the first 2 hours was 90.4 ± 25.0 minutes. 17 (56.7%) were interrupted at least twice during this time, mainly for neonatal care. The first interruption took place before the first breastfeeding in 60% of cases, Mean time before the first breastfeeding was 44.6 ± 21.1 minutes. Seven infants did not breastfeed in the first 2 hours (23.3%). The factors linked to this failure were multiparity, lower umbilical arterial pH at birth, and early interruptions in skin-to-skin contact. Among them, only early interruptions of skin-to-skin contact appear to be modifiable. In the first 2 hours of life, early interruptions of skin-to-skin contact should be discouraged as they reduce the chances of early breastfeed. PT, descriptive study, duration of KC, Birth KC, interruptions to Birth KC, BF not on charts 3-22-16; New to biblio study.

Rocha, B., Bouzada, M.C., Machado, M., Barbosa, L., Santos, A.P., Sousa, T., (2017-Oct). RISK FACTORS FOR DELAYED ONSET OF LACTOGENESIS II AMONG BRAZILIAN Breastfeeding Med. 12( S1): 30-31. Abstract#59 fromThe Academy of Breastfeeding Medicine 22nd Annual International Meeting Atlanta, Georgia November 9–12, 2017 http://online.liebertpub.com/doi/full/10.1089/bfm.2017.29058.abstracts Low milk supply is frequently reported as a reason for breastfeeding as early weaning. The purpose of this study was to determine the occurrence of and the risk factors for delayed onset of lactogenesis II (>72h after birth) in a population of primiparous mothers who gave birth to a healthy, single, term infant at Santa Casa de Misericordia de Belo Horizonte, during the 3-month recruitment period (2017) were invited to participate if they met the eligibility criteria and were willing to attempt to breastfeed exclusively. Lactation guidance was provided and data were collected in the hospital (day1) and on days 4, 7, and 14. Onset of KCBib 2018
lactation was defined based on maternal report of changes in breast fullness. Data were analyzed using SPSS15.5 for Windows and Statas/SE11.0. Chi-square tests detected covariates independently associated with delayed onset of lactogenesis and the variates with p-value < 0.05. Our analysis included 170 mothers. Delayed onset of lactation occurred in 20% of women and was significantly associated with the following variables in the bivariate analyses: maternal age, breastfeeding Self-Efficacy Scale scores, intrapartum disorders, skin-to-skin contact, intra-hospital formula use, gestational diabetes and baby weight loss at discharge. In the multiple logistic regression, the significant variables were Breastfeeding Self-Efficacy Scale scores (OR:0.91; CI:0.85-0.96), intrapartum disorders (OR:3.3; CI:1.07-10.22) and gestational diabetes (OR:4.28; CI:1.36-13.40). The incidence of delayed onset of lactogenesis II in our study population fell within the range of previously published incidence rates (17%-44%). The associated risk of gestational diabetes is consistent with previous research. Intrapartum disorders may be consistent with other studies outcomes regarding to stress during labor and delivery. Breastfeeding self-efficacy significantly influences breastfeeding outcomes and all breastfeeding mother-infant pairs should be evaluated 72-96 hours postpartum. FT, descriptive, BF, 3rd Not on charts Brazil study.

Rocha, B., Bastos, L., Machado, M., Barbosa, L., Santos, A.P., Sousa, T. & Bouzada, M.C. (2017-Oct). 60. RISK FACTORS FOR EARLY BREASTFEEDING CESSATION AMONG BRAZILIAN PRIMIPAROUS MOTHERS. Breastfeeding Med 12(3): 31. Abstract #60 from The Academy of Breastfeeding Medicine 22nd Annual International Meeting Atlanta, Georgia November 9–12, 2017 http://online.liebertpub.com/doi/full/10.1089/bfm.2017.29058.abstracts. The protective effect of breastfeeding increases with its duration and exclusivity. This study aimed to identify factors related to breastfeeding cessation on day 7 and 14 after birth among 170 mothers who gave birth at a Baby-Friendly Hospital in Brazil. All primiparous mothers who gave birth to a healthy, single, term infant were invited to participate in the study. Data were collected at the hospital (day 0), by phone call on day 4, during a hospital visit on day 7 and during a phone call on day 14. The babies were weighed, breastfeeding practices were evaluated and Edinburgh Postnatal Depression Scale and Breastfeeding Self-Efficacy Scale (BSES) were filled out on day 7. Data were analyzed using SPSS15.5 for Windows and Statas/SE11.0. Chi-square tests detected covariates independently associated with breastfeeding cessation and the variables p < 0.20 were included in the multivariate logistic regression model. Results: Breastfeeding cessation rates were 17.2% and 18.5%, respectively on day 7 and 14. Education level, working mothers, pre-natal assistance, gestational diabetes, gestational disorders, type of delivery, skin-to-skin contact, breastfeeding assistance, gestational age, income status, delayed onset of lactogenesis, pacifier, gestational weight gain, newborn weight at birth and the weight loss at discharge, fixed hours for breastfeeding, nipple pain, maternal age, maternal body mass index, and BSES were in the backward process selection (p < 0.05). Lactogenesis delayed onset and BSES lower scores were associated with breastfeeding cessation on day 7. Working mothers and lower BSES scores were associated with cessation on day 14. Conclusions: Women with increased risk for delayed lactogenesis onset should be targeted in intervention to promote breastfeeding. Breastfeeding self-efficacy significantly influences breastfeeding outcomes and all nursing mothers should be evaluated at 72–96 hours postpartum. Other studies in Latin American countries have provided evidence that nursing mothers working outside home are less likely to breastfeed their infants exclusively not on charts.


Rodriguez-Alarcon, J., Melchor, J.C, Linares, A., Aranguren G, Quintanilla M, Fernández-Llebrez L, de la Gándara A, Rodriguez-Soriano J. (1994). Early neonatal sudden death syndrome (SIDS) is a rare but well known disease entity. Between January 1975 and December 1991, 29 full-term newborn infants delivered in our maternity unit and, considered healthy at birth, suffered early SIDS (n = 15) or early apparent life threatening events (ALTE) (n = 14). Data from the whole population of live full-term infants born in our hospital during the past five years have been used as a reference (n = 27,841). The general rate of early SIDS was 0.14 per 1000 (15/107,263). Combining early ALTE cases, the overall rate was 0.27 per 1000 (29/107,263). A postmortem examination was performed for all infants who died (20/29): no cause of death could be determined, and we did not observe a single case with evident sequelae. There were 9 deaths (31%) within the first hour after delivery and 12 deaths occurred in the early morning hours (04:00-08:00; RR = 3.76; p = 0.0008). The lowest incidence was in the spring (RR = 0.21; p = 0.03). There was a tendency for an increased incidence during the weekend and the summer. No influence of sex, maternal age, gestational age, infant weight presentation, delivery, anesthesia or presence of meconium-stained fluid was found. In our opinion, SIDS can take place even during the first hour of life and it is not possible to predict when a baby might be affected. Pediatrically trained caregivers, close observation by the mother during the first few days and resuscitation facilities in maternity wards may be the most important preventive measures to reduce the risk of early SIDS and the consequences of ALTE in the early newborn period. FT, birth KC, life threatening event. Not on Charts 9/3/2013. The abstract does not mention KC but this articles being cited as having infants prone skin to skin against maternal chest. This needs to be checked out.

in four periods comprising 35 years, examining charts from 208,220 live neonates. In the most recent period, there was a statistically significant increase in the rate of ALTE and sudden deaths in neonates. Risk factors were birth KC, primiparity, increased incidence in night hours, and invariable occurrence of these events in the second period of neonatal adaptation (30 minutes to 90 minutes of life). 8 patients had ALTE and of these 8, two had neurological sequelae and another died. ALTE in the first two hours after birth are uncommon, but have serious consequences. One of the main risk factors may be skin to skin contact between infant and mother in the delivery room during early adaptation period. As such contact has been proven to be beneficial and without apparent risks, this practice should be promoted. However, maternity staff should be vigilant during skin to skin contact, especially if the mother is alone with her neonate or other risk factors are present. FT, Birth KC, mortality, negative event, ALTE, Spain. See also Melchor Marcus from Spain too. Apparent life threatening event. This may be officially listed in pubmed under GOMEZ, but I can’t find it under that so I listed it under Melchor

Rojas, MA, Kaplan M, Quevedo M, Sherwonit E, Foster LB, Ehrenkranz RA, & Mayes L (2003). Somatic growth of preterm infants during skin-to-skin care versus traditional holding: A randomized controlled trial. J. Developmental and Behavioral Pediatrics 24(3), 163-168. 60 preterms (swaddled holding = 28; KC =33) <32 wks gestational age, <1500 grams, hemodynamically stable with minimal ventilatory support. KC was for up to 8 hours/day (periods up to 4 hours/twice a day) every day until infant reached 2000 grams or was discharged, whichever was first (KC occurred for 1-28 days, swaddled holding occurred for 0-15 days with a median of 1 session per day). Fathers held infants a mean 27% of swaddled holding and 31% of KC time, and 30/33 fathers gave KC. Rate of head growth was higher in KC group; weight gain, linear growth, caloric intake, survival were not significantly different between groups (but 2 KC babies died during study, one swaddled died). KC group had significantly greater total head growth and head growth rates once head size at birth was accounted for. 926 (35%) of swaddled were successfully breastfed. 18/30 (60%) of KCs were successfully breastfed... KC was “strongly associated with successful breastfeeding” (p. 165). Fewer KC infants had episodes of oxygen desaturation during handling, and trend for fewer episodes of hypothermia and regurgitation in KC group (p. 166). Preterm, RCT, Paternal KC, temperature, regurgitation, BF, LOS, head circumference, length, weight, daily caloric intake, mortality, oxygen saturation, SaO2 desaturation, successful BF, hypothermia. (Not on charts yet)

Roller CG. (1999). Kangaroo care for a restless infant with gastric reflux: One nurse midwife’s personal experience. MCN: American Journal of Maternal Child Nursing, 24(5): 244-246. Full-term infant who was given SURROGATE KC by the CNM because mother was unavailable. Infant had severe and refractory GER but was GER free during two feedings given with KC two days apart. Fullterm, Case study, SURROGATE KC, PT, gastroesophageal reflux

Roller CG. (2005). Getting to know you: Mothers’ experiences of kangaroo care. J Obstet Gynecol Neonat Nurs, 34(2), 210-217. 10 mothers of preterms with APGAR of 6 or more at 1 minute and 7 or more at 5 mins (1500-3000 gms who have completed 32-36 wks age) answered in 15-90 minute semi-structured interviews: “What was it like for you to provide KC for your preterm infant while in the hospital?” They were questioned at home about their infant care routines intended for staff and invariable occurrence of these events in the second period of neonatal adaptation (30 minutes to 90 minutes of life). In th


Romano AM. (2007a). Research summaries for normal birth, I Perinatal Education 16(4), 70-74. This is a review of the Moore, Anderson and Bergman Cochrane Database of Systematic Reviews 2007 Early skin-to-skin contact for mothers and their healthy newborn infants. It repeats the findings and has a big section of significance for normal birth, eschewing the separation that occurs, the sensitive period being the first 2-1 hours postbirth, and concludes that denying healthy infants skin to skin contact is harmful (pg. 71). “With such compelling evidence, it is unethical to continue to deny healthy babies and their mothers skin-to-skin contact after birth. The principles of beneficence (doing good) and nonmaleficence (do not harm) demand that uninterrupted time for mothers and babies after birth take priority over labor-ward routines intended for staff convenience and hospital efficiency and that postpartum and newborn interventions be either delayed or, when necessary, carried out with the baby and mother skin-to-skin”. Pg. 71 Review, BF, Fullterm, separation,

Romano AM. (2007b). Research summaries for normal birth, I Perinatal Education 16(3), 53-58. This months summary reviews the Jonas et al., 2007 article, repeating the findings and saying that the small study does nto provide strong evidence of any harm of epidural or oxytocin augmentation, but does tell of wide-ranging and unpredictable disturbances caused by intervening in the normal birth.
process. Babies might not get full benefit of KC if not able to respond to KC as nature intended (without medication influence).p. 55. Does provide beginning information that epidurals containing fentanyl (close to sufentanil, a drug which crosses the placenta) increase the risk of early breastfeeding cessation. Review, fullterm, Breastfeeding, temperature, birth KC, epidurals.

Romano, A.M. (2009). Deconstruction junction: how to separate the good evidence from the bad (and from the ugly). J Perinatal Education 19(4): 49-55. The Bystrova et al., June 2009 study is critiqued so that readers will not be misled. Two other articles are also reviewed. She says, “GARBAGE IN, GARBAGE OUT.” She relates that one message given to new mothers is “Keep mothers and babies skin-to-skin after birth. This exposes the baby to beneficial bacteria on the mother’s skin, facilitates early breastfeeding, and lowers the likelihood that the baby will exhibit signs or symptoms that mimic infection, such as low temperature, or low blood sugar, which could cause the need for blood tests or spinal taps to rule out infection.” (p. 51). On page 53 she starts her critique and is critical of the fact that KC begins after a battery of procedures and disruptions (Bystrova, 2009, Mizuno et al, 2004, Moore & Anderson, 2007) and says this is a weakness in the studies and this practice represents harm to the newborn because routine care of the newborn is not normal and is harmful because normal bonding is really adaptation to and overcoming disruptions that are not benign because they disrupt normal adaptation which is being with mother. The harms of compulsory practices dictated by tradition overwhelm and obscure the benefits of KC. Just imagine what benefits we might see if KC truly was immediate, prolonged, and undisturbed.” (pg. 54). Review, FT, Birth KC; non-separation.

Romano, A.M. (2010). A new vital sign for maternity care: duration of skin-to-skin contact after birth. Quickening 41(3), 15. This is a simple review related to the Joint Commission’s release of perinatal core measures and the United States Breastfeeding Committee’s document for hospitals called “Implementing the Joint Commission Perinatal Core Measure on Exclusive Breast milk Feeding” (See US BF Committee citation). “But, if hospitals are serious about improving their exclusive breast feeding rates, they should get serious about measuring the duration of skin-to-skin care. A new study in the J. of Human Lactation (view it at http://bit.ly/dnFrjA) demonstrated a strong dose-response relationship between skin-to-skin care and exclusive breast feeding at hospital discharge. FT, commentary, Exclusive BF.Birth KC.

Romano, A.M. (2011). Safe and healthy birth: The importance of data. The Journal of Perinatal Education, 19(4), 52-58. Review article of aspects of maternity care about which data is needed in addition to the routine data of birth which is for medical billing practices only and does not identify supportive, low tech practices that could drive improvements that will affect long-term physical and emotional health, maternal infant attachment, breastfeeding, family-centeredness, and women’s satisfaction with care. Data means anything observed, measured, and documented. 3 new types of data are needed; 1) duration of skin-to-skin contact after birth as a means to improve exclusive breastfeeding rates for Joint Commission accreditation, 2) role of qualitative data describing how women and providers experience maternity-care practices, and 3) limitations of combining data from many different contexts to glean information about the safety of planned home births. “A new vital sign for maternity care: Duration of skin-to-skin contact after birth. The Joint Commission rolled out a bundle of perinatal quality measures in 2009 (See Advance for Nurses as author). One measure is the proportion of newborns discharged from hospital having consumed only breastmilk during their stay. The USBreastfeeding Committee (USBC,2010 reference) stated that “Compliance with the new core measures may require facilities to modify their paper charts and/or electronic medical records. Thus, facilities may want to consider charting modifications that support breastfeeding (such as length of time in skin-to-skin contact, especially immediately following birth)” (pg2 of USBC, 2010) and page 53 of Romano article. “If hospitals are serious about improving their exclusive breastfeeding rates, they should get serious about measuring the duration of skin-to-skin care. A new study in the J of Human Lactation demonstrates a strong dose response relationship between skin-to-skin care and exclusive breastfeeding at hospital discharge (and cites Bramson et al, 2010). . . Using data from nearly 22,000 mothers and their healthy, full term babies, the reseachers found the dose response relationship even after controlling for whether the woman intended to exclusively breastfeed, education, ethnicity, anesthesia, mode of birth and other factors. The findings are strong and consistent – the dose response pattern held up in multiple calculations applying various assumptions. FT, Rev, guidelines, Birth KC duration, electronic medical record, CORE MEASURE. NOT ON CHARTS


Roos, T. & Roos, N. (2011). The Miracle of Kangaroo Mother Care. For Every Parent and Every Baby. Rare Inspirational Stories of Infant Survival. No publisher, You get this book online, Pay $27.00-47.00 US Dollars for it and then download 120 pages on your own printer. The book is available at www.themiracleofkangaroomothercare.com This begins with the store of Kate and David Ogg whose baby was declared dead and then came back to life 2 hours later while in Kangaroo Care (Chapter 6, The Twins From Down Under. Pg. 58-75. Though mostly stories of how mothers had to fight the nurses and hospitals to be able to do Kangaroo care with their preterm and fullterm infants, the stories also include some evidence from Natalie KCBib 2018
Charpak and Kerstin Nyqvist. The book ends with Yamilie Jackson's use of KC in the hurricane and how she developed the Kangaroo Zak in honor of her son Zachary who survived (Chapter 12. Zachary Jackson: 906 grams of Pure Inspiration) Pg. 111-119. PT, FT, mother's feelings, implementation, Compassionate KC, end of life, separation Book

Rousseau PV, Francotte J, Fabbricatore M, Frisshchen C, Duchateau D, Perin M, Gauthier JM, Lahaye W (2014). Immobility reaction at birth in newborn infant. Infant Behavior and Development 37(3), 380-386 doi: 10.1016/j.infbeh.2014.05.001. There is an immobility reaction that has not been previously reported ata or immediately after birth in human newborns. 31 videos of healthy term vaginal birth infants from Time 0 of birth = birth of thorax to birth of pelvis. The Immobility reaction (IR) was seen in 8 of 31 infants. Features are immobilization, frozen face, shallow breathing, bradycardia. One had SUPC 2 hours after birth. Related factor was maternal prenatal stress (close to significance was infant’s livdness (Being furiously angry or being blue or gray purplish, discolored, black and blue discoloration by breathing). THE first breath in all 31 infants occurred before Time 0 and was NOT associated with FIRST CRY. IR signs are similar to those of the universal most severe response to severe stress or danger. Children with IR at birth might be at risk for similar disorders as those associated with prenatal stress and they maybe at risk of SUPC and SIDS. FT, SUPC, immobility reaction, infant stress (not on charts 7/14/2014)

Rowe-Murray, H, & Fisher, J. (2003). Baby Friendly Hospital practices: Cesarean section is a persistent barrier to early initiation of breastfeeding. Breastfeeding Review 11(1), 21-27. This is a study to improve BF and KC is mentioned on pages 128, 129 and 130. Review of practice of step 4 of Baby Friendly initiative which is skin-to-skin contact within half hour of birth. Says that in cesarean section births this seldom occurs and continues to impede initiation of breastfeeding. FullTerm, BF, Very Early KC, Cesarean section, Baby Friendly Not on charts yet


Ruiz JG, Charpak N, Castillo M, Bernal A, Ríos J, Trujillo T, Córdoba MA. (2016-Oct). Randomized Controlled Trial on Kangaroo Mother Care in Bogotá: Cost-utility analysis. J Clin Epidemiol. pii: S0895-4356(16)30587-X. doi: 10.1016/j.jclinepi.2016.10.007. [Available online]. Kangaroo-Mother Care (KMC) has been shown to be safe and effective in randomized controlled trials (RCT), there are no published complete economic evaluations including the three components of the full intervention. Cost-utility analysis on the results of a RCT conducted in Bogotá, Colombia between 1993 and 1996 was conducted. Hospital and ambulatory costs were estimated by microcosting in a sample of preterm infants from a University Hospital in Bogotá in 2011, and at a KMC clinic in the same period. Utility scores were assigned by experts by means of: a) direct ordering and scoring discrete health states, and b) constructing a multi-attribute utility function. Ninety-five per cent confidence intervals for the incremental cost-utility ratios (ICUR) were computed by the Fiellers theorem method. One-way sensitivity analysis on price estimates for valuing costs was performed ICUR at 1 year of corrected age was $ -1,546 per extra QALY gained using the KMC method (95% CI $-7,963 to $ 4,910).In Bogotá, the use of KMC is dominant: more effective and cost-saving. Although results from an economic analysis should not be extrapolated to different systems and communities, this dominant result suggest that KMC could be cost-effective in similar LMIC settings. PT, says RCT, but it is descriptive comparative cost analysis of an RCT study from 1990’s with the comparison being in a KMC clinic in 2011, cost . Get this. Ruiz-Pelaez, J.G. & Charpak, N. (1998). Kangaroo Care: Commentary on a Commentary. Birth 25(1): 62-64.


Rupprecht, T., & Wittal, L (2012). Kangaroo care in the Beirut Clinic. Kinderkrankenschwester. 2012 May;31(5):203-5. No abstract available so I need to get this somehow! NOT ON CHARTS, don’t know if it is full term or preterm LEBANON

Russell, K., Weaver, B., & Hsu, J-P. (2011). Effect of a maternal simulated intervention on physiologic and developmental behaviors of 28-34 week gestation infants in a Level III neonatal intensive care unit. Presentation Nov. 2, 2011 at American Public Health Association 139th Annual Meeting and Exposition, Oct. 29-Nov. 2, 2011, Washington, DC. Abstract #235705. Preterms have many problems that interventions have been created to ameliorate, i.e. nesting rolls, etc. But few of these have been studied. Quasi-experiment of 45 infants randomized into four groups of different interventions to explore over time when developmentally appropriate interventions were applied. Differences in pain scores, apnea/bradycardia episodes, vital signs, occurrence of self-regulatory and stress behaviors were observed. Infants receiving the maternal simulated intervention (does not mention what it is in any way, nor what the other four interventions are), had fewer episodes of apnea/bradycardia. The odds of observing stress over time were higher for standard care and stress behaviors were observed.


Sachdev HPS. (2003). “Kangaroo Mother Care” method to reduce morbidity and mortality in low-birth-weight infants: RHL commentary (last revised 2 June 2003). The WHO Reproductive Health Library, Geneva: World Health Organization. Available from http://apps.who.int/ichald/newborn/hpconc/en/p164.html. This is a 3 page document of a Cochrane type meta-analysis of 14 trials (I was not randomized and were excluded) yielding 3 trials in developing countries of 1362 infants <2000 gm. Trials were Charpak et al., 1997; Cattaneo et al., 1998; Sloan et al., 1994; Charpak et al., 2001). Meta-analysis showed that KMC reduced nosocomial infection at 41 wks, including lower respiratory tract infection at 6 months. KMCers gained more weight per day at discharge even tho this was of low clinical significance. KCBib 2018


Ryan J, Russell, K., Weaver, B., Vogel, R.L.(2015 Sept). Preterm births: a global health problem. MCN Am J Matern Child Nurs. 40(5):278-83. doi: 10.1097/NMC.0000000000000174 Globally, in 2012, there were 15 million babies born preterm. The majority of preterm births occur in resource-poor countries including India, Nigeria, Pakistan, and the Democratic Republic of Congo where many die due to lack of basic skilled nursing care. In September 2000, the United Nations signed the Millennium Development Declaration establishing eight Millennium Development Goals (MDGs). These MDGs provide specific, measurable targets that are designed to provide equitable health to all, particularly the most vulnerable including preterm infants. On May 2, 2014, the World Health Organization specifically targeted the nursing workforce as a key stakeholder in strategies to reduce global prematurity and end preventable preterm newborn deaths. Specific strategies include primary care, screening for risk factors, kangaroo mother care, and early initiation of breastfeeding with exclusive breastfeeding for the first 6 months of life, sharing our knowledge and skills. Nurses can contribute to global actions being taken to end preventable preterm newborn deaths. PT, FT, Review, nurses are responsible for helping reduce prematurity and preterm newborn (neonatal death) deaths. Mortality, guidelines

Sloan et al., 1994; Charpak et al., 2001. Meta-analysis showed that KMC reduced nosocomial infection at 41 wks, including lower respiratory tract infection at 6 months. KMCers gained more weight per day at discharge even tho this was of low clinical significance. KCBib 2018
significance (3.6 gms/day 95%CI =0.8-6.4) No differences in mortality, KMC reduced likelihood of NOT being EXCLUSIVELY BF at discharge but there was no difference in exclusive BF rates at one and six months follow-up.Fewer mothers were dissatisfied with care. Psychomotor development was similar between KMC and incubator groups at one year age. Page 2 says that hypothermia and not being BF are the major underlying contributors to morbidity in LBW and predispose them to infection and mortality. Maternal acceptability of 24 hour KMC in hot and humid environments has not been studied. This Cochrane meta-analysis of 3 247 KMC RCTs is not robust and “does not as yet support the use of this method on a large scale” (pg. 2). Has good summary of LBW incidence & problems in Southeast Asia. PT, LBW, Meta-analysis, 24/7 KMC, infections, weight gain, EXCLUSIVE BF, mortality, maternal dissatisfaction, psychomotor development

Saeidi, R., Tafazoli, M., & Robatsang, M.G. (2010). Kangaroo mother care for infantile colic: a randomized controlled trial. *Tehran Journal of Medical Sciences*, 37(7), 580-586. 961 infants who got 10 minutes of maternal KC before during and after injection until newborn stopped crying. Other group got 10 minutes of undisturbed positioning in quiet room before injection and after the injection until the infant stopped crying (n = 50). Mean HR was lower (p<0.001) and SaO2 was higher (p<0.001) during and 3 minutes after injection in maternal KC vs no-KC group. FT, PAIN, HR, RCT, SaO2

Sakaki, H., Nishioka, M., Kanda, K., & Takahashi, Y. (2009). An investigation of the risk factors for infection with methicillin-resistant Staphylococcus aureus among patients in a neonatal intensive care unit. *American Journal Infection Control (Am J Infect Control)*, 37(7), 580-586. 961 infants hospitalized in a teaching hospital NICU in Japan from July 2002 through December 2005 provided routine daily clinical data. At baseline, KC group had 3.5 hrs/day crying and it significantly dropped to 1.7 hr/day, awake and content behavior significantly increased in KC group, as did sleep. NO difference between groups in feeding duration. (FT, RCT, crying, colic, sleep, wake, feeding, Diary) Write to Mahbobhe Gholami Robatsangi at midwiferymaster26279@gmail.com

Sajedi, F., Kashaninia, Z., Amiinejad, M., Esmaeili, H., & Robatsang, M.G. (2011). Use of “kangaroo care” to alleviate the intensity of vaccination pain in newborns. *Iran Journal of Pediatrics*, 21(1), 99-102. Randomized controlled trial double blind, two group clinical trial in which 60 NSVD healthy (Apgars 7-10) and birthweight 2500-4000 gm were randomly assigned to KC (rec - got two minutes of KC before vaccination and then got 3 more minutes after vaccination; control rec - wrapped in blanket and put aside mother), HR, SaO2, crying time and pain by Neonatal/Infant Pain Scale (NIPS) score >3 indicates pain and measures facial expression (relaxed muscle 0, grimace1), crying (none -, whimper 1, vigorous cry 2), Breathing pattern (Relaxed 0, change 1) Arms (relaxed/restrained 0, extended 1), State of arousal (sleeping/awake 0, fussy 1) were measured. Infants were not fed for 30 minutes before vaccination. Randomized control case controlled clinical trial of 60 healthy FULLTERM infants who were videotaped receiving the vaccination when at least 24 hours old. Non-random purposive sampling but did use random assignment. During the shot, 30% KC infants had 6.0 pain & 70% had score of 7; 96.6% of controls had score of 7 and 3.3% has score of 6(p<0.001). Three minutes after vaccination, 93.3% of KC had pain score 0 and only 6.6% had score of 6 or 7; 70% controls had score of 0 and 26% had scores of 6 or 7 (p<0.021). Mean pain intensive 3 minutes after injection was sig lower in KC infants. KC infants had shorter cryduration during and after vaccination than controls. Oxygen saturation before vaccination (KC= 95.80, control +94.07) during vaccination (KC= 96.17,control=95.53) and after vaccination (KC= 95.60, controls = 95.10) essentially no difference in SaO2 between groups. No SaO2 values were significantly different. FT, RCT, pain, HR, SaO2

Safe Motherhood. (2004). Kangaroo Mother Care. Safe Motherhood. A newsletter of worldwide activity. Issue 31, 2004 (1.), p. 5. This a review of the Kangaroo Mother Care book produced by WHO so countries can establish their own programs of KMC. This newsletter is available from World Health Organization, 1211 Geneva 27, Switzerland or through rhpublications@who.int. The ISSN is 1014-9511. FT, guidelines


Sajedi, F., Kashaninia, Z., Rahegozar, M., & Noghhabi, F. (2007). The effect of kangaroo care on physiologic responses to pain of an intramuscular injection in neonates. *Iranian J of Pediatrics*, 17, 339-344. No doi. This is same group of subjects as Kashaninia 2008 study. 100 infants, 50 who got 10 minutes of maternal KC before during and after injection until newborn stopped crying. Other group got 10 minutes of undisturbed positioning in quiet room before injection and after the injection until the infant stopped crying (n = 50). Mean HR was lower (p<0.001) and SaO2 was higher (p<0.001) during and 3 minutes after injection in maternal KC vs no-KC group. FT, PAIN, HR, RCT, SaO2

Sahakian, Robatsangi M., & Takahashi, Y. (2009). An investigation of the risk factors for infection with methicillin-resistant Staphylococcus aureus among patients in a neonatal intensive care unit. *American Journal Infection Control (Am J Infect Control)*, 37(7), 580-586. 961 infants hospitalized in a teaching hospital NICU in Japan from July 2002 through December 2005 provided routine daily clinical data. At baseline, KC group had 3.5 hrs/day crying and it significantly dropped to 1.7 hr/day, awake and content behavior significantly increased in KC group, as did sleep. NO difference between groups in feeding duration. (FT, RCT, crying, colic, sleep, wake, feeding, Diary) Write to Mahbobhe Gholami Robatsangi at midwiferymaster26279@gmail.com

Sakaki H., Nishiohka M, Kanda K, & Takahashi Y. (2009). An investigation of the risk factors for infection with methicillin-resistant Staphylococcus aureus among patients in a neonatal intensive care unit. *American Journal Infection Control (Am J Infect Control)*, 37(7), 580-586. 961 infants hospitalized in a teaching hospital NICU in Japan from July 2002 through December 2005 provided records to determine risk factors for MRSA. 28 infants (29%) developed MRSA. Multivariate logistic regression analyses demonstrated the following risk factors: low birth weight (odds ratio 0.91), presence of eye mucus (OR 6.78), practice of kangaroo mother care (OR 3.82), and MRSA colonization rate (OR 11.12). Thus, practice of KMC is a risk factor for developing MRSA and isolating MRSA infants should prevent spread. Descriptive study of records. PT, infections, MRSA. negative findings NOT ON CHARTS AS OF JULY 1, 2009.

Knowledge, attitude, and practice regarding early breastfeeding initiation within the first hour of life is a potential mechanism for health promotion and is considered to be an indicator of breastfeeding quality. Knowledge, attitude, and practice regarding early breastfeeding initiation within the first hour of life in both the Pediatrics and Gynecology and Obstetrics Departments of Minia University Hospital, Minia, Egypt were evaluated. Forty groups of participants from both the Pediatrics and Gynecology and Obstetrics Departments of Minia University Hospital, each of them consisting of 30 individuals, used a questionnaire to assess the knowledge, attitude, and practice regarding early breastfeeding initiation for each group. Sixty percent of women delivered by spontaneous vaginal delivery and 16.7% of those delivered by cesarean section initiated breastfeeding within 30 minutes to 1 hour after birth. Forty percent of lactating women delivered by spontaneous vaginal delivery, 83.3% of lactating women delivered by cesarean section, and 38.7% of healthcare workers used prelacteal feed instead of early breastfeeding initiation. The most important factors affecting the breastfeeding initiation were maternal illness followed by immediate skin-to-skin contact. Although the majority of women participating in this study exhibited knowledge about early breastfeeding initiation, actual application of this practice was clearly deficient. To improve the rates of breastfeeding initiation within the first hour of life we should enhance vaginal delivery and prenatal classes and implement Baby-Friendly Hospital Initiative policies in both the Pediatrics and Gynecology and Obstetrics Departments of Minia University Hospital. FT, descriptive evaluative study. Maternal illness was main factor affecting early initiation of BF and KC was 2nd main factor and its practice is DEFICIENT. FT, descriptive, BF, Birth KC, cesarean

Sallam SA, Babas GM, Sadek RR, Mostafa AM. (2012). Knowledge, Attitude, and Practices Regarding Early Start of Breastfeeding Among Pregnant, Lactating Women and Healthcare Workers in El-Minia University Hospital. Breastfeed Med. 2012 Oct 5. [Epub ahead of print] Breastfeeding within the first hour of life is a potential mechanism for health promotion and is considered to be an indicator of excellence of breastfeeding. Knowledge, attitude, and practice regarding early breastfeeding initiation within the first hour of life in both the Pediatrics and Gynecology and Obstetrics Departments of Minia University Hospital, Minia, Egypt were evaluated. Forty groups of participants from both the Pediatrics and Gynecology and Obstetrics Departments of Minia University Hospital, each of them consisting of 30 individuals, using a questionnaire to assess the knowledge, attitude, and practice regarding early breastfeeding initiation for each group.

Sampaio AR1, Boussquat A2, Barros C1. (2016-Apr-Jun). Skin-to-skin contact at birth: a challenge for promoting breastfeeding in a "Baby Friendly" public maternity hospital in Northeast Brazil. Epidemiol Serv Saude. 2016 Apr-Jun;25(2):281-290. doi: 10.5123/S1679-49742016000200007. Objective was to identify prevalence of compliance with the fourth step of the Baby-Friendly Hospital Initiative - to put the babies in skin-to-skin contact with their mothers immediately after birth for at least half an hour - in a public hospital in Northeast Brazil. This was a cross-sectional study using data from interviews with mothers who had recently given birth during a typical week in 2014. 107 mothers were interviewed; 9.3% had completed the fourth step properly; the fourth step was negatively associated to cesarean section (p<0.01), and adequacy was not associated with receiving guidance on breastfeeding during the prenatal period or with breastfeeding in the first hour of life. Low compliance with the fourth step is cause for concern, especially because this is a Baby-Friendly Hospital; cesarean section was detrimental to infant skin-to-skin contact with their mothers immediately after birth.

Samra, N. (2017-Oct) THE EFFECT OF KANGAROO MOTHER CARE ON WEIGHT GAIN OF LOW BIRTH WEIGHT NEONATES WITH DELAYED WEIGHT GAIN AND ITS EFFECT ON THE DURATION OF PHOTOTHERAPY OF INFANTS RE-ADMITTED FOR NEONATAL JAUNDICE. Abstracts from the Academy of Breastfeeding Medicine’s 22nd Annual International Meeting, Atlanta, GA Nov. 9-12, 2017. in Breastfeeding Medicine, 12(S1): 32. Kangaroo Mother Care (KMC) was developed in Colombia in the 1970s (Nyqvist et al., 2010). However it remains unavailable in most low-income countries (Lawn et al., 2010). To evaluate the effect of intermittent Kangaroo Mother Care (KMC) on weight gain in low birth weight neonates with delayed weight gain after the first week and also We investigated the effect of kangaroo mother care (KMC) on the duration of phototherapy of jaundiced neonates. A prospective observational study was performed on forty low birth weight newborns who had not started to gain weight after seven days, to see if KMC would help to induce weight gain. Our outcome measures were the mean postnatal age of regaining birth weight and the average daily weight gain. Another Fifty Egyptian newborns hospitalized for jaundice were investigated through a prospective observational study to determine whether intermittent KMC would reduce the duration of phototherapy required. In the KMC group compared to the controls, the mean postnatal age of regaining birth weight was significantly less (15.68 versus 24.56 days) and the average daily weight gain was significantly higher (22.09 versus 10.39 gm), (p < 0.001). Outcome measures had a very strong negative correlation (r = 0.00). The babies who received KMC recovered earlier from jaundice and needed a shorter duration of phototherapy than the control group (68.14 ± 24.32 hour versus 100.86 ± 42.26 hour, p = 0.004). KMC was found to be an effective intervention for inducing weight gain in low birth weight babies with delayed weight gain also KMC may

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be an effective intervention to reduce the duration of phototherapy needed when jaundiced babies are hospitalized. PT, Egypt, descriptive prospective observational study, weight gain, phototherapy duration. Not on charts

Samra, N.M., El Taweel, A., & Cadwell, K. (2013). Effect of intermittent kangaroo mother care on weight gain of low birth weight neonates with delayed weight gain. Journal of Perinatal Education, 22(4), 194-200. (Oct. 2013). Non-randomized controlled quasi-experimental 40 LBW with delayed weight gain (did not gain weight until after Day 7 of life) were followed after complete stabilization (all entered study at 8 days of life) to determine if KC (n=22 infants) with additional opportunities to breastfeed during the one hour of KC, two times per day, 7 days /week until birth weight regained, improved weight gain compared to standard care (n= 18) (standard care was in incubator, infants fed every two hours full strength LBW formula alternatively with mom’s expressed breastmilk so that infants got 130kcal/kg/day. Mothers had to be coming to the NICU and breastfeed twice daily to be eligible and provided KMC for at least an hour. No differences in baseline data and demographic/medical characteristics (GA, BW, mean weight loss and wgt at enrollment) between the groups (pg. 196-197), and the mean postnatal age at which KCers regained birthweight was 15.7 ± 0.7 days, in controls =24.6±/3.8 days, p=0.01; mean daily weight gain was significantly higher in KMC group (22.1+/2.5g) vs controls (10.4+/2.5g; p=0.001). KC with ad lib Breastfeeding was only factor independently contributing to outcomes and neonates had 17.4 +/-1.3 additional Breastfeeds during the mean of 15.7 days of treatment. Because infants spend their energy in the following prioritized areas: basic metabolism, body temperature regulation, and then body growth (Tourneux, P., Libert,J.P., Ghyselen, L., Leke, A., Delanadan, S., Degrugilliers,L., Bach, V. (2009). Heat exchanges and thermoregulation in the neonate. Archives de Pediatrie, 16(7), 1057-1062.) and because KC reduces energy spent on metabolism and thermoregulation, most energy is directed towards growth (pg. 198). PT. Quasi experimental cuz no randomization, daily weight gain, regain birth weight, breastfeeding ad lib, basic metabolism or metabolic rate, 3rd world

Samra, N.M., El Taweel, A., & Cadwell, K. (2011). The effect of kangaroo mother care on the duration of phototherapy of infants re-admitted for neonatal jaundice. Journal of Maternal-Fetal and Neonatal Medicine, 24, 2011, 1-4, Online. DOI: 10.3109/14767058.2011.634459. Fifty preterm (60% of subjects) and full term infants (Gestational age ranged from 35-40 weeks) with birth weights ranging from 2000-3750 gms who were admitted to the NICU over a four month period for clinical jaundice (80%- 40/50 had physiologic jaundice and 20% or 10/50 had breastfed associated jaundice). None of these were hemolytic disease associated jaundice were studied. Moms who could give intermittent KMC were assigned to the KMC group (n=28) and gave KC three times a day for at least one hour in each session, 7 days/week until jaundice resolved and had phototherapy intermittently (pg. 2 upper right column., 2nd paragraph); mothers who could not come to give KMC were assigned to control group (n=22; continuous phototherapy and no KC). All infants were fed formula or expressed mother’s milk when available.Inclusion criteria were: onset of jaundice at 48-72 hours, peak serum bilirubin occurring at day 3-5 of age, rate of rise of bilirubin <5 mg/dl/day and conjugated bilirubin level less than 2 mg/dl at any time. They excluded breastmilk jaundice infants (defined as onset of clinical jaundice on days 5-10 of life, peak serum bilirubin level occurring at day 15, rate of rise of bilirubin 1-2 mg/dl/day, and the infant is thriving (Page-Goertz, S. Hyperbilirubinemia and hypoglycemia. In Walker M. (ed.) Core Curriculum for Lactation Consultant Practice. Sudbury, MA: Jones & Bartlett Publishers, 2002, p. 289). Phototherapy stopped when bilirubin plateaud and began to fall (pg. 2,left column, 3rd paragraph), or in babies whose Total Serum Bilirubin=18 mg/dl or higher when serum bilirubin levels falls below 13mg/dl. No significant differences between groups on delivery mode, gender, gestational age, mean birth weight, mean onset of jaundice, mean peak bilirubin level, and cause of neonatal jaundice. Clinical jaundice appeared later in babies with breastfeeding jaundice than in physiologic jaundice babies. KMC and cause of jaundice (BF or physiological) were two independent predictors of the duration of phototherapy. Duration of phototherapy was significantly shorter in KMC (68.14 +/- 24.32 hours, R=40-130 hrs) than control group (100.86 +/- 42.26 hours, R=48-192 hrs) (p=0.004). Babies with Breastfeeding associated jaundiced needed longer duration of phototherapy (125.80 days) than physiologic jaundice babies (71.72 days). This article also addresses pain and length of stay, saying that KMC reduces pain and stress that preterm infants have and reduces length of stay which should reduce cost of care. PT, FT, NOT an RCT, but quasi-Experimental, PT, FT, bilirubin, phototherapy, LOS

Sandin-Bojos, A-K, Hall-Lord, M-L., Axelsson, O., Uden, G., & Wilde Larsson, B. (2004). Midwifery care: development of an instrument to measure quality based on the World Health Organization’s classifications for care in normal birth. Journal of Clinical Nursing, 13: 75-83. This a Delphi study to establish a tool to measure quality maternity care delivered by midwives. The World Health Organizations gold standard recommendations(pg. 76) from 1996 (WHO, 1996, on this hib) were used as elements to be evaluated and the elements encompassed four areas: 1)Practices that are demonstrably useful and should be encouraged and KC is one of these, stated as “item #51: The baby is put skin-to-skin with the mother within 30 minutes after delivery.” (p. 78), 2) practices that are clearly harmful or ineffectual and should be eliminated (i.e. enema, pubic hair shaving, etc.) 3)practices for which insufficient evidence exist to support a clear recommendation and which should be used with caution while further research clarifies the issue (i.e. fundal pressure), and 4Practices that are frequently used inappropriately (i.e oxytocin use during second stage). When they tested the tool on 15 intraparatal records, the option ‘don’t know’ had to be recorded for “the baby is put skin-to-skin after deliveries” (pg. 80) because this was not charted. Another tool of quality care is the Bologna Score by Chalmers B & Porter R. 2001. Assessing effective care in normal labour: the Bologna score. Birth, 28, 79-83 and another is Murphy PA & Fullerton’s JT 2001 Measuring outcomes of midwifery care: development of an instrument to access optimality. J Midwifery and Women’s Health, 46,274-284. Descriptive, FT, quality care, birth KC, lack of charting KC., guideline/recommendation

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Sandin-Bojo, A-K, Hall-Lord, M-L, Axelsson, O, & Wilde Larsson, M-L. (2007). Intrapartal care in a Swedish maternity unit following a quality improvement project. Midwifery, 23, 113-132. Quality improvement project to have more the WHO 1996 guidelines put into practice in a Swedish maternity unit and this did occur. Improvements in skin to skin placement so that it was almost routine, were seen. Quality Improvement Project, Descriptive evaluation, FT, Birth KC, guideline implementation.

Sandin-Bojo, A-K, Hashimoto, M, Kanal, K, & Sugiyama, Y. (2011). Intrapartum care at a tertiary hospital in Cambodia: A survey using the Bologna Score. Midwifery, Epub ahead of print. Developing countries aim to reduce maternal-infant mortality by establishing good health care practices. This is a descriptive study of childbirth care practices in a Cambodian hospital that delivers 8,500 birth/year, as measured by the Bologna Score instrument. The Bologna Score Instrument reflects the adaptation of evidence-based care and attitudes of caregivers. Bologna Score was calculated for 177 consecutive midwife managed (63%) or physician managed (35%) childbirths of term infants. All women survived, but a full 5-point Bologna Score was not achieved for any woman. A full 5-point score indicates that evidenced-based management of vaginal delivery is occurring. Use of supine position, presence of accompanying person in the birth room, use of the partogram, use of skin-to-skin contact, absence of labor augmentation, and lack of episiotomy are evidenced-based practices measured by the Bologna Score. Only ¼ of the vaginal births had skin-to-skin contact during the first two hours postbirth. The Bologna Score is easy to use and identifies practices that can be improved. Bogota score of good third stage of labor practice. The fifth question on the score is whether skin to skin contact is maintained for at least 30 minutes during the first hour after birth. Descriptive, FT, Birth KC, Bologna Score, routine Birth KC, Evidenced-based implementation measure. Not on Charts 1.3.2012 Put in Fairview manuscript and in KC course.

Sandin-Bojo, A-K & Kvist, L-J. (2008). Care in labor: a Swedish survey using the Bologna Score. Birth, 35(4), 321-328. The Bologna Score measures 1. presence of a companion to the woman. 2. Whether a partogram (Friedman curve) was used. 3. Absence of augmentation including external physical pressure on the fundus or emergency cesarean. 4. Woman gave birth in a non-supine position. 5. The fifth question on the score is whether skin to skin contact is maintained for at least 30 minutes during the first hour after birth. Each of the five areas gets a score of 1, so maximum score is 5 and means that deliveries are managed according to the best available evidence for care in normal birth. In Sweden in 2008, birth is managed according to scientific evidence to a limited degree. KC was quickly adopted. FT, Bologna score, Birth KC Recommendation/guidelines

Sandin-Bojo AK, Kvist LJ, Berg M, Larsson BW (2011). What is, could be better: Swedish women's perceptions of their intrapartal care during planned vaginal birth. International Journal of Health Care Quality Assurance, 24(4):81-95. This descriptive study of 1173 women's responses to a questionnaire about their perception of the quality of their general care and quality of specific intrapartal care was taken 2 months postpartum. Women were asked to rate “perceived reality” and “subjective importance” of each item of WHO recommendations for care in normal birth. On page 89 it revealed that mothers rated “I had the possibility to have the baby skin-to-skin directly after birth” with subjective importance as higher than perceived reality but normal birth mothers had higher perceived reality on this than cesarean mothers. 89% reported a positive birth experience, HAVING a POSSIBILITY OF BIRTH KC IS VERY IMPORTANT TO MOTHERS. Birth KC, WHO guidelines., maternal perception.

Sandin-Bojo, A-K, Wilde Larsson, B., Axelsson, O., & Hall-Lord, M-L. (2006). Intrapartal care documented in a Swedish maternity unit and considered in relation to the WHO's recommendations for care in normal birth. Midwifery, 22, 193-286 or is it 2007. The is a study of women's perceptions of their childbirth experiences in Sweden with midwives and comparing the practices to those recommended by WHO for normal births. Practices revealed that there is little evidence that birth is seen as a normal physiological process with as few interventions as possible in the birthing process (pg. 2994) and all the interventions are associated with a negative birth experience. One of the WHO recommendations and the FIRST in the category “After the baby is born” is “the baby was placed skin-to-skin” (Figure 1 on page 2996) and on page 2996 it says “almost all women reported that “the baby was put skin-to-skin” and on page 2997 it states “After the baby was born the items ‘the baby was placed skin-to-skin’ followed by ‘I was helped to breastfeed within two hours’ showed the highest ratings for being practice.” Women’s perceptions of birth were negative if the infant was sent to NICU and 34% perceived their deliveries as normal even though they received practices that were harmful, have insufficient evidence for practice exists, and practices that were frequently used inappropriately. FT, Birth KC, Guideline/Recommendation, routine birth kc. Be sure to go to Sandin-Bojo AK, Hall-Lord ML, Axelsson O, Uden G, and Wilde Larsson B, (2004) Midwifery care: development of an instrument to measure quality based on
the World Health Organization’s classification of care in normal birth.  Journal of Clinical Nursing, 13, 75-83 because I think this is development of the Bologna Score.

Sandin-Bojo, A-K., Wilde Larsson, B., & Hall-Lord, M-L. (2006). Intrapartal care documented ina Swedish maternityunit and considered in relation to World Health Organization recommendations for care in normal birth. Midwifery, 22, 207-217. Descriptively evaluated 212 consecutive childbirth records to determine if WHO recommendations were being followed. Vag exams were carried out more often than recommended and practices that were harmful, with insufficient evidence and practices used inappropriately were used to a large extent. In third stage three items were not documented at all: placing infant skin to skin, sterility in cutting the cord and waiting for pulsations to stop before clamping the cord. Birth KC, WHO recommendations.

Sandin, Attie (2/25/2012). Attie reports this KC Story: I had an awesome situation today while working in Labour and Delivery. Baby with severe fetal distress and mother with CPD and loads of Meconium. Post birth APGARS 5/6/9. Still a bit grumpy after deep suction for mec below cords by RT. who than suggested baby should go skin to skin in Recovery Room. It took about 15 minutes for us to get mom out of OR and baby still a bit grumpy went skin to skin in 30 degree angle between breasts. Warmed up and pinked well and became calm etc. I have seen much of this but usually these kids have gone to the nursery because of the deep suctioning and as the circulating nurse I can't say too much but I become the mom and baby nurse in the RR so this went very well. I loved the changes. Parents were pleased to especially since baby breastfed before leaving RR and was transferred to the PP floor in the skin to skin position. Could not have gone better. ;-) Sure I would have liked to see skin to skin in OR but mother was very nauseous and shaky. Connect with Attie at Attie_Sandink@gmail.com, KC Story

Santos J, Pearce SE, Stroustrup A. (2015-April). Impact of hospital-based environmental exposures on neurodevelopmental outcomes of preterm infants. Curr Opin Pediatr, 27(2):254-60. doi: 10.1097/MOP.0000000000000190. Over 300,000 infants are hospitalized in a neonatal intensive care unit (NICU) in the United States annually during a developmental period critical to later neurodevelopmental function. Environmental exposures during the fetal period and infancy have been shown to impact long-term neurobehavioral outcomes. This review summarizes evidence linking NICU-based environmental exposures to neurodevelopmental outcomes of children born preterm. Preterm infants experience multiple exposures important to neurodevelopment during the NICU hospitalization. The physical layout of the NICU, management of light and sound, social interactions with parents and NICU staff, and chemical exposures via medical equipment are important to long-term neurobehavioral outcomes in this highly vulnerable population. Existing research documents NICU-based exposure to neurotoxic chemicals, aberrant light, excess sound, and restricted social interaction. In total, this creates an environment of co-existing excesses (chemicals, light, sound) and deprivation (touch, speech). The full impact of these co-exposures on the long-term neurodevelopment of preterm infants has not been adequately elucidated. Research into the importance of the NICU from an environmental health perspective is in its infancy, but could provide understanding about critical modifiable factors impacting the neurobehavioral health of hundreds of thousands of children each year. PT, review, light, sound, separation, stress. NOT on Charts 1/29/2018.


Save the Children, (2010). Advocating for Kangaroo Mother Care. Westport, CT: Save the Children. Available from Save the Children, 54 Wilton Road, Westport, CT 06880, or 1-800-728-3643 or www.savethechildren.org. Each year 29,000 Mali infants die in the first month of life, 25% due to prematurity. KMC is an effective way to care for small infants and can reduce deaths by more than half (cites Lawn, which has many methodological problems in the analysis). In KMC moms provide warmth, have facilitated breastfeeding and better bonding. KMC began in Mali in2001where there was prevailing belief that small babies were destined not to survive and little or no effort was given to ensure their survival. Save the children brought KMC to the community, where almost half of babies are born. Save the Children developed the Essential Newborn Care package, which was first phase of Save Newborn Lives program, and the second phase (2006-2011) of this program is to Scale up KMC and move it from hospitals to throughout a country. Starts the steps taken to spread ENC (which includes KMC) and establish KMC units in Mali hospitals and how they are proceeding. PT, Implementation report, 247KMC, Essential Care of Newborns.

Save the Children. (May 2013). Surviving the First Day. Washington, DC: Save the Children. This is the first ever of how many babies die on their birth day around the world and presents the first ever BIRTH DAY RISK INDEX and lists countries doing the best and KCBib 2018
doing the worst at preventing these deaths in 186 countries to identify the safest and most dangerous places to be born. On pg 8 it says: “?

in the industrialized world, the United States has by far the first-day deaths. An estimated 11,300 newborn babies die each year in the United States on the day they are born. (now page 9 begins:) This is 50 percent more first day deaths than all other industrialized countries combined.” On page 27 it says “The United States is #1 in industrialized counties. The USA has more deaths on the first day of life than any other industrialized country.” Survival strategies for mothers and newborns have received relatively little emphasis in public health programs. (pg. 43). On pages 40-43 it says: “There are three effective interventions for newborn survival. They are breastfeeding, kangaroo mother care, and clean cord care to prevent infection. “Kangaroo mother care” is a simple effective way for mothers to help underweight babies survive the first critical days of life. Preterm and low birthweight babies need special care, particularly with regard to warmth and feeding. Through this approach, mothers are taught how to keep their newborns warm through continuous skin-to-skin contact on the mother’s chest. This encourages the mother and baby to bond emotionally and enables the baby to breastfeed at will, giving the baby energy to produce his own body heat. In many cases, kangaroo care reduces the need for incubators, which are prohibitively expensive in developing countries. A recent comparison of studies in 15 developing countries found that kangaroo care was more effective as incubator care, cutting newborn deaths by 51 percent for preterm babies who were stable (citation 131- probably Lawn). An analysis based on these findings suggested that up to half a million newborns could be saved each year if kangaroo care was promoted everywhere.”

Review, oxytocin, postpartum hemorrhage PPH, BF

Saxton A, Fahy K, Hastie, C. (2014-Dec). Effects of skin-to-skin contact and breastfeeding at birth on the incidence of PPH: A physiologically based theory. Women and Birth. Online:27(4):250-3. doi: 10.1016/j.wombi.2014.06.004 This is a physiology review that supports the hypothesis that KC at birth accompanied by breastfeeding will diminish likelihood of postpartum hemorrhage as found in Saxton’s 2013 article. The importance of optimising maternal/baby psychophysiology has been integrated into contemporary midwifery practices not in the detail required to really understand the underpinning biological basis. The functioning of the autonomic nervous system, as it relates to the uterus is reviewed. The physiology of myometrial cell contraction and relaxation is outlined. The main focus is on the factors that affect the availability and uptake of oxytocin and adrenaline/noradrenaline in the myometrial cells. These are the two key neuro-hormones, active in the 3rd and 4th stages of labour, that affect uterine contraction and retraction and therefore determine whether the woman will have an atomic PPH or not. The discussion explains and predicts the physiological functioning of the uterus during the 3rd and 4th stages of labour when skin-to-skin contact and breastfeeding occurs and when it does not. This biologically based theory hypothesises that to achieve and maintain eutony and eulochia, midwives and birthing women should ensure early, prolonged and undisturbed skin-to-skin contact for mother and baby at birth including easy access for spontaneous breastfeeding.

PT, physiology review, oxytocin, postpartum hemorrhage PPH, BF

Saxton A, Fahy K, Hastie, C. (2014-Dec). Pronurturance Plus at birth: A risk reduction strategy for preventing postpartum haemorrhage. Women & Birth, 29, 279-284 doi: 10.1016/j.wombi.2015.11.007. Postpartum haemorrhage (PPH) rates continue to rise in the developed world. A recent study found that any skin-to-skin contact and breastfeeding within 30min of birth was associated with an almost 50% reduction in PPH rates. Improved oxytocin release is the biological reason proposed to explain this. The combination of skin-to-skin contact and breastfeeding within 30min of birth is termed ‘Pronurturance’. Midwifery theory and research claims that optimal third stage care is more holistic than simple Pronurturance which suggests that further reductions in PPH rates may be possible. What can midwives and women do to minimise blood loss in the third and fourth stages of labour? We present a new theory that describes and explains how to optimise the woman’s reproductive psychophysiology in the third and fourth stages of labour to ensure a well contracted uterus which inhibits excessive bleeding regardless of risk status or whether active management was used. In developing the Pronurturance Plus theory we expand upon what is already known about oxytocin in relation to simple pronurturance to integrate concepts from birth territory theory, cognitive neuroscience, mindfulness psychology and the autonomic nervous system to develop an holistic understanding of how to optimise care and minimise PPH. Pronurturance Plus is a psycho-biologically grounded theory which is consistent with existing evidence. It is free, natural and socially desirable. Review, theory, birth KC. Postpartum hemorrhage. New to Bibliography

Saxton A1, Fahy K2, Rolfe M3, Skinner V4, Hastie C5 (2015-Nov). Does skin-to-skin contact and breast feeding at birth affect the rate of primary postpartum haemorrhage: Results of a cohort study. Midwifery.31(11):1110-7. doi: 10.1016/j.midw.2015.07.008. (Author information)Southern Cross University, Southern Cross Drive, Bilinga, Qld 4225, Australia. Electronic address: Dfars1@pacific.net.au). To examine the effect of skin-to-skin contact and breast feeding within 30 minutes of birth, on the rate of primary postpartum haemorrhage (PPH) in a sample of women who were at mixed-risk of PPH Retrospective cohort study: Two obstetric units plus a freestanding birth centre in New South Wales (NSW) Australia. After excluding women (n=3671) who did not have opportunity for skin to skin and breast feeding, I analysed birth records (n=7548) for the calendar years 2009 and 2010. Records were accessed via the electronic data base ObstetriX. Skin to skin contact and breast feeding within 30 minutes of birth. Outcome measure was PPH i.e. blood loss of 500ml or more estimated at birth. Data was analysed using descriptive statistics and logistic regression (unadjusted and adjusted). After adjustment for covariates, women who did not have skin to skin and breast feeding were almost twice as likely to have a PPH compared to women who had both skin to skin contact and breast feeding (aOR 0.55, 95% CI 0.41-0.72, p<0.001). This apparently protective effect of skin to skin and breast feeding on PPH held true in sub-KCBib 2018
analyses for both women at 'lower' (OR 0.22, 95% CI 0.17-0.30, p<0.001) and 'higher' risk (OR 0.37 95% CI 0.24-0.57, p<0.001).

KEY CONCLUSIONS AND IMPLICATION FOR PRACTICE: this study suggests that skin to skin contact and breastfeeding immediately after birth may be effective in reducing PPH rates for women at any level of risk of PPH. The greatest effect was for women at lower risk of PPH. The explanation is that pronurturance promotes endogenous oxytocin release. Childbearing women should be educated and supported to have pronurturance during third and fourth stages of labour. FT, evaluative study, retrospective chart review.

Saxton, A., Fahy, K., Skinner, V. & Hastie, C. (2013). Effects of immediate skin-to-skin contact and breastfeeding after birth on postpartum hemorrhage (PPH) rates: A cohort study. Women and Birth, 26(Suppl 1)Oct. 2013, S16-17. Doi: http://dx.doi.org/10.1016/j.wombi.2013.08.268. Descriptive regression analysis of medical records of >10,000 births in the Obstetrix database to determine if birth KC influenced postpartum hemorrhage. PPH rates are >20% in many major OB units and continue to rise despite active medical management. PPH is based on the four Ts (tone, tissue, trauma, and thrombin). Authors argue that the high rate of PPH is based on medical reductionistic model of labor physiology which ignores the impact of the environment and maternal emotions. They asked, “Do immediate skin-to-skin contact and early breastfeeding impact the rate of PPH? And if so, why?” (Answer is oxytocin). … When a woman had skin-to-skin contact with her baby at birth she was less likely to have a PPH (p<0.0001, Odds ratio = 27.04, Confidence interval= 2.17-3.297). When a woman breastfed her baby after birth, she was less likely to have PPH (p=0.0001; OR=1.578, CI=1.334-1.866).” (pg. S17) The reason is a “cascade of endogenous oxytocin occurs most and acts most effectively when physiologic care is provided in labour and continues into the 3rd and 4th stages of labour and thereby minimizes PPH rates.” (S17). Fullterm, regression analysis, birth KC, PPH, BF


Schanler RJ. (2001). The use of human milk for premature infants. Pediatric Clinics of North America, 48(1), 207-219. This review article covers the role of fortification and states “the potential stimulation of an enteromammary pathway through skin-to-skin contact provides species-specific antimicrobial protection for premature infants, and this needs to be explored. Thus, neonatal centers should encourage the feeding of fortified milk, together with skin-to-skin contact, as reasonable methods to enhance milk production while potentially facilitating the development of an enteromammary response.” Review, breastfeeding, mother’s milk, enteromammary pathway, dermal pathway

Schanler, R.J. (1995). Suitability of Human Milk for LBW Infants. Clinics in Perinatology, 22(1): 207-222. A nursery policy that advocates early skin-to-skin contact between LBW infant and mother may improve host defense of the infants” (211). “Guidelines for feeding LBW infants must include skin-to-skin contact to promote development of maternal antibodies” (217). Premise is that baby’s skin picks up NICU pathogens and when in contact with mom’s skin passes them to her. She then makes antibodies, “it is possible that the mother may make specific IGA antibodies against nosocomial pathogens in the infant’s environment and pass them along to the infant in breast milk”. Schanler, R.J., Fraley, J.K., Lau, C., Hurst, N.M., Horvath, L., & Rossmann, S.N. (2011). Breastmilk cultures and infection in extremely premature infants. Journal of Perinatology, 31(5), 335-338. DOI: 10.1038/jp.2011.13. Correlational study to determine if serial microbial cultures of mothers milk predict infection in premature infants because mothers milk is known to be colonized by microbial species based on the hypothesis that the presence of specific microbial flora in expressed mothers milk was correlated with subsequent infection in the neonate. 161 mothers of premature infants <30 wks gestation contributed aliquots that were subjected to plate counts for microbial flora. 813 samples of milk yielded 1963 isolates. KC was practiced by 77% of the mothers who were mostly graduates of college and 11% had incomes >$100,000. Most common isolate was staphylococcus epidermidis, but it lists many more on the 3rd page. There were no relationships between microbial counts and maternal age, ethnicity, education, KC, and infant infection. Initial cultures of milk did not predict later cultures of milk, so taking a milk sample just once is not sufficient to predict exposure during all feedings. Routine milk cultures are not useful in identifying potential infection. PT, correlational study, breastmilk, infection.

Schanler RJ, Lau C, Hurst NM, & Smith EO. (2005). Randomized trial of donor milk versus preterm formula as substitutes for mothers' own milk in the feeding of extremely premature infants. Pediatrics, 116(2), 400-406. Preterms <30 wks GA were enrolled on Day 4 of life and were randomly assigned to receive either donor milk (n=81) or preterm formula (n=92) if mothers milk (mm) supply was insufficient from birth to 90 days of age or hospital discharge (whichever was sooner) and compared to infants who received only mother’s milk (n= 70 or 29%). Duration of KC was measured daily. 17 infants in donor milk (DM) group had insufficient weight gain and were switched to preterm formula (PF). Outcomes measured after attainment of milk intake of 50mL/Kg were late onset sepsis (no diff between donor milk and preterm formula groups), NEC (no diffs), meningitis (no diffs), presumed sepsis (no diffs), urinary tract infection (no diffs), dietary intake (DM intake > PF but slower rate of weight gain), weight gain (see note above), head circumference (no diffs), KC(mother’s milk gave more episodes and longer duration of KC than other 2 grps- detailed below), and duration of hospital stay (no diffs) and mortality.

KCBib 2018
(no diff). MM group had less LOS, NEC, and total infection related events, and shorter hospital stay, fewer gram neg organisms in blood cultures. Donor milk offered little observed short term advantage of Preterm formula. Exclusive mothers own milk showed advantages of fewer infection related events and shorter stay in hospital. “Skin-to-skin contact was correlated positively to intake of mother’s milk (r=0.47, p<0.001), negatively with preterm formula intake (r=-0.25, p=0.18), and not with donor’s milk (r= -0.08, p=0.18). Skin-to-skin contact was not correlated with the number of infection –related events (late onset sepsis, necrotizing enterocolitis, meningitis, presumed sepsis, or urinary tract infection)(pg. 403). KC was given by 5(69%) mons and 2(26%) pops in donor milk group; by 6(65%) mons and 2(24%) pops in preterm formula group, by 65(93%) mons and 33(47%) pops in mother’s milk group. The percent of mothers and fathers providing skin-to-skin contact was not significantly different between donors milk and preterm formula groups, but was significantly greater (p<0.001) in mothers milk group compared to combined values for the donors milk and preterm formula groups (pg. 404). The number of episodes of KC also differed between the groups: M=5.0,SD=7.5 in donors milk group, M=5.2, SD =7.7 in preterm formula group, and M=11.6,SD =12.6 in mothers milk group, with no significant difference between donors milk and preterm formula groups but significant difference (p<0.001) between mothers milk and combined donors milk and preterm formula groups. Duration of KC also differed between groups: M=318 minutes SD =873 in donor milk group, M=349, SD = 596 in preterm formula group; M=962, SD = 1452 minutes in mother’s milk group and this was not different between donor’s milk and preterm formula groups, but was different (p=0.001) between mother’s milk and combined donors milk and preterm formula groups.PT, RCT, BF, paternal KC, donor milk, infection, head circumference, weight, mortality, NEC. Comparisons are between donor milk, mother’s milk, and preterm formula,not between KC and nonkc.

Scher, M.S. (2008). Ontogeny of sleep. Sleep Medicine 9(6): 615-636. This review article traces the expected patterns of postnatal brain maturation and changes occurring due to alterations from genetically programmed neuronal processes under stressful and/or pathological conditions. Also says that kangaroo care improves sleep and may be beneficial to the brain. Automated analyses of cerebral and noncerebral signals provide time- and frequency- dependent computational phenotypes of brain organization and maturation in healthy and diseased states. These computational phenotypes can be used to design longitudinal studies for the assessment of gene-environment interactions. Serial neonatal and infant electroencephalographic (EEG)-polysomnographic studies document the ontogeny of cerebral and noncerebral physiologic behaviors based on visual inspection or computer analyses. EEG patterns and their relationship to other physiologic signals serve as templates for normal brain organization and maturation, subserving multiple interconnected neuronal networks. Interpretation of serial EEG-sleep patterns also helps track the continuity of brain functions from intrauterine to extraterrestrial environment time periods. Recognition of the ontogeny of behavioral and electrographic patterns provides insight into the developmental neurophysiological expression of neural plasticity. Sleep ontogenesis from neonatal and infancy periods documents expected patterns of postnatal brain maturation, which allows for alterations from genetically programmed neuronal processes under stressful and/or pathological conditions. Automated analyses of cerebral and noncerebral signals provide time- and frequency-dependent computational phenotypes of brain organization and maturation in healthy or diseased states. Research pertaining to the developmental origins of health and disease can use these computational phenotypes to design longitudinal studies for the assessment of gene-environment interactions. Computational strategies may ultimately improve our diagnostic skills to identify special-needs children and to track the neurorehabillitative care of the high-risk fetus, neonate, and infant. Review, brain maturation and development. Not on charts yet.


Scher MS, Johnson MW. Ludington SM, Loparo K. (2011). Physiologic brain dysmaturity in late preterm infants. Pediatric Research,70(5), 524-528. doi: 10.1038/pr.2011.749. Neonatal EEG sleep was used to determine whether differences were expressed between healthy late preterm and full-term (FT) groups. Twenty-seven 24-channel multichannel studies were recorded at similar postmenstrual ages (PMA) and analyzed for eight asymptomatic late preterm infants (LPT) compared with 19 healthy FT infants as a preliminary analysis, followed by a comparison of a subset of eight FT infants, matched for gender, race, and PMA. Z scores were performed on data sets from each group pair comparing each of seven EEG/Sleep measures for entire recordings, active sleep (AS) and quiet sleep (QS) segments and artifact-free intervals. Six of seven measures showed differences between the eight LPT and eight matched FT cohort pair comparisons of >0.3; rapid eye movements, arousals during QS, spectral correlations between homologous centrencephalic regions during QS, spectral beta/alpha power ratios during AS and QS, a spectral measure of respiratory regularity during QS, and sleep cycle length. Quantitative neurophysiologic analyses define differences in brain maturation between LPT and FT infants at similar PMA. Altered EEG/Sleep behaviors in the LPT are biomarkers of developmental neuroplasticity involving interconnected neuronal networks adapting to conditions of prematurity for this largest segment of the preterm neonatal population. PT, RCT, Sleep brain studies, brain development, NOT ON CHARTS 4/12/2014

between parents and infants. Analyses of EEG-sleep studies can compare functional brain maturation between SSC and non-SSC cohorts. Sixteen EEG-sleep studies were performed on eight preterm infants who received 8 weeks of SSC, and compared with two non-SSC cohorts at term (N=126), a preterm group corrected to term age and a full-term group. Seven linear and two complexity measures were compared (Mann-Whitney U test comparisons p<.05). Fewer REMs, more quiet sleep, increased respiratory regularity, longer cycles, and less spectral beta were noted for SSC preterm infants compared with both control cohorts. Fewer REMs, greater arousals and more quiet sleep were noted for SSC infants compared with the non-SSC preterms at term. Three right hemispheric regions had greater complexity in the SSC group. Discriminant analysis showed that the SSC cohort was closer to the non-SSC full-term cohort. Skin-to-skin contact accelerates brain maturation in healthy preterm infants compared with two groups without SSC. Combined use of linear and complexity analysis strategies offer complementary information regarding altered neuronal functions after developmental care interventions. Such analyses may be helpful to assess other neuroprotection strategies.

PT, comparative descriptive study, sleep, brain studies NOT on charts, new to bible study

Schneider C, Charpak, N., Ruiz-Pelaez, J.G., Tessier, R. (2012-Oct). Cerebral motor function in very premature-atbirth adolescents: a brain stimulation exploration of kangaroo mother care effects. Acta Paediatrica, 101(10), 1045-1053. doi: 10.1111/j.1651-2227.2012.02770.x A Quasi experimental pretest-test historical control design with 10 preterm infants (8 provided complete data sets for all analyses) who had been randomized by computerized minimization technique into the KC care for 8 weeks of KMC (1.5 hours/day x 4 days/week from 32-40 weeks postmenstrual age (enrollment and testing occurred within 2 weeks of both dates) EEG sleep analyses conducted at 32 and 40 weeks PMA in incubator in NICU for pretest and in KMC in NICU for KC group. 126 historical controls (X no KC preterms tested in NICU in incubator for pretest and for test periods; and X fullterm infants tested in sleep lab with 48 hours of birth). 22 EEG-based outcomes were evaluated and calculated as test-pretest change. Scorer of EEG was blind to period, but new that some of the preterms had been given KMC. When KC preterms were compared to both fullterms and non-KC preterms, KC group had fewer REMS (p=.0001), longer sleep cycle lengths (p=.0148), higher percentage of quiet sleep (p=.0005), less spectral beta power (p=.0529) (less energy in the beta band because infant is in quiet sleep more than active sleep), and increased spectral respiratory irregularity (p=.0077) (more chaotic respiratory signal in the brain so its value is higher and closer to 1.0 than a sinusoidal signal that has all of its energy focused at a single frequency for score close to 0.0). When KC preterms were compared to non-KC preterms at term age, the K group had fewer REMS (p=.0006), higher percentage of quiet sleep (p=.0002), more arousals during quiet sleep (p=.0002), and higher spectral beta power (p=.0136). EEG frequencies have been separated into bands, alpha (8-13 Hz) and beta (13-22 Hz). Each band is a unitless measure of the energy in the band and the energy differs dramatically between quiet and active sleep states. Measures of sample entropy (complexity of neuronal connections) showed that KC infants had greater complexity in five brain regions than non-KC preterms at term age (the brain regions were in the right hemisphere and left and right parasagittal regions. When KC infants were compared to both non-KC preterms and term infants as one group, 3 brain regions had greater complexity in the KC preterms: all 3 regions were in the right hemisphere. And KC infants had less complexity in the posterior quadrant of the left hemisphere when compared to both non-KC groups. More advanced neurophysiologic development for KC infants over an 8 week period. More advanced maturation and more complexity of multiple neuronal pathways within the brainstem, diencephalon, and cortex. Better development of ponto-medullary to basal-frontal pathways of respiration was present in KC preterms; better development of pedunculo-pontine/geniculo-calarcar pathways of REM behavior, and better development of the ascending reticular activating pathway serving arousal; better development of the corticothalamic pathways service quiet sleep, and better development of cortico-cortical pathways service spectral beta power and complexity of the brain. KC positively affected neuronal networks throughout the neuroaxis. Changes in the right hemisphere reflect the right hemisphere’s greater responsivity to sensory stimulation than the left hemisphere which is “hard wired” for activation at later age control of language and motor functions. KC hastens brain maturation and may influence neurodevelopmental outcomes. FEWER REMS, MORE QUIET SLEEP, INCREASED RESPIRATORY REGULARITY, LONGER SLEEP CYCLES and LESS SPECTRAL BETA FOR KC preterms at term compared towh control cohorts were shown. Quasi-experiment with historical controls, sleep, arousals, REM, quiet sleep, active sleep, respiratory regularity, and brain maturation, complexity.

Schlez, A., Litmanovitz, I. Bauer, S., Dolfin, T. Regev, R. & Armon, S. (2011). Combining kangaroo care and live harp music therapy in the neonatal intensive care unit setting. Israel Medical Association Journal, 13(6), 354-358. Anxiety reduction in the NICU is needed (P. 354) and music reduces stress. Live harp music was used because Lai found that recorded music and KC reduced maternal KCBib 2018
anxiety and live music is better stress reducer than recorded music. The tempo of the music was 60-70 beats/min and was played 1-2 meters from dyad and decibel level 10 cm from infant’s ear was 50–65dB with a frequency of 25-10,000 Hz, but they aimed for listening volume of 50–65 dB. The background noise during KMC alone was 40.6 dB and during KMC + harp it was 58.1 dB. They played familiar Jewish and Arab music like lullabies. 52 Stable infants, 32-37 weeks gestation with normal hearing were randomly assigned to KMC and live harp music or to KMC alone. Neonatal and Maternal HR, SaO2, RR and neonatal behavioral state (documented every two minutes) and maternal anxiety. Behavioral state was measured on 7 point scale (deep sleep, light sleep, drowsy, quiet awake or alert, actively awake and aroused, hugely aroused, upset, or crying, and prolonged respiratory pause >8 seconds (based on Ains, Lawhon, Brown et al., Pediatrics, 1986, vol. 78, 1123-1132.), maternal anxiety measured by state trait anxiety inventory scale of Spielberger CD, Gorschuk RL, Lushene R, Vagg PR, & Jacobs GA. Manual for state-trait anxiety inventory: STAI (Form Y), Palo Alto, Consulting Psychologist Press, 1983) KMC and live harp music had significant beneficial effect on maternal anxiety only (46.5 vs 27.7) over KMC alone, but did not change any other parameter. No correlation between mother’s age, ethnicity, years of education and affinity for music and maternal anxiety was found. KMC with harp music is more beneficial in reducing maternal anxiety than KMC alone, but the combined therapy had no effect on infant’s physiologic reponses and behavioral state. Susie Ludington has one problem with concealment in this RCT: On page 356 it states “Data were recorded by a single physician (SA) who remained at the bedside throughout each session. Data were analyzed in a blinded fashion by SA who was unaware of treatment allocations” (pg. 356.) How can one be UNAWARE of live harp music being played as you stay at the bedside? So Susie contacted the author and learned that SA was not present during the treatment’s administration, so the concealment issue is now mute but has been left here in case others are wondering the same thing based on the written text. PT, RCT, infant stress, maternal stress, maternal anxiety, Mat HR, Mat SaO2, mat RR, RR, SaO2 and HR of infant, behavioral state music See also Lai et al., 2006 for another RCT of KMC + Music. Not on charts 8/19/2011

Schneider, E., & Wittebach, G. (1986). Care of the abnormal newborn: A random control trial study of the “kangaroo method” of care of low birth weight newborns. In: (WHO ed.) WHO Interregional Conference on Appropriate Technology Following Birth, Trieste, WHO, 1986. More kc moms initiated BF than non KC moms, even when LBW infants were a mean 3 weeks old at time of first KC experience. RCT, preterm, BF, late KC

Schneider, C., Charpak, M., Ruiz-Pelaez, J.G., & Tessier, R. (2012). Cerebral motor function in very premature-at-birth adolescents: A brain-stimulation exploration of k Kangaroo mother care effects. Acta Paediatrica, 101(10), 1045-1053. DOI: 10.1111/j.1651-2227.2012.02770.x. This is a 16 year follow-up to Charpak’s RCT of 28-32 week Gestation preterm infants given 24/7 KMC once off of oxygen support in Colombia (see Charpak 1998 and 2001) and at home (mothers were told to provide KMC all the time so the infant would not get cold. When mother needed a break, a father or another provider carried the infant at home. Infants were removed from KMC only for cleaning and changing clothes). Mean KC time was 28.67 days at home after discharge. Transcranial magnetic stimulation was applied over the primary motor cortex of 9 term and 39 very preterm adolescents (<33 wks GA, 21 of whom got 24/7 KMC and 18 who got no KMC at all. Short interval intracortical inhibition (SICI) and facilitation were tested as was the integrity of each hemisphere function for motor planning, and the short—interval interhemisphere inhibition to test callosal (corpus callosum) function (integrity of motor circuits between hemispheres). Corticomotor latency was lengthened in the noKMC adolescents when compared to KMC and term adolescents, and SICI was decreased, SIHI latency was delayed, and SIHI duration was shortened, and SICI and intracranial facilitation were more difficult to obtain. All outcomes were similar between KMC preterms and term born adolescents. “The brain motor pathways worked better in the KMC group, thus reflecting on one side the sustained impairment of the premature brain functional connectivity, and on the other side the positive impact of KMC on brain circuits and synaptic efficacy up to adolescence. All TMS outcomes were similar between KMC and term adolescents, with typical values as in healthy adults, and better than in Controls. KMC adolescents presented faster conduction times (p<0.05), revealing more efficient MI cells synchronization (p<0.05) and interhemispheric transfer time (p<0.0001), more frequent inhibitory processes with a better control between hemispheres (p<0.0001). The enhanced synchronization, conduction times, and connectivity of cerebral motor pathways in the KMC group suggests that KMC positively influenced the premature brain networks and synaptic efficacy up to adolescence. PT, RCT, brain studies, brain development, long term follow-up, motor development, 16 years. See review by Wood, J (2012) too

Schnitzer, P.G., Covington, T.M., & Dykstra, H.K. (2012). Sudden unexpected infant deaths: Sleep environment and circumstances. American Journal of Public Health, epub: ahead of print, pg. e1-e9. Doi: 10.2105/AJPH.2011.300613. Not about KC per se, but this is a retrospective look at the data from the American Child Deaths data base of the USA to see what the circumstances were that accounted for the new classification of infant death due to suffocation. They found that a hazardous place for infants to sleep was FINISH

Schoch, D.E., Lawhon, G., Wicker, L.A. & Yeeco, G. (2014, Feb). An interdisciplinary multidepartmental educational program toward baby friendly hospital designation. Advance in Neonatal Care, 14(1):38-43. doi: 10.1097/ANC.000000000000029. Our healthcare institution chose to strive for Baby Friendly Hospital Initiative (BFHI) designation to enhance our support of breastfeeding. To complete Baby Friendly Hospital Initiative Step 2, a 5-hour educational program of supervised clinical experience was designed incorporating learning needs identified through gap analysis. Five interdisciplinary simulation stations included (1) a video on practical aspects of skin-to-skin contact immediately after delivery, (2) a dynamic interactive exercise on skin to skin in the labor and KCBib 2018
delivery setting. (3) couplet care on admission to the maternal infant unit, (4) breast milk expression, and (5) common challenges. Small groups of staff rotated among stations in 45-minute intervals. Two hundred fifty staff completed this educational program and an additional 54 nurses have become certified breastfeeding counselors. Evaluations highly favored this model of active participation and our work toward achieving Baby-Friendly Hospital designation has been greatly enhanced. They provided a *Procedure for Immediate SSC*

<table>
<thead>
<tr>
<th>1.</th>
<th>Delivery of newborn</th>
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<tr>
<td>2.</td>
<td>Dry and stimulate for first breath/cry and assess newborn</td>
</tr>
<tr>
<td>3.</td>
<td>If the newborn is stable, place skin-to-skin with cord attached (with option to milk cord), clamp cord after 1 minute or after placenta is delivered, and reassess newborn to permit physiologic circulatory transition.</td>
</tr>
<tr>
<td>4.</td>
<td>Continue to dry entire newborn except for hands to allow the infant to suckle hands bathed in amniotic fluid (which smells and tastes similar to colostrum), which facilitates rooting and first breastfeeding.</td>
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<tr>
<td>5.</td>
<td>Cover head with cap (optional) and place warmed blankets to cover body of newborn on mother’s chest, leaving face exposed.</td>
</tr>
<tr>
<td>6.</td>
<td>Assess Apgar scores at 1 and 5 minutes</td>
</tr>
<tr>
<td>7.</td>
<td>Replace wet blankets and cap with dry warm blankets and cap</td>
</tr>
<tr>
<td>8.</td>
<td>Assist and support to breastfeed</td>
</tr>
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This quality improvement project increased breastfeeding. FT, BF, Baby Friendly, QI project, implementation, Birth KC, not on charts

Schrauwen L,1, Kommers DR3,2, Oetomo SB1,2. (2017-Jan.). Viewpoints of Parents and Nurses on How to Design Products to Enhance Parent-Infant Bonding at Neonatal Intensive Care Units: A Qualitative Study Based on Existing Designs. HERD. 2017 Jan 1;1937586717728483. doi: 10.1177/1937586717728483. [Epub ahead of print]. To investigate how product design can be used to improve parent-infant bonding in a neonatal intensive care unit. Impaired parent-infant bonding is an inevitable consequence of premature birth, which negatively influences development. Products, systems, or services that support the bonding process might counter these negative influences. The first step was to trace existing products by performing a literature search in PubMed, the university library, and Google. The identified existing designs were then used in semistructured interviews with nurses and parents to get insights into their desires and recommendations for product design to enhance bonding. Interviews contained open questions and a multiple-choice questionnaire based on the literature search. In total, 17 existing design types were used in interviews with 11 parents and 23 nurses. All nurses explicitly stated that practicality was the first criterion designs aimed at enhancing bonding definitely had to meet. All parents indicated that they would like to use a design to enhance bonding if that would contribute to their child's health and development. For both parents and nurses, the most valuable way to enhance bonding seemed to be products to improve Kangaroo care; however, their specific desires varied substantially. Therefore, seven recurring themes were defined, resulting in nine general recommendations and six opportunities intended to enhance parent-infant bonding. This study provides design recommendations and opportunities based on parents' and nurses' expert opinions. Designing to enhance bonding is considered valuable; however, designs should match the stakeholders' desires and conditions. FT, KC wraps, qualitative study, Staff perceptions, bonding, parent experience

Not on charts

Schrewe, B., Janvier, A., Barrington, K. (2010). Life-threatening events during skin-to-skin contact in the delivery room. BMJ Case Reports 2010. Pub:eb1201003475. Doi: 10.1135/bcr.11.2010.3475. This is a case report of one healthy term infant placed in skin-to-skin contact for breastfeeding who had sudden unexpected postnatal collapse a few minutes after being put in KC in the delivery room. Even the doctor and nurse in the room did not notice the change in the infant’s condition, let alone the mother. After an uncomplicated term delivery, a newborn infant experienced a life-threatening event a few minutes after being born. Few such events have been described before, they may be due to suffocation; minor changes in surveillance can probably prevent these potentially devastating events. Clearly states that SSC is a risk factor for these cases. "Our case is the the reports (ABOVE) suggest a rare association with unexpected acute life-threatening deterioration. The benefits of increased success of breastfeeding and enhanced mother-infant interaction should not be sacrificed because of these rare events. Rather, we feel that due to this critical period of adaptation of the infant, a responsible person should be assigned to non-invasively observe the infant for signs of distress or depression…. Indeed, other family members, if present, could be easily instructed to ensure that the infant is breathe calmly and without obstruction of nose and mouth. If the mother is on her own, then we suggest that she not be left alone with the infant, as the period of post-burour exhaustion may well lead to a reduction in the mother’s level of alertness." (pg. 2 of 3). FT, Case study, life threatening event, birth KC. Not on charts 9/1/2013.

Schrod L. & Walter, J. (2002). Effect of head-up tilt position on autonomic function and cerebral oxygenation in preterm infants. *Biology of Neonate, XI*, 255-259. Handling, temperature control, and head elevated body position are stress factors for infants during KC (pg. 258). 36 preterms (32.5 wks, bw=880-2980 with median BW of 1460g) were tested in supine horizontal position in incubator, then raised on a wedge to 30 degree incline and then returned to supine horizontal position to determine if head-up position of KC causes
autonomic stress. Each position was tested one hour after the previous feeding and was tested over 20 minutes. After 3 minutes of adaptation, prolonged head-up position did not produce further changes in HR, MAP, SaO2, and resp. frequency was reduced by 6-12% (42 → 38). HRV showed greater increase in low frequency than high frequency activity after being tilted, but both changed significantly on day 8 only, suggesting a relative increase in sympathetic versus vagal activation. Preterms <1500 g showed significant decrease of regional cerebral oxygen saturation of about 2.5% from day 2-day 8 (this level is clinically insignificant) of the study (showing maturational changes in regional cerebral oxygenation). From supine (90%) (R=37-88) to head up tilt (68%) (R=89-92) to horizontal supine (67%) (R=29-84) the only significant difference was between pretest percent and head up percent, not between head up tilt and then back to horizontal supine. Cerebral hemoglobin (total, in micromols was 41(R=7-100) in pretest supine, in head up tilt it was 40 (R=9-106), and in posttest supine horizontal it was 45 (R=7-125). Only median values and Range reported, no means, no standard deviations.

There were no prolonged side effects of prolonged head-up position (tested by using a wedge under the baby) in stable preterms over first days of life (2-12 days of life), though initial decline in total cerebral hemoglobin in first 3 minutes of head-up position might be critical in very immature infants. “Prolonged head-up positioning has no undesirable effects in preterm infants with stable circulation including very immature infants of 25 weeks gestation”(pg. 259). The authors state that “handling, temperature control and head elevated body position are the main stress factors for infants during KC. The change in body position from horizontal to heat up results in pooling of blood in the lower body part, a decrease in venous return and a lower ventricular filling rate, which in turn induces the baroreceptor reflex and thus an increase in sympathetic tone. In the fetus, intense sympathetic activation results in concomitant vagal stimulation and bradycardia, instead of vagal deactivation as seen in adults (pg. 258).

RR decreased with head up positioning and SaO2 remained the same due to higher tidal volumes and a decrease in intrathoracic pressure and better ventilation of lower lung segments. Heart rate and blood pressure did not change between horizontal and head up after 3-5 minutes of settling in to each condition. For HRV outcomes, low frequency reflects sympathetic activities such as baroreceptor reflex, and high frequencies reflect vagal activity. The increase in sympathetic activity during the first weeks of life was evidenced by an increase in LF response to orthostatic stress from 26% on Day1 to 70-80% on Day 8. HR increases with age, too, but to a less degree.”(p258). Authors conclude that “the orthostatic stress associated with kangaroo care is insignificant in clinically stable preterm infants if abrupt tilting is eschewed by slow position changes.” pg 259. Case controlled pretest-test-posttest one group, RR, HRV, HR, SaO2, MAP, cerebral hemoglobin, cerebral oxygen pressure, Not a KC study but refers to KC.

Schultz, M., Loughran-Fowleds, A., & Spence, K. (2009). Neonatal pain: A comparison of the beliefs and practices of junior doctors and current best evidence. *J Pediatr Nurs* & *Child Health*, 46(1-2), 23-28. 33 junior doctors in 5 tertiary NICUS in Sydney Australia answered questions about perception of pain, effects of pain, pain assessment tools, and safety and efficacy of pain treatments for both procedural and long-term pain. They have adequate knowledge about pain effects but a low proportion knew difference in long term effects between neonates and older children. Pain assessment tools are not perceived as reliable, valid, or routinely used, and they were appropriately unsupportive of topical anesthetic agents. They knew efficacy of breastfeeding and oral sucrose during short term painful procedures, but KC and massage were less recognized as useful. Most agreed that sedation does not provide adequate pain relief.

Conclusion: junior doctors need more education about neonatal pain. Descriptive, pain, assessment of pain and effects of pain. Don’t know about KC for pain, nor do they know about massage. DO THIS SAME STUDY WITH NURSES.

Schwartz B, Fatzinger C., & Meier PP., (2004). Rush special care keepsakes: Families celebrating the NICU journey. *MCN, the American J of Maternal/Child Nursing* 29 (6), 354-365. Parents are encouraged to participate in weekly scrapbooking (or scrap booking) sessions held each Saturday (funded by Paula Meier) to record pictures and anecdotes of their feelings and experiences in the NICU (which acts as a parent-to-parent support group) and Family Holiday Photo Shoots (always including family members rather than picture of infant alone in holiday attire). Mothers get a picture taken on their first KMC session and are prompted to attachme

Kangaroo Care last week. Do you have any suggestions for Mrs. T?” In this way, scrapbooking techniques transform the weekly session from a craft project to a parent support network (358). Also on page 358 there is a picture of one mother’s scrapbook page of KC and it shows “Joshua, In this life you have mommy time, daddy time, family time but the time I had with you was called Kangaroo time. It was one of the best times with you. I enjoyed talking to you, singing, telling stories, praying, laughing, crying and most important time spent with you.” (358). *Clinical report, scrapbooking, parent support, bonding*


and morbidity in preterm infants. Although KMC is a key intervention package in newborn health initiatives, there is limited systematic information available on the barriers to KMC practice that mothers and other stakeholders face while practicing KMC. This systematic review sought to identify the most frequently reported barriers to KMC practice for mothers, fathers, and health practitioners, as well as the most frequently reported enablers to practice for mothers. We searched nine electronic databases and relevant reference lists for publications reporting barriers or enablers to KMC practice. We identified 1,264 unique publications, of which 103 were included based on pre-specified criteria. Publications were scanned for all barriers/enablers. Each publication was also categorized based on its approach to identification of barriers/enablers, and more weight was assigned to publications which had systematically sought to understand factors influencing KMC practice. Four of the top five ranked barriers to KMC practice for mothers were resource-related: "Issues with the facility environment/resources," "negative impressions of staff attitudes or interactions with staff," "lack of help with KMC practice or other obligations," and "low awareness of KMC/infant health." Considering only publications from low- and middle-income countries, "pain/tiredness" was ranked higher than when considering all publications. Top enablers to practice were included "mother-infant attachment" and "support from family, friends, and other mentors." Our findings suggest that mother can understand and enjoy KMC, and it has benefits for mothers, infants, and families. However, continuous KMC may be physically and emotionally difficult, and often requires support from family members, health practitioners, or other mothers. These findings can serve as a starting point for researchers and program implementers looking to improve KMC programs.


The most recent reports on global trends in neonatal mortality continue to show alarmingly slow progress on improvements in neonatal mortality rates, with sub-Saharan Africa still lagging behind. This emphasised the urgent need to innovatively employ alternative solutions that take into account the intricate complexities of neonatal health and the health systems in which the various strategies operate. In our first paper, we empirically explored the causes of the stagnating neonatal mortality in Uganda using a dynamic synthesis methodology (DSM) approach. In this paper, we completed the last three stages of DSM, which involved the development of a quantitative (simulation) model, using STELLA modelling software. We used statistical data to populate the model. Through brainstorming sessions with stakeholders, iterations to test and validate the model were undertaken. The different strategies and policy interventions that could possibly lower neonatal mortality rates were tested using what-if analysis. Sensitivity analysis was used to determine the strategies that could have a great impact on neonatal mortality. We developed a neonatal health simulation model (NEOSIM) to explore potential interventions that could possibly improve neonatal health within a health system context. The model has four sectors, namely population, demand for services, health of the mothers and choices of clinical care. It tests the effects of various interventions validated by a number of Ugandan health practitioners, including health education campaigns, free delivery kits, motorcycle coupons, kangaroo mother care, improving neonatal resuscitation and labour management skills, and interventions to improve the mothers' health, i.e. targeting malaria, anaemia and tetanus. Among the tested interventions, the package with the highest impact on reducing neonatal mortality rates was a combination of the free delivery kits in a setting where delivery services were free and motorcycle coupons to take women to hospital during emergencies. This study presents a System Dynamics model with a broad and integrated view of the neonatal health system facilitating a deeper understanding of its current state and constraints and how these can be mitigated. A tool with a user friendly interface presents the dynamic nature of the model using 'what-if' scenarios, thus enabling health practitioners to discuss the consequences or effects of various decisions. Key findings of the research show that proposed interventions and their impact can be tested through simulation experiments thereby generating policies and interventions with the highest impact for improved healthcare service delivery.

Senarat U., Fernando DN, & Rodrigo I. (2007). Effect of training for care providers on practice of essential newborn care in hospitals in Sri Lanka. J Obstet, Gynaecol, and Neonatal Nursing, 36(6), 531-541. An RCT of hospitals assigned to intervention group (education of WHO Essentials of Newborn Care over 4 days [32 hours of training]) or no education. Estimates of baseline levels of newborn practices of immediate BirthKC, initiation of Breastfeeding within 30 minutes of birth, and handwashing in postpartum unit were assumed to be 50%. After the education, care of women was evaluated and immediate Birth KC increased by 1.5 times baseline and early initiation of BF by 3.5 time’s baseline. Undesirable health events of newborns were reduced from 32 to 21 per 223 newborns in the intervention groups. Effect of training for care providers on practice of essential newborn care, improving neonatal resuscitation and labour management skills, and interventions to improve the mothers' health, i.e. targeting malaria, anaemia and tetanus. Among the tested interventions, the package with the highest impact on reducing neonatal mortality rates was a combination of the free delivery kits in a setting where delivery services were free and motorcycle coupons to take women to hospital during emergencies. This study presents a System Dynamics model with a broad and integrated view of the neonatal health system facilitating a deeper understanding of its current state and constraints and how these can be mitigated. A tool with a user friendly interface presents the dynamic nature of the model using 'what-if' scenarios, thus enabling health practitioners to discuss the consequences or effects of various decisions. Key findings of the research show that proposed interventions and their impact can be tested through simulation experiments thereby generating policies and interventions with the highest impact for improved healthcare service delivery. PT, FT, Policy study, factors reducing infant mortality, Not on charts 5-25-16. New to bibliographic

Seo YS, Lee J, Ahn HY. (2016-Jun). Effects of Kangaroo Care on Neonatal Pain in South Korea. J Trop Pediatr. 62(3):246-9. doi: 10.1093/ijtp/ftp0102. Blood sampling for a newborn screening test is necessary for all neonates in South Korea. During the heel stick, an appropriate intervention should be implemented to reduce neonatal pain. This study was conducted to identify the effectiveness of Kangaroo care (KC), skin contact with the mother, on pain relief during the neonatal heel stick. Twenty-six neonates undergoing KC and 30 control neonates at a university hospital participated in this study. Physiological responses of neonates, KCBib 2018
including heart rate, oxygen saturation, duration of crying and Premature Infant Pain Profile (PIPP) scores were measured and compared before, during and 1 min and 2 min after heel sticks. The heart rate of KC neonates was lower at both 1 and 2 min after sampling than those of the control group. Also, PIPP scores of KC neonates were significantly lower both during and after sampling. The duration of crying for KC neonates was around 10% of the duration of the control group. In conclusion, KC might be an effective intervention in a full-term nursery for neonatal pain management. FT, RCT, pretest-posttest, heel stick, HR, SaO2, Crying, PIPP, pain. Need to get study to know SaO2 results, no difference but what direction??


Shah, V., & Jefferies, A. (2012). Preterm infants receiving heel lance procedures have slightly lower pain scores and quicker time to return to baseline heart rate when held in kangaroo care by the mother than by the father. Evidenced Based Medicine. Mar 7 e pub ahead of print. Commentary on Johnston, 2011 study of Maternal vs. paternal pain reduction. PT, PAIN, HR, paternal KC GET TH

Shapiro-Mendoza, C. (2017). Sudden Infant Death. Pediatrics June 2017. Physicians were given four scenarios for sudden unexpected infant death (SUID) and at least 15% ascribed the deaths to different causes, suggesting that reports are underrepresenting deaths due to suffocation only 1% ascribed death to suffocation. And when SIDS or SUIDs was considered, the definitions used to establish a determination varied considerably, as did the choice of diagnostic screening tools. For example, metabolic screenings (where bile and blood samples are tested for various disorders) were used routinely about 80 percent of the time. But radiology screenings were routinely conducted about 60 percent of the time. Genetic testing was used just 7 percent of the time, the study authors said. And while 94 percent of the respondents said they relied on death scene investigation reports when coming to a final determination, fewer (88 percent) said they conducted a full autopsy. Even fewer (85 percent) conducted a toxicology analysis or a review of an infant's medical history (82 percent). Few autopsies are done, fewer genetic tests are done, and that the CDC’s guidelines for investigating and reporting SUIDs and SIDS may not be followed. PT, FT, descripton study, SUPC. ALT, not on charts 5-20.2017.

Sharma, A. (2016-Sept). Efficacy of early skin-to-skin contact on the rate of exclusive breastfeeding in term neonates: a randomized controlled trial. African Health Sciences 16(3): 790–797. doi: 10.4314/ahs.v16i3.20 Despite multiple benefits of breast milk, the rates of exclusive breastfeeding in developing countries are low. To evaluate the efficacy of early skin-to-skin contact (SSC) on the rate of exclusive breastfeeding (EBF) at 6 weeks of age among term neonates born by vaginal delivery. Term neonates born by vaginal delivery and did not require any resuscitation were randomized at birth to SSC (n=100) and control (n=100) group. Immediately after clamping the umbilical cord, SSC group neonates were placed on the bare bosom of mother and control neonates were placed under a radiant warmer for a period of 45 minutes each while mothers underwent management of the third stage of labor and episiotomy repair. After 45 minutes of KC, babies were wrapped in two layers of clothes and roomed in with mothers (pg. 791). Pain experienced by mother during episiotomy repair was recorded using a numerical pain scale. The primary outcome evaluated was the rate of exclusive breastfeeding at 6 weeks of postnatal age. Mothers were asked to rate their breastfeeding according to the following definitions: EXCLUSIVE BF = all feeds by breast, PREDOMINANT BF = 1-2 supplemental feeds/24 hours, or MIXED BF = (breastfeed plus >2 supplemental feeds/24 hours)(pg. 791). Mothers were discharged 24 hours post-delivery and recorded weekly their BF schedules. A significantly higher proportion of neonates (72%) were exclusively breastfed at 6 weeks of age (when got first immunization) in the SSC group than in the control group (72% vs. 57.6%, p=0.04, relative risk: 1.3, 95% confidence interval: 1.0 - 1.6). The mean pain score during episiotomy repair in mothers of the SSC group was significantly lower than the control group (4.74±0.83 versus 5.34±0.81; P <0.01). He used the American Society for Pain treatment guidelines for patients, version III, Dec. 2007. Numerical pain scale, page 10, citation 13 on page 796). SSC babies voided 2 times more than controls and had same weight and length at 6 weeks of age as controls and same head circumference (pg. 794). Vital signs for SSC vs control group at Birth. 10 mins, 30 mins, and 6 hrs (he lists on page 794 112, 18, and 24 hrs values too) were HR birth=163.0±5.4 KC vs 162.8±4.6; HR 10 mins =154.5±7.4 KC vs 154.8±4.6; 30 mins =140.6±8.5 KC vs 141.3±4.6; 60 mins=136.2±8.5 KC vs 136.1±4.6. No HRs were significantly different between groups. RRks at birth were KC=64.3±0.6 SD3.0 vs 64.3±0.6 SD3.0; at 10 mins KC=57.6 SD4 vs 58.7 SD4; at 30 mins KC=44.3±0.6 SD3.8 vs 44.6±0.6 SD3.4. No differences in RR either. Temperature at birth for KC was 37.1±0.1 °C vs 37.0±0.1 °C; at 10 mins KC=37.2±0.1 °C vs 37.2±0.1 °C; at 30 mins KC=37.3±0.1 °C vs 37.3±0.1 °C. No differences in temperature either, at even 10 and 30 minutes when KC infants were in KC and should have been warmer (pg. 794). Early SSC significantly improved the rate of exclusively breastfeeding at 6 weeks of age among healthy term neonates, probably due to high levels of catecholamine at birth that make olfactory bulb extremely sensitive to odor cues (Porter RH & Winberg J. Unique salience of maternal breast odors for newborn infants. Neuroscience Biobehavioral Review, 1999, 23: 439-449; Porter RH. The biologic significance of skion to skin contact and maternal odors. Acta Paediatrica 2004, 93, 1560-1562). Thus helping infant crawl to breast within 60 minutes of birth (Richard & Alade, Lancet 1990; Widstrom et al., Gastric suction in healthy newborn infants: effects of curulation and developing feeding behavior. Acta Paedidri Scand, 1987, 76; 566-572). Then infants become sleepy due to decrease KCBib 2018
in circulating catecholamines (Langercrantz H, Slotkin TA. 1986 The Stress of being born. Sci Am April, 92-102). An important additional effect was a decrease in the amount of pain that mothers in the SSC group experienced during episiotomy repair. 

Author says this is in contrast to Marin-Gabriel et al 2010 study which did not reveal a significant effect of SSC on episiotomy pain. 

Says reduction in episiotomy pain is due to powerful effect of infant’s sensory stimulation by providing touch and warmth which are vagal stimuli which release maternal oxytocin which reduces pain (pg. 795) and which reduces maternal anxiety, increases calm and uterine contractions. “Also neonatal motor activity after SSC over mother’s abdomen appears to serve the same function as common medical interventions, such as uterine massage to stop the placenta and to decrease postpartum hemorrhage (cities Matteisen A, Ransjo A, Nissen E, Uvnas K. PP maternal oxytocin release by newborns: effect of infant hand massage and sucking. Birth 2001, 28:13-19).” (pg795). 

FT, RCT, episiotomy pain, Exclusive BF, head circumference, weight gain, length at 6 weeks, HR, RR, Temp, PPH

Sharma D, Murki S, Oleti TP. (2016-July). To compare cost effectiveness of 'Kangaroo Ward Care' with 'Intermediate intensive care' in stable very low birth weight infants (birth weight <1100 grams): a randomized control trial. J Pediatr. 13;42(1):64. doi: 10.1186/s13052-016-0274-3. -To compare cost effectiveness of 'Kangaroo Ward Care' with 'Intermediate Intensive Care' in stable very low birth weight infants (birth weight <1100 g). This is the secondary analysis of the study in which we have analysed the cost effectiveness of 'Kangaroo ward care' (KWC) with 'Intermediate Intensive Care' (IIC). In this randomized control trial 141 infants (less than 1100 g and ≤32 weeks at birth) were enrolled, 71 were randomized to KWC group and 70 to IIC group, once the infant reached a weight of 1150 g. Infants randomized to KWC group were shifted to the Kangaroo ward immediately after randomization. Infants randomized to IIC group were shifted to the Kangaroo ward once the infant reached 1250 g. Cost incurred by the patient in both the groups from the time of randomization to hospital discharge was calculated. The hospital costs were determined by "top-down" accounting methods and out of pocket expenditure of parents from standard "bottom-up" cost-accounting methods. 

There was significant reduction in neonatal charges in KWC group post-randomization (41591.9 ± 21712.8 INR vs 75388.8 ± 25532.2 INR; p < 0.001). The separate "top-down" and "bottom-up" cost analysis showed that there was significant reduction of hospital and parents expenditure in KWC group when compared to IIC group (p < 0.001). There was significant saving of around 33800 INR (USD) in the KWC group for each patient. Initiating early shifting to Kangaroo ward is cost effective intervention and have huge monetary implication in resource poor countries. PT, Cost , RCT-qui-exp. 3rd world, ELBW, New to biblio study, not on chart 7-19=18 . 3rd world, 

Sharma D, Murki S, Pratap OT. (2016-Aug). To compare growth outcomes and cost-effectiveness of "Kangaroo ward care" with "intermediate intensive care" in stable extremely low birth weight infants: randomized control trial. J Matern Fetal Neonatal Med. 2016 Aug 30:1-7. [Epub ahead of print]. The aim was to compare growth outcome and cost-effectiveness of "Kangaroo ward care" (KWC) with "Intermediate intensive care" (IIC) in stable extremely low birth weight (ELBW) infants. This is secondary analysis of the study and we analyzed 62 ELBW infants, 33 were randomized to KWC and 29 to IIC once the infant reached a weight of 1150 g. Infants in the KWC group were shifted to the Kangaroo ward immediately after randomization and in the IIC group received IIC care till they attain a weight of 1250 g before shifting to Kangaroo ward. The gain in weight (g/day), length (cm/week), and head circumference (cm/week) were compared between the two groups. The mean weight, length, and head circumference were comparable at term gestational age. The infants in KWC group were shifted five days earlier to Kangaroo ward compared to IIC group. The cost-effective analysis using "top-down" and "bottom-up" accounting method showed that there was significant reduction of hospital and parents expenditure in KWC group (p < 0.001) with approximate saving of 452 USD for each patient in the KWC group. Early shifting of ELBW infants for KWC is very efficacious and cost-effective intervention when compared to Intermediate intensive care. (CTRI/2014/05/004625). PT, randomized to KWC and control for a quasi-experiment as both groups got the Kangaroo ward treatment, 3rd world, ELBW, cost, weight, Length, head circumference 

Sharma D, Murki S, Pratap OT. (2016-Oct). The effect of kangaroo ward care in comparison with "intermediate intensive care" on the growth velocity in preterm infants with birth weight <1100 g: randomized control trial. Eur J Pediatr. 175(10):1317-24. doi: 10.1007/s00431-016-2766-y. Kangaroo mother care (KMC) reduces neonatal mortality, neonatal sepsis and improves growth outcome in preterm infants. In this study, we compared the efficacy of "baby care in kangaroo ward (KWC)" with "baby care in intermediate intensive care (IIC)" in stable preterm infants (birth weight <1100 g) for improving the growth velocity till term corrected age. One hundred and forty-one infants were randomized to KWC (n = 71) or IIC (n = 70) once the infant reached a weight of 1150 g in Hyderabad, India. Infants in the KWC group were shifted to the KWC immediately after randomization and those in the IIC group were given care in the IIC till they attained a weight of 1250 g and then shifted to the KWC. The average weight gain as well as weight, length, and head circumference at term corrected age were comparable in both the groups. There was significant reduction in IIC stay post randomization and increase in weight gain before discharge in the KWC group. There was a significant increase in incidence of apnea in the IIC group. Early KWC is equally efficacious as IIC in improving the growth outcomes of stable preterm (birth weight <1100 g) infants at term gestational age.Clinical trial registry of India CTRI/2014/05/004625. What is known: Kangaroo mother care (KMC) reduces neonatal mortality, neonatal sepsis and improves 

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growth outcome in VLBW infants. What is new: • Baby care by mother can be given safely in kangaroo ward from a weight of 1150 g in stable preterm infants without any adverse effects. PT, VLBW, RCT but really quasi-experiment because both groups got the Kangaroo ward treatment, daily weight gain, weight, length, head circumference, apnea.

Sharma D, Farahbakhsh N, Sharma S, Sharma P, Sharma A. (2017-Mar) Role of Kangaroo mother care in growth and breast feeding rates in very low birth weight (VLBW) neonates: A systematic review. J Matern Fetal Neonatal Med. 8:1-29. doi: 10.1080/14767058.2017.1304535. Epiphys ahead of print. To evaluate the role of Kangaroo mother care (KMC) on growth and breast feeding rates in very low birth weight (VLBW) neonates. A literature search was done to identify eligible studies using various electronic database searches including PubMed and EMBASE, various Web of Science including Scopus, Index Copernicus, African Index Medicus (AIM), Thomson Reuters (ESCI), Chemical Abstracts Service (CAS), SCIWIN (Scientific World Index), Google Scholar, Latin American and Caribbean Health Sciences Information System (LILACS), Index Medicus for the Eastern Mediterranean Region (IMEMR), Index Medicus for the South-East Asian Region (IMSEAR), and Western Pacific Region Index Medicus (WPRIM) and various clinical trial registries. Thirteen studies that evaluated the role of KMC in VLBW infants in improvement of growth outcome (weight/length/head circumference) or breast feeding rates as their primary or secondary outcome, were included in this systematic review. Seven studies evaluated both growth and breast feeding rates, four studies evaluated breast feeding rates and two studies evaluated growth outcome. All included studies except one either showed positive effect after 0-19-2017 or no effect on growth and breast feeding rates. KMC has a positive effect on growth of the VLBW infants and also leads to increase in the breast-feeding rates. KMC should be an integral part of neonatal care and should be promoted as an essential newborn care component. PT, systematic review, VLBW, BF, weight, head circumference, length, essential newborn care. Not on charts 3/19/2017

Shealy K, Li R, Benton-Davis S, & Grummer-Strawrn LM. (2005). The CDC Guide to Breastfeeding Interventions. Atlanta, GA: USDHHS CDC. Publications. On page 1 of the book it states “maintaining skin-to-skin contact between mother and baby after birth has been demonstrated to have a positive effect on breastfeeding.”

“Breastfeeding is an extremely time-sensitive relationship” (pg. 2). Policy, BF, guidelines, full term.

Sheridan, B. (2000). Katie’s story: A little inspiration. Central Lines 18(4): 27. Story of a 28 weeker’s recovery. KC was started and author states “Probably one of the greatest parts of my job is when a parent first kangaroo’s her baby.” PT, Case study. Nurses’ opinion

Sheridan V. (1999). Skin-to-skin contact immediately after birth. Practicing Midwife 2 (9), 23-28. Concern over temp regulation during KC is concern still. Birth KC, Very Early KC, PT. Shau Chiu has this article as she reviewed it for her Birth article.

Shetty AP. (2007). Kangaroo mother care. Nursing J India. 98(11): 249-250. This is a review article that has far too few references because many studies are cited without reference given. The article reviews the definition, research findings, benefits of healthier heart rate and respiration, increased breastfeeding, improved immunity, increased weight gain, regulated body temperature, physiologic stabilization, maternal bonding, breastfeeding, improved resolution of preterm birth issues. She goes into detail about the infants position for KC and that maternal willingness, general health, availability and support from family and community need to be assessed before conducting KC. She also makes statement that “babies who suffer from respiratory distress and stayed in KC positions were relieved within 48 hours without respirators” (p. 249), but gives no citation. Review, PT and FT, definition and position guidelines. Not on CHARTS YET.

Shiau, S-HSH. (1997). Randomized controlled trial of Kangaroo Care with full term infants: Effects on maternal anxiety, breastmilk maturation, breast engangement, and breast feeding status. Dissertation at Case Western Reserve University (143 pages - ISBN # 978-0-591-61624-8). Or in Dissertation Abstracts International, call #ATT3034635). Taiwanese mothers who had rooming-in and started KC within four hours of birth and continued KC for 8 hours-per-day for three days were closer to exclusive breastfeeding and breastfed longer (91.1 days vs. 24.8 days) than control mothers who did not have rooming in and Early KC. Further, more Early KC mothers had less anxiety and less breast engangement and were breastfed longer (at one year post-birth, than control mothers. FT, RCT, BF exclusivity, BF duration. Get this complete # of subjects and tools used and how to validate were closer to exclusively, NOT ON CHARTS 12/31/2012

Shiau, S-H. (1999). The effects of kangaroo care on sleep and crying of healthy fullterm newborns. Nursing Research (China), 7(3): 198-208. 22 Kcers and 22 standard care infants (No sig difs between groups on demographics) were compared. Kcers had significantly less total crying (7.14 min vs 10.73, p=0.00) on days 1 & 2 but not 3; Kcers had more sleep (total 47.64 min vs. 40.36, p=0.00 on days 1,2,3) and less awake time (total 14.55 vs. 17.45 min, p=0.046) and less awake time on day 3 but not on days 1,2. FULL TERM, RCT crying, sleep, wakefulness Chinese.

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Shonkoff, J.P. (2011). Protecting brains, not simply stimulating minds. *Science*, 333(6045):982-983. NOT KC PER SE. BUT SEPARATION. Curricular enhancements in early childhood education that are guided by the science of learning must be augmented by protective interventions informed by the biology of adversity. The same neuroplasticity that leaves emotional regulation, behavioral adaptation, and executive functioning skills vulnerable to early disruption by stressful environments also enables their successful development through focused interventions during sensitive periods in their maturation. The early childhood field should therefore combine cognitive-linguistic enrichment with greater attention to preventing, reducing, or mitigating the consequences of significant adversity on the developing brain. Guided by this enhanced theory of change, scientists, practitioners, and policy-makers must work together to design, implement, and evaluate innovative strategies to produce substantially greater impacts than those achieved by existing programs.

Shonkoff, J.P., Committee on Psychosocial Aspects of Child and Family Health, Committee on Early Childhood, Adoption, and Dependent Care, Section on Developmental and Behavioral Pediatrics (2012). Technical Report: The lifelong effects of early childhood adversity and toxic stress. *Pediatrics*, 129(1):e232-e246. NOT KC PER se, but about SEPARATION. Advances in fields of inquiry as diverse as neuroscience, molecular biology, genomics, developmental psychology, epidemiology, sociology, and economics are catalyzing an important paradigm shift in our understanding of health and disease across the lifespan. This converging, multidisciplinary science of human development has profound implications for our ability to enhance the life prospects of children and to strengthen the social and economic fabric of society. Drawing on these multiple streams of investigation, this report presents an ecobiodevelopmental framework that illustrates how early experiences and environmental influences can leave a lasting signature on the genetic predispositions that affect emerging brain architecture and long-term health. The report also examines extensive evidence of the disruptive impacts of toxic stress, offering intriguing insights into causal mechanisms that link early adversity to later impairments in learning, behavior, and both physical and mental well-being. The implications of this framework for the practice of medicine, in general, and pediatrics, specifically, are potentially transformational. They suggest that many adult diseases should be viewed as developmental disorders that begin early in life and that persistent health disparities associated with poverty, discrimination, or maltreatment could be reduced by the alleviation of toxic stress in childhood. An ecobiodevelopmental framework also underscores the need for new thinking about the focus and boundaries of pediatric practice. It calls for pediatricians to serve as both front-line guardians of healthy child development and strategically positioned, community leaders to inform new science-based strategies that build strong foundations for educational achievement, economic productivity, responsible citizenship, and lifelong health.

Ecobiodevelopmental framework: a significant paradigm shift in developmental care is in process because the process of development is now understood to be a function of contact with the mother, not separation from the mother and not control of lighting, noise, and reading an infant’s cues to control interactions. Development is now a function of “NATURE DANCING WITH NURTURE OVER TIME” (pg. E234), or “beginning prenatally, continuing through infancy, and extending into childhood and beyond, development is drive y an ongoing, inextricable interaction between biology (as defined by genetic predispositions) and ecology (as defined by the social and physical environment)” (pg. E234). The ECOLOGY part of the model is the social and physical environment of the infant. Epigenetics investigates the molecular biologic mechanisms (such as DNA methylation and histone acetylation) that affect gene expression without altering DNA sequence. In rats, differences in quality of nurturing affect neural function in rat pups and negatively affect cognition and expression of psychopathology later in life. Rats whose mothers showed increased levels of licking & grooming in 1st week of life also showed less exaggerated stress responses as adults compared to low licking and grooming reared rats. The expression of mother-rat pup interactions in the pups have been shown to be passed on to the next generation (citations 18-22). The decade of the Brain (the 1990’s) was when NIH invested sig resources into understanding normal and pathologic neuronal development and function. WE now know how an integrated, functioning network with billions of neurons and trillions of connections is assembled. The network serves as a biologic platform for a child’s emerging social-emotional, linguistic, and cognitive skills, and developmental neuroscience is beginning to clarify the underlying causal mechanisms that explain the normative process of child development” (pg. e234). “Alterations in the child’s ecology can have measurable effects on his or her developmental trajectory, with lifelong consequences for educational achievement, economic productivity, health status, and longevity.” e234. “There is a robust link between early life adversities and important adult outcomes. In this context, significant stress in the lives of young children is viewed as a risk factor for the genesis of health-threatening behaviors as well as a catalyst for physiologic responses that can lay the groundwork for chronic stress-related diseases later in life.” E 235. THREE foundations of Healthy Development are: 1) stable and responsive environment of relationships which provide young children with consistent, nurturing, and protective interactions with adults to enhance their learning and help them develop adaptive capacities that promote well regulated stress response systems, 2) safe and supportive physical, chemical and built...
environments, and 3) sounds and appropriate nutrition (health promoting food intake and eating habits). Review, Stress, epigenetics, amygdala, prefrontal cortex, hippocampus

Shonkoff, J.P., Fisher P.A. (2013). Rethinking evidence-based practice and and two-generation programs to create the future of early childhood policy. Developmental Psychopathology, 25(4 Pt 2), 1635-1653. An infant’s development cannot be enhanced in the absence of a consistent, emotionally rewarding relationship. Parents are valued as primary caregivers and actively partner with staff in their child’s care. This synchrony of caregiving to the immediate capabilities of the developing brain, while fostering a nurturing relationship with the parents, leads to improved neurodevelopmental outcomes FT, PT, development, separation, maternal involvement, parents as primary caregivers, synchrony of caregiving. NOT on CHARTS 8/30/2015 this is a free article to all.

Shonkoff, J.P., & Garner, A.S., Committee on Psychosocial Aspects of Child and Family Health, Committee on Early Childhood, Adoption, and Dependent Care, & Section on Developmental and Behavioral Pediatrics. (2012). The lifelong effects of early childhood adversity and toxic stress. Pediatrics, 129(1), e232-246. doi: 10.1542/peds.2011-2603. This is a technical report that describes the “ecobiodevelopmental model” for translating developmental science into lifelong health, where eco stands for ecology, or the environment. Advances in fields of inquiry as diverse as neuroscience, molecular biology, genomics, developmental psychology, epidemiology, sociology, and economics are catalyzing an important paradigm shift in our understanding of health and disease across the lifespan. This converging, multidisciplinary science of human development has profound implications for our ability to enhance the life prospects of children and to strengthen the social and economic fabric of society. Drawing on these multiple streams of investigation, this report presents an ecobiodevelopmental framework that illustrates how early experiences and environmental influences can leave a lasting signature on the genetic predispositions that affect emerging brain architecture and long-term health. The mother’s body provides “buffering protection of adult support” that prevents harmful epigenetic changes taking place during sensitive periods of development (also ascribed to Meaney & Szyf, 2005). The report also examines extensive evidence of the disruptive impacts of toxic stress, offering intriguing insights into causal mechanisms that link early adversity to later impairments in learning, behavior, and both physical and mental well-being. The implications of this framework for the practice of medicine, in general, and pediatrics, specifically, are potentially transformational. They suggest that many adult diseases should be viewed as developmental disorders that begin early in life and that persistent health disparities associated with poverty, discrimination, or maltreatment could be reduced by the alleviation of toxic stress in childhood. An ecobiodevelopmental framework also underscores the need for new thinking about the focus and boundaries of pediatric practice. It calls for pediatricians to serve as both front-line guardians of children’s health and as advocates for the families of children. Community leaders to inform new science-based strategies that build strong foundations for educational achievement, economic productivity, responsible citizenship, and lifelong health. See also Bergman and Bergman, 2013 article that expounds on this one.

Shonkoff JP, Richter L, van der Gaag J, Blutta JA (2012). An integrated scientific framework for child survival and early childhood development. Pediatrics, 129(2), e460-e470. NOT KC PER SE, but SEPARATION. Building a strong foundation for healthy development in the early years of life is a prerequisite for individual well-being, economic productivity, and harmonious societies around the world. Growing scientific evidence also demonstrates that social and physical environments that threaten human development (because of scarcity, stress, or instability) can lead to short-term physiologic and psychological adjustments that are necessary for immediate survival and adaptation, but which may come at a significant cost to long-term outcomes in learning, behavior, health, and longevity. Generally speaking, ministries of health prioritize child survival and physical well-being, ministries of education focus on schooling, ministries of finance promote economic development, and ministries of welfare address breakdowns across multiple domains of function. Advances in the biological and social sciences offer a unifying framework for generating significant societal benefits by catalyzing greater synergy across these policy sectors. This synergy could inform more effective and efficient investments both to increase the survival of children born under adverse circumstances and to improve life outcomes for those who live beyond the early childhood period yet face high risks for diminished life prospects. Center on the Developing Child at Harvard University, Harvard University, 50 Church Street, Cambridge, MA 02138, jack_shonkoff@harvard.edu

Shorey S, He HG, Morelius E. (2016-Sept). Skin-to-skin contact by fathers and the impact on infant and paternal outcomes: an integrative review. Midwifery.40:207-17. doi: 10.1016/j.midw.2016.07.007. Singapore and Sweden. To summarise research evidence on the impact of father-infant skin-to-skin contact on infant and paternal outcomes. An integrative literature review was conducted. Data sources were PubMed, ScienceDirect, PsycINFO, and Cumulative Index to Nursing & Allied Health.Studies included were: (1) published in English between January 1995 to September 2015; (2) primary researches; and (3) focused on fathers providing skin-to-skin contact with their infants and its impact on infant and paternal outcomes. The Joanna Briggs Institute's Critical Appraisal Checklists were used to appraise the scientific rigour of the studies. Twelve studies (10 quantitative and two qualitative) were included in this review. Father-infant skin-to-skin contact had positive impacts on infants' outcomes, including temperature and pain, bio-physiological markers, behavioural response, as well as paternal outcomes, which include parental role attainment, paternal interaction behaviour, and paternal stress and anxiety. A father's involvement in providing skin-to-skin contact with their infants has important implications for infant and parent well-being. A father’s role is especially important in enhancing the early attachment relationship and promoting secure attachment behaviors in infants. A father’s positive role in infant development can also improve paternal stress and anxiety, promote self-efficacy, and enhance the quality of paternal interaction with the infant. The findings of this review highlight the importance of fathers’ involvement in infant care and support the implementation of policies and programs that encourage skin-to-skin contact and other forms of father-infant interaction. Research in this area continues to grow, and future studies should focus on understanding the mechanisms underlying these positive effects and developing strategies to promote fathers' participation in infant care.
contact seems to be feasible and beneficial to both infants and fathers. However, there has been a scarcity of literature that exclusively examines fathers' involvement and perceptions related to skin-to-skin contact in the postpartum period. Future research should examine skin-to-skin contact by fathers and its associated benefits, as well as fathers' perceptions on father-infant SSC among varied populations. A father's involvement in providing skin-to-skin contact should be promoted during the postnatal period. Father-infant skin-to-skin contact is a valuable alternative, especially during the unavailability of mothers due to special circumstances, including medical emergencies and caesarean section.

**FT, integrative lit review, Paternal KC, cesarean, temp, pain, bio-physical markers, infant behaviors, paternal stress, paternal anxiety role attainment, interaction. NOT ON CHARTS**

Silva LJ, Leite JL, Scochi CG, Silva LR, Silva TP. (2015 July), Nurses’ adherence to the Kangaroo Care Method: support for nursing care management Rev Lat Am Enfermagem. 2015 Jul 3. pii: S0104-11692015005092579. [Epub ahead of print] Purpose was to construct an explanatory theoretical model about nurses’ adherence to the Kangaroo Care Method at the Neonatal Intensive Care Unit, based on the meanings and interactions for care management. Qualitative research, based on the reference framework of the Grounded Theory. Eight nurses were interviewed at a Neonatal Intensive Care Unit in the city of Rio de Janeiro. The comparative analysis of the data comprised the phases of open, axial and selective coding. A theoretical conditional-causal model was constructed. Four main categories emerged that composed the analytic paradigm: Giving one's best to the contact, putting the infant in good conditions, parental care and contact, and considering the infant’s condition. The central phenomenon revealed that each nurse and team professional has a role of multiplying values and practices that may or may not be constructive, potentially influencing the (dis)continuity of the Kangaroo Method at the Neonatal Intensive Care Unit. Some nurses just don’t want to do KC and do not think it is important. The findings can be used to outline management strategies that go beyond the courses and training and guarantee the strengthening of the care model. **PT, Qualitative, staff issues, not enough KC being done, implementation. 3rd world** [Not on charts 7/30/2015]

Silva MG, Barros MC, Pessoa ÚM, Guinsburg R. (2016 April). Kangaroo-mother care method and neurobehavior of preterm infants. Early Hum Dev. 95:55-59. doi: 10.1016/j.ear humdev.2016.02.004 To evaluate the effect of kangaroo-mother care (KMC) in Brazil in preterm (PT) neurobehavior between 36 and 41 weeks post-conceptual age (PCA). A prospective cohort of 61 preterm infants with gestational age (GA) of 28-32w evaluated by the Neonatal Intensive Care Unit Network Neurobehavioral Scale (NNNS), with 36-41w PCA. Infants with clinical instability were excluded. They were analyzed in 2 groups: - Kangaroo (KAN): KMC for 7 or more days; - Conventional (CON): did not receive KMC. Scores of the 13 NNNS variables were compared between groups and the effect of KMC in the scores of the variables of NNNs were evaluated by multiple linear regression, controlling for confounders. The KAN groups (n=24) and CON (n=37) were similar regarding main demographic and clinical maternal and neonatal characteristics. Mean GA was 30.3w; and birth weight was 1170g for both groups. PT of KAN group were admitted in KMC with PCA of 35.8w (38.5days of life) and remained with this care for 14.3days. The NNNS was applied 13days after the start of KMC. PT submitted to KMC showed higher quality of movements (KAN: 4.98±0.53 vs CON: 4.53±0.47; p=0.001) and lower scores on Signs of stress and abstinence (KAN: 0.03±0.03 vs CON: 0.05±0.03; p=0.001). Controlling for confounders, the KMC was associated with higher scores on the variables Attention, Quality of movements, and lower scores on Asymmetry and Signs of stress and abstinence. Preterms submitted to the KMC, compared to those non-submitted, have better neurobehavior performance between 36 and 41weeks of post-conceptual age. PT, stress, NAS, abstinence, motor development, movements, late preterms, duration of KMC, deel, [not on charts, new to biblio study]

Silva CME1, Pellegrinelli ALR1, Pereira SCL1, Passos IR2, Santos LCD1. (2017-May). [Educational practices in accordance with the "Ten steps to successful breastfeeding" in a Human Milk Bank]. Cien Saude Colet. 22(5):1661-1671. doi: 10.1590/1413-8123201722.14442015. [Article in Portuguese]. This article sought to evaluate educational practices in line with the "Ten Steps to Successful Breastfeeding" in a Human Milk Bank. It involved a retrospective study using sociodemographic data about the pregnancy and the baby, obtained from a nursing mothers care protocol (2009-2012). These data were associated to steps related to educational practices from the "Ten Steps." Descriptive analysis, chi-square test and Poisson regression were performed. 12,283 mothers, with a median of 29 (12-54) years old, were evaluated. The guidelines about breastfeeding received during prenatal care (step 3) prevailed among mothers aged 30-39 years and the skin to skin contact (step 4) prevailed among oriented mothers. Breastfeeding training (step 5) predominated among those who breastfed exclusively. Higher prevalence of exclusive breastfeeding (step 6), breastfeeding on demand (step b) and use of artificial nipples (step 9) were noted among infants whose mothers were oriented. These findings indicate the important role of health professionals on mother/child training about breastfeeding, on encouragement of the skin/skin contact, exclusive breastfeeding and breastfeeding on demand. The guidelines indicated the need to improve in order to reduce the use of artificial nipples and enhance exclusive breastfeeding. **FT, descriptive evaluative study, BF, birthKC, Baby Friendly Step 4. Not on charts 6/1/2019**

feeding) that changed morbidity and mortality. Conclusions state “There is a place for a trial of Kangaroo Mother Care and…” (pg. 365).

PT, NOT KC study, referral to KC only, morbidity, mortality.

Simkiss, D. (2013). Kangaroo mother care [Editorial] J Tropical Pediatrics, 45(4), 192-194. This two page editorial talks about origins of KMC, components of KMC (Kangaroo feeding at breast, Kangaroo discharge), summarizes the 1996 INK meeting recommendations and consensus paper, says hi tech European and US units have adopted KC, cites temperature, apnea, periodic breathing, oxygenation, oxygen consumption, development, infection, and breastfeeding production outcomes (pg 192), mentions paternal KC and Feldman & Eidelman’s improved self-regulation findings, and relates outcomes in resource poor countries (Bergman, Sloan, Addis Ababa and Mexico studies). She says ‘good evidence to show that KMC is physiologically safe (pg. 193), but long term effects on neuropsychological and emotional development in infants need to be explored further. She states KMC does not increase mortality, instead it reduces hypothermia, improves weight gain, improves BF at discharge rates, is cost effective, leads to early discharge and is acceptable to parents. She next cites the INK research goals (from Cattano et al., 1998). REVIEW, INK, recommendations, 24 hr KC, KCBF, KC discharge, guidelines, weight, infection, length of stay, milk production. Not on charts yet

Simmons, L.E., Rubens, C.E., Darmstadt, G.L. & Gravett, M.G. (2010). Preventing preterm birth and neonatal mortality: exploring the epidemiology, causes, and interventions. Seminars in Perinatology, 34(6), 408-415. NO DOI. A review of the global problem of 13 million infants born preterm. Goes over causes of preterm birth, and says that “antenatal and postnatal interventions (e.g. antepartum maternal steroid administration, or KMC) to improve neonatal survival after birth have been demonstrated to be effective, but have not been implemented widely. … scaling up known efficacious interventions to improve the health of the preterm neonate is needed.” (pg. 408) KC NEEDS TO BE SCALED UP FOR PRETERM INFANTS. Yeah!!!! PT, Review, Implementation Not on charts 2/17/2011


Simpson, KR (2018- Jan-March). Emerging trends in perinatal quality and risk with recommendations for patient safety. J Perinatal & Neonatal Nursng, 32(1), 15-20. “Hospitals and health care systems are generally not keen to report single adverse events or series of adverse events in the literature because of liability concerns” (pg. 15) This is unfortunate because it can be very useful for clinicians to be made aware of possible risks based on others’ experiences before an injury happens”. Several trends that are associated with preventable patient harm and professional liability risk warrant close scrutiny. These trends are: 1) computerized interpretation of fetal heart rate during labor and clinical decisions support systems, 2) misuse of features of electronic medical record, 3) lack of attention to newborn safety in the hospital. Keeping health mother and infants together after birth requires precautions for maintaining safe conditions for the newborn. The first 2 hours after birth is a time of risk to the newborn for accidental suffocation or sudden unexpected postnatal collapse and may be related to a ‘potentially asphyxiating position’ during skin-to-skin care or breastfeeding (cites Becher, Bushan Lyon, 2012; Dageville et al., 2008; Peovic 2013; Poets et al. 2011). Risk factors are the first two hours of life, prone position of infant, skin-to-skin care, unsupervised breast-feeding during first 2 hrs of life, mother and infant are left alone during recovery, primiparous nthers, maternal fatigue, and maternal distractions such as smartphone use while holding the infant (cites Becher, Bushan Lyon, 2012; Dageville et al., 2008; Peovic 2013; Poets et al. 2011). Other risk factors are cesarean birth, maternal obesity, mother receiving narcotics, lack of availability of a well baby nursery or lack of a nurse to staff this nursery. “In several SUPC cases reviewed, babies were left in mother’s arms and not checked on for a number of hours. Some mothers are told that the hospital does not have enough staff to open the nursery, so they have to keep their babies with them. Risk factors for newborn falls or drops have been identified and need to inform strategies to minimize risk, including the middle of the night/eary morning hours, within the first 48-72 hours postpartum, no support person to stay with mother, maternal and support person fatigue, mother or family falling asleep while holding the infant, carrying the infant around the room (trips and falls (cites several fall articles) Recent cases of newborns falling from the OR bed during cesarean birth while lying on their mother’s chest but with no nurse standing next to the woman have been reported (no citation in article) Some of these cases resulted in skull fractures Skin to skin care in the OR must be done safely with a nurse holding onto the infant along with the mother. In another case, an infant fell from the mother’s arm while she was being transferred from the OR to the recovery unit as the stretcher moved quickly over an uneven floor (no citations). Hospitals have tried educating parents and having them sign contracts that they agree not to hold their infant while sleepy and not to leave the infant unattended on the bed ( ” pg. 17) These strategies seem reasonable but have not been tested for efficacy. Some mothers are reluctant to tell the nurse that the infant was dropped or fell because they fear being labeled as a bad parent.”... “The American KCBib 2018
recommend continuous nursing presence at the bedside during the two hour recovery period. Data describing risk factors for SUPC support these recommendations (cites Becher, Bushan Lyon, 2012; Dageville et al., 2008; Peovic 2013; Portis et al. 2011). Regular (including every 30 minutes for high-risk mothers and babies) monitoring of mother-baby couplets during postpartum hospitalization is also recommended by the American Academy of Pediatrics (Feldman-Winter, Goldsmith, et al. Pediatrics, 2016). Develop strategies that include routinely checking in on new mothers and infants during the postpartum hospitalization, as high risk mother require every 30-minute assessment (Feldman-Winter et al. for AAP, 2016). During frequent check-ins the nurse can quickly identify a tired mother or support person, put the newborn in the bassinet, and reinforce safety procedures. Safety contracts and patient education about risks of newborn drops and falls may be useful. Encourage skin to skin care during recovery and throughout the postpartum period. Encourage breast feeding and provide all the recourses necessary for the new mother meet her breastfeeding goals (cites ). Consider using one of the published tools to minimize risk of SUPC (cites ) that include systematic and frequent assessment of the new mother and infant… Maintain nurse staffing of one nurse to no more than 3 mother-baby couplets (cites ). Provide adequate nursing staff for the well-baby nursery as needed (cites ). Do not leave newborns at the nurses’ station under the care of unlicensed personnel” (pg. 18).

Sinclair, Jack C. (1999) Supporting parents and promoting attachment. In Jack C. Sinclair and Mike Bracken (Eds.) Effective Care of the Newborn Infant. Oxford University Press. Pp. 50-24. On page 52 there is a whole section on Kangaroo Care that relates how KC got started and benefits derived from uncontrolled studies (i.e. reduced mortality, morbidity and abandonment, thermal stability, more successful lactation, and positive parental attitudes (and cites references 79, 80 ). But then it says the evidence about thermal protection is of concern. LBW babies whose mean skin temp is <35.6°C have cold-induced rise in metabolism. Quoting Gagge, Winstlow, and Herrington (ref 81) that adult chest skin temperatures are 34.35°C at environmental temps of 20.30°C, mother’s skin temp is not warm enough to transmit heat to baby. Thus, KC is predicted to result in heat loss by conduction from baby to mother, and mother would only conduct heat to baby if baby was HYPOTHERMIC. “the concept that the method allows the baby to be ‘warmed’ by the mother is misleading.”(pg. 52). Then it goes on to cite Fardig’s study in which rectal temp at 45 mins postbirth in early KC (at cord cutting), late KC (after 5 minute APGAR) and no KC groups was above 36°C. So, Sinclair said, “This (Fardig’s) randomized trial shows for healthy full term babies generally a trend toward an increase in thermal stability during the immediate postpartum period. The findings are relevant because ‘keeping baby warm’ remains a maternal behavior that is associated with an improved survival of preterm infants (cites ).” (pg. 52). Reviews Acoclet (1989) too and says “skin temp of 3 vlbw babies was well maintained during skin to skin contact with their mothers, under conditions in which the babies wore a hat and had a blanket over the back.” (pg. 52). Reviews Whitelaw et al., in which “temperature instability was not a problem”. Evidence of thermal effects of KC is very limited at time of publication, and research is needed on direction and rate of heat transfer, body temps both deep and superficial, effect on metabolic rate and clinical effects should be done in large scale RCTS in developing and developed world to provide valid basis for assessing or recommending this practice. This is end of page 52 review, but on page 224 it starts talking about KC again, related to maternal behaviors and feelings and a Table 1 shows all the studied re viewed and this chapter’s author summarized on page 225:“There was no discernible pattern of effects related to length of skin to skin contact between mother and infant in the immediate postnatal period. Studies reporting no significant differences offered exposures of 30-60 minutes. Review, FT.PT Birth KC, prevents heat loss, maternal behaviors. GET CHAPTERS

Singh, A., Yadav, A. & Singh, A. (2012). Utilization of postnatal care for newborns and its association with neonatal mortality in India: An analytical appraisal. BMC Pregnancy and Childbirth, 12(1), 33. Correlation study between immediate postnatal care and infant mortality. 39% of neonatal deaths in India occur on the first day of life and 57% in the first three days of life. No association between check-up of newborns within 24 hours of birth and neonatal mortality existed in 2005-2007 data. However, the place where the newborns were examined was significantly associated with neonatal mortality. Children of mothers who were advised on “keeping baby warm (kangaroo care) after birth” during their antenatal sessions were significantly less likely to die during the neonatal period compared to those children whose mothers who were not advised about the same.” Pg. 33. The findings are relevant because ‘keeping baby warm’ is one of the most cost-effective and easiest interventions to save babies from dying during the neonatal period. Though randomized controlled trials have already demonstrated the effectiveness of ‘keeping baby warm’, for the first time this has been found effective in a large-scale population-based study. The findings are of immense value for country like India where the neonatal mortality rates are unacceptably high. PT?, mortality. FT., descriptive correlational study, Birth KC, SAFETY of Birth KC, morality, ALTEx, SUPC

Singh K, Khan SM, Carvajal-Aguirre L, Brodish P, Amouzou A, Moran A. (2017-Dec). The importance of skin-to-skin contact for early initiation of breastfeeding in Nigeria and Bangladesh. J Glob Health.7(2):020505. doi: 10.7189/jogh.07.020506. Skin-to-skin contact (SSC) between mother and newborn offers numerous protective effects, however it is an intervention that has been under-utilized. Our objectives are to understand which newborns in Bangladesh and Nigeria receive SSC and whether SSC is associated with the early initiation of breastfeeding. Demographic and Health Survey (DHS) data were used to study the

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characteristics of newborns receiving SSC for non-facility births in Nigeria (DHS 2013) and for both facility and non-facility births in Bangladesh (DHS 2014). Multivariable logistic regression was used to study the association between SSC and early initiation of breastfeeding after controlling for key socio-demographic, maternal and newborn-related factors. Only 10% of newborns in Nigeria and 26% of newborns in Bangladesh received SSC. In the regression models, SSC was significantly associated with the early initiation of breastfeeding in both countries (OR = 1.42, 95% CI 1.15-1.76 for Nigeria; OR = 1.27, 95% CI 1.04-1.55, for Bangladesh). Findings from the regression analysis for Bangladesh revealed that newborns born by Cesarean section had a 67% lower odds of early initiation of breastfeeding than those born by normal delivery (OR = 0.33, 95% CI 0.26-0.43). Also in Bangladesh newborns born in a health facility had a 30% lower odds of early initiation of breastfeeding than those born in non-facility environments (OR = 0.70, 95% CI 0.53-0.92). Early initiation of breastfeeding was significantly associated with parity, urban residence and wealth in Nigeria.

Geographic area was significant in the regression analyses for both Bangladesh and Nigeria. Coverage of SSC is very low in the two countries, despite its benefits for newborns without complications. SSC has the potential to save newborn lives. There is a need to prioritize training of health providers on the implementation of essential newborn care including SSC. Community engagement is also needed to ensure that all women and their families regardless of residence, socio-economic status, place or type of delivery, understand the benefits of SSC and early initiation of breastfeeding. **FT, Descriptive evaluative study, BF, community KC, 3rd world.**

Singh Joy, S.D. (2010). Skin-to-skin contact after a cesarean and risk of hypothermia. *American Journal of Nursing* 110(8), 67. This is a review of Gouchon et al.,’s 2010 experimental trial in *Nursing Research*. It reiterates the specifics of the study and that fear of hypothermia with KC after cesarean is not substantiated. This review does not discuss any of the breastfeeding outcomes nor maternal satisfaction. **Full Term, cesarean, temperature, hypothermia**

Singh, M. & Deorari, A.K. (2003). Humanized care of preterm babies. *Indian Pediatrics*, 40, 13-20. A REVIEW paper that reviews the virtues of the womb, principles of humanized care, elements of a baby-friendly ecology in the NICU (i.e. sound, light, positioning, handling, feeding with human milk, rhythmic gentle stimulation, tactile/vestibular development [through intermittent KC “during KC most babies feel comfortable, stop crying and achieve physiologic stability. At times, intractable apneic attacks may be relieved by skin to skin contact. During skin to skin contact there is a possibility of transfer of tremendous electromagnetic energy from compassionate mother to her tiny baby, producing calmness, comfort, autonomic stability, promotion of physical growth and augmentation of forces of healing. These virtues of skin to skin contact need to be further studied and exploited”], auditory stim, visual stim, and olfactory stim. **PT, Review, apnea, cyring, comfort, autonomic stability, growth, humane care**

Singh, H., Sing, D., Jain, BK, Kaur, H & Kaur S. (2004). Immediate cognitive impact of KMC workshop on medical students. Presentation at “Workshops on KMC at Neoncon 2004. XXVII NNF Annual Convention at Chandigarh, 28October, 2004” Available from file://E:\KangarooMotherCareInitiative(KMCI).html 63 senior medical students were give a questionnaire immediately before and immediately after a one-hour lecture with demonstration on Kangaroo Care. Maximum possible score was 25. Pretest scores were 0 (54% of students), 1 (39.7%), 2 (6.3%). Post test scores were 100% in 46% of students, 96% (19%), 92 (11.1%), 88(6.4%), 84 (11.1%) and 76 (6.4%). Immediate cognitive impact of KMC lecture was excellent. **Quasi-experimental one group, 3rd world, knowledge, medical students/doctors**

Simusas K & Gagliardi A. (2001). Initial management of breastfeeding. *American Family Physicians*, 64(6), 981-988,991-992). This is a review article of important things for family physicians delivering and caring for newborns to know and it cites KC in several places. Pg. 981 relates “infant should be placed on mother’s chest or upper abdomen immediately following delivery” “skin to skin contact between the mother and infant can facilitate breastfeeding, improve bonding. If infant is left alone it can crawl to breast and suckle.” On pg 982 “measures should be taken to ensure high quality contact as soon as possible because maternal-infant contact promotes early initiation of breastfeeding.” Pg. 985 states “early skin to skin contact is beneficial to maternal infant bonding and probably also to early Breastfeeding success. It appears prudent to delay a number of common nursery procedures until after the first hour of bonding and lactation…. Heat loss can be prevented by placing a cap on infant’s head and covering infant with a blanket while still maintaining direct skin to skin contact with the mother. Further, when skin to skin contact is practiced in the hospital with premature infants, studies document long term, increased maternal confidence and milk production.” **Fullterm, Review, Birth KC, delay procedures, breastfeeding.**

Sizun, J., Ratynski N., & Mambrini C. (1999). Implanter un programme individualise de soutien due developpement en reanimation neonatale: pourquoi, comment? *Archives de Pediatrie 6*, 434-439. Case study report in which careful observations of a session of birth kangaroo care was conducted with a preterm and compared to outcomes usually ascribed to individualized developmental care (NIDCAP). No reference is made to the Bogota model of kangaroo mother care, instead it talks about what kangaroo care did for the baby at birth, particularly how it supported maternal infant bonding. **FT, Case study, birth KC, bonding, developmental care. Need to get this article**

proposed as an alternative or complement to conventional neonatal care for preterms and that positive effects have been reported (improved growth, breastfeeding rate, and reduced nosocomial infections – citing Charpak et al., 2001), that most trials have been in developing countries and results may not have same relevance in countries where high technology neonatal care is more widely available” (and it sites Conde-Agudelo et al., 2000 to support this last statement). This review concludes that more randomized controlled trials of developmental care are needed and says that there are only 3 of NICCAP.  


Sloan, N.L., Ahmed, S., Islam, M., & Mitra, S. (2011). Experiences with community Kangaroo Mother Care in very low— income settings. *Current Women’s Health Reviews*, 7(3), 310-316. doi:10.2147/157340411796355153. This is a review of previous studies of community KMC in which rigorously followed community KMC (CKMC) prevented hypothermia, some respiratory conditions, and diarrhea and improved newborn nutrition in Bangladesh. However, subsequent to the study, training has been weak and only “token” KMC is being conducted with little health, nutrition or survival potential. PT, FT, 3rd world, Community KC, mortality, temp, infections, diarrhea. *Not on charts as of 10/2/2011.*

Sloan, N.L., Ahmed, S., Mirta SN, Choudhury N, Chowdhry M, Rob U., & Winikoff, B. (2008). Community-based kangaroo mother care to prevent neonatal and infant mortality: a randomized controlled cluster trial. *Pediatrics* 121(5), e1047-e1059. RCT in rural Bangladesh. Half of 42 union in 2 Bangladesh divisions were randomly assigned to KMC or no KMC. One village per union was randomly selected. 39,888 eligible consenting women provided demographic data. Community based workers taught KMC to all expectant and postpartum women in the intervention villages. 4165 live births were enrolled. Newborns were followed for 30-45 days and then quarterly thru first birthday for care, feeding, growth, health, and vital status. 40% overall and 65% of newborns who died were not weighed at birth. No diff in overall neonatal mortality rate nor infant mortality rate. KMC behaviors were more common in KMC than control group, except for care seeking behaviors. Implementation of KMC was weak. RCT, community-based KMC, mortality, 3rd world. *NOT ON CHARTS YET.*

Sloan, N.L., Camacho, L.W.L., Rojas, E.P.,, Stern, C., & Maternidad Isidro Ayora Study Team. (1994). Kangaroo mother method: Randomized controlled trial of an alternative method of care for stabilized low-birth weight infants. *Lancet*, 344(8925)September 17, 1994, 782-785. Longitudinal randomized controlled trial with infants <2000 g who were out of risk KC=128, incubator care group = 147. Over 6 months follow up, KC groups had lower rates of serious illness (respiratory tract disorders, apnea, aspiration, pneumonia, sepsis, general infections – all were 7% of KC and 27% of controls). No differences in growth or % of women breastfeeding, but proportion of BF is high in both groups. Mortality was same in both groups. KMC moms made more visits to clinic post discharge, but their infants had fewer readmits and so the cost of care was lower for KMC. Eligibility criteria excluded 50% of LBW infants. PT, RCT, 3rd world. Apnea, costs, infection, post-discharge visits to doctor, BF, mortality, morbidity, RCT, growth/weight/readmits.


Smitt M, Dawson JA, Ganzeboom A, Hooper SB, van Roosmalen J, te Pas AB. (2014, Mar 31). Pulse oximetry in newborns with delayed cord clamping and immediate skin-to-skin contact. Arch Dis Child Fetal Neonatal Ed. 99(4), F309-F314. doi: 10.1136/archdischild-2013-305484. To assess whether defined reference ranges of oxygen saturation (SpO2) and heart rate (HR) of term infants after birth also apply for infants born after midwifery supervised uncomplicated vaginal birth, where delayed cord clamping (DCC) (after at least 1 min or when pulsations in cord stopped) and immediate skin to skin contact (ISSC) is routine management. A prospective observational study was conducted. All infants born vaginally after uncomplicated, that is, no augmentation, maternal pain relief or instrumental delivery. Midwives supervising uncomplicated births at home or in hospital in the Leiden region (The Netherlands) used an oximeter and recorded SpO2 and HR in the first 10 min after birth. SpO2 and HR values were compared to the international defined reference ranges. In Leiden, values of 109 infants were obtained and are comparable with previously defined reference ranges provided by Dawson JA, Kamin CO, Wong C et al., 2010. Changes in heart rate in the first

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minutes after birth. Arch Dis Child Fetal Neonatal Ed, 95, F177-181, except for a higher SpO2, p<0.05) combined with a slower increase in SaO2 the first 3 min. The largest difference in SpO2 between the DCC+SSC group and the reference group was in the first three minutes (pg. The Leiden cohort also had a lower HR (p<0.05) during the first 10 min with a slower increase in the first 3 min. In the first minutes after birth, tachycardia (HR>180 bpm) occurred less often, and bradycardia (<80 bpm) more often (p<0.05) in the DCC+SSC group than reference group (reference group had 33,119 SaO2 readings and 20,318 observations of HR. They also charted the SaO2 and HR according to percentiles provided by the reference group (308 infants). For SaO2 at 1 minute, the 10th, 50th, 90th and 95th % were 60, 68, 86, and 96. For HR at 1 minute the 10th, 50th, 90th, and 95th % were 41, 65, 170, 170 bpm. AT 2 minutes, 79, 81, 89, and 95 for SaO2 and 54, 81, 184, and 188 bpm for HR. At 5 minutes for SaO2 they were 75, 91, 98, 99% and for HRs were 129,152, 168, 173 bpm. At 1, 2, and 3 minutes of life, the median SaO2 of the DCC+SSC group was 11, 7, and 4% higher than reference group. At minutes 4-10, SaO2 was 5(4mins), 6(5mins), 6(6mins), 5(7 mins), 5(8 mins), 4(9 mins), 2(10 mins) % lower than defined reference ranges group. For the DCC+SSC group tachycardia occurred 2.6% less often than in reference group (19.3%). For minutes 1-10, the percentages of tachycardia in the DCC+SSC group were 0.9,3.2,4.4,2.0, 0% and 2.14,31, 29.22, 22.18, 14, 12, 14% in reference group. Bradycardia occurred 6.5% of observations in DCC+SSC group and 4.8% in reference group. For minutes 1-10 in DCC+SSC group percentages of bradycardia were 70.47, 13, 3, 2.3,1, 1, 0, 0%; for reference group percentages were 50.21, 6, 2.1,1,2,1,0.0. The median HR of DCC+SSC group was 19, 75, 10, 18, 17, 14, 19, 13, 7, 12 bpm lower for 1-10 min after birth when compared to the defined reference ranges group. Median HR and 10th and 90th percentiles for DCC+SSC group were lower at all times compared to defined reference ranges. The reference ranges group received medical interventions, immediately clamping, and sscc was rarely done. It has been recommended to accept values down to the 10th percentile (pg. F311, citation is Dawson JA, Davis PG, O'Donnell CP et al., 2007. Pulse oximetry for monitoring infants the delivery room. A review. Arch Dis Child Fetal Neonatal Ed, 92, F4-F7) So, expectation of DCC+SSC group HR at 1-10 minutes is (Median, Range) = 61(42-146) at 1 minute; 85(67-164) @ 2 min; 157(145-169) at 3 mins, 152 (140-163) @4 mins; 150 (140-161) @ 5 mins; 149 (138-162) @ 6 mins; 152 (140-161) @ 7 mins; 147 (139-156) @8 mins; 149 (138-158) @9 mins; 146 (140-153)@ 10 mins. And the 10 and 90th percentiles of HR for DCC+SSC were lower than the 10th and 90th percentiles of values for the reference group. For SaO2 the median and ranges were: @ 1 min 78 (67-87%), at 2 mins 80(74-90%), at 3 mins 85 (77-81%), at 4 mins 86 (80-93%), at 5 mins 90 (81-95%), at 6 mins 91 (85-95%), at 7 mins 91 (87-95%), at 8 mins 92 (89-96%), at 9 mins 93 (89-97%), at 10 mins 95 (89-98%). This article lists all the previous studies of SaO2 and HR with Term infants after birth (p. F312). Defined reference ranges can be used in infants born after uncomplicated vaginal birth with DCC and ISSC, but higher SpO2 and lower HR were observed in the first minutes. FT, descriptive comparative study, stable within normal ranges, Birth KC, HR, tachycardia, bradycardia, oxygen saturation, delayed cord clamping. Not on charts 4/3/2014

Smith ER, Bergelson I, Constantian S, Valsangkar B, Chan GJ. (2017-Jan) Barriers and enablers of health system adoption of kangaroo mother care: a systematic review of caregiver perspectives. BMC Pediatr.17[1]:35-52 doi: 10.1186/s12870-016-0769-5. Despite improvements in child survival in the past four decades, an estimated 6.3 million children under the age of five die each year, and more than 40% of these deaths occur in the neonatal period. Interventions to reduce neonatal mortality are needed. Kangaroo mother care (KMC) is one such life-saving intervention; however it has not yet been fully integrated into health systems around the world. Utilizing a conceptual framework for integration of targeted health interventions into health systems, we hypothesize that caregivers play a critical role in the adoption, diffusion, and assimilation of KMC. The objective of this research was to identify barriers and enablers of implementation and scale up of KMC from caregivers’ perspective. We searched PubMed, Embase, Web of Science, Scopus, and WHO regional databases using search terms ‘kangaroo mother care’ or ‘kangaroo care’ or ‘skin to skin care’. Studies published between January 1, 1960 and August 19, 2015 were included. To be eligible, published work had to be based on primary data collection regarding barriers or enablers of KMC implementation from the family perspective. Abstracted data were linked to the conceptual framework using a deductive approach, and themes were identified within each of the five framework areas using Nvivo software. We identified a total of 2875 abstracts. After removing duplicates and ineligible studies, 98 were included in the analysis. The majority of publications were published within the past 5 years, had a sample size less than 50, and recruited participants from health facilities. Approximately one-third of the studies were conducted in the Americas, and 26.5% were conducted in Africa. We identified four themes surrounding the interaction between families and the KMC intervention: buy in and bonding (i.e. benefits of KMC to mothers and infants and perceptions of bonding between mother and infant), social support (i.e. assistance from other people to perform KMC), sufficient time to perform KMC, and medical concerns about mother or newborn health. Furthermore, we identified barriers and enablers of KMC adoption by caregivers within the context of the health system regarding financing and service delivery. Embedded within the broad social context, barriers to KMC adoption by caregivers included adherence to traditional newborn practices, stigma surrounding a preterm infant, and gender roles regarding child care. Efforts to scale up and integrate KMC into health systems must reduce barriers in order to promote the uptake of the intervention by caregivers. FT, implementation, staff issues, maternal/paternal issues, barriers to KMC, little being done. Not on charts 2-22-2017

Smith, P.B., Moore, K., & Peters, L. (2012). Implementing Baby-Friendly practices: strategies for success. MCN American Journal of Maternal Child Nursing, May 16 (epub ahead of print). Excellent article on strategies to get nurses and doctors and patients to do Birth KC. Hospitals and birthing centers can strongly influence the outcomes for mothers who choose to breastfeed by establishing KC Bib 2018
effective breastfeeding behaviors immediately after birth and during the hospital stay. The Baby-Friendly USA initiative outlines 10 steps to successful breastfeeding. Although these steps have been successfully supported in practice, they can be difficult to implement due to a variety of factors, including resistance to change. Specific steps generate more barriers to overcome than others—namely exclusive breastfeeding without supplementation or pacifiers, rooming-in for 23 out of 24 hours, and skin-to-skin contact with a parent immediately after birth and during the hospital stay. Our hospital spent 5 years implementing Baby-Friendly practices to prepare for a successful site visit. In the process, barriers to key Baby-Friendly steps were overcome through creative approaches and strategic education for staff, physicians, and parents. The purpose of this article is to outline specific actions taken that assisted our hospital in its successful journey. Those actions and strategies will hopefully be of value to others in their journey toward designation. FT, Birth KC, BF, barriers, implementation, quality improvement project, need education

Smith, J., Plaat, F., & Fisk, NM. (2008). The natural cesarean: a woman-centered technique. British Journal of Obstetrics and Gynaecology, 115, 1037-1042. Cesarean birth remains entrenched in surgical and resuscitative ritual which delay maternal contact, impair maternal satisfaction, and reduce breastfeeding. This is description of KC for 4000 c/s in Australia, describing a natural approach by allowing parents to watch birth of child as active participants (Holding mom up and no drape separating her from sterile field), slowing delivery with physiological autoresuscitation (let baby’s head emerge and stay in that position so uterine contractions clear lung field of fluid, then surgeon slowly delivers baby and baby flings arms out in extension reflex and they watch baby for one minute APGAR, and transferring baby directly onto mothers chest for Birth KC (actually baby goes to midwife’s arm and mom is told not to reach for baby because she may contaminate sterile surgical field. Midwife places baby on mom’s chest and dries and covers with blanket and bubble wrap and then Mom can embrace baby). They do Vit K shot before mom embraces baby. After surgery, in OR, baby is weighed and given to partner for paternal KC (pg. 1039) while mom is transferred to bed. Biggest obstacle has been reluctance of staff to change roles and give up rituals. OR temp is maintained at 25 degrees C to keep babies warm. No evaluation criteria of the technique are presented and they mention that this needs to be done. See also Varner, 2008 for his commentary on this “controversial” type of care (pg. 1042) and Newman & Hancock commentary on this. Full term, Birth KC, Cesarean section, breastfeeding, paternal KC, implementation.

Smith, J., Plaat, F., & Fisk, N.M. (2009). “The Natural Cesarean” Birth, 36(4), p. 356. This is a letter to the editor in regards to Newman and Hancocks 2009 comments about how a cesarean birth can not ever be natural! They make the point that cesarean patients should have some autonomy in their maternity care and the time for DOCTOR KNOWS BEST with no input from patient and patient remaining a passive participant in the cesarean birth experience has PASSED!!!! They think not doing KC permits regression from informed autonomy to yesteryear’s doctor know best approach, an approach that even the NIH conference statement on cesareans says is outdated (NIH State of the Science Conference Statement: Cesarean delivery on maternal request. March 27-29, 2006. Obstet Gynecology 107(6), 1386-1397.) The authors do not think that skin to skin contact and breastfeeding should be sacrificed as part of the aim to improve cesarean care (which is meant to mean reduce elective cesareans). They agree that safety and maternal satisfaction with skin to skin at cesarean birth should be measured. They conclude that women and their partners welcome the introduction of some normal elements into an otherwise abnormal birth. PT, FT, commentary, Birth KC, Cesarean, Breastfeeding. See also Bergman & Bergman, 2013 for their citation of this work.

Smith, K.M. (2007). Sleep and kangaroo care: clinical practice in the newborn intensive care unit: where the baby sleeps. Perinatal Neonatal Nursing 23(2), 151-157. An implementation report of using KC to increase stable preterm infant sleep and rest. KC was started earlier in each infant’s NICU course by increasing interactive education, support, ongoing review of unit practices and outcomes. Education regarding sleep states and cues was a focus of the project and understanding infant sleep assisted staff in recognizing levels of restful sleep or restless sleep in infants. The implications of sleep and infant success in achieving discharge to home allowed staff to see their role in infant sleep and parent’s role in infant sleep and growth/development overall. Preterm, implementation, sleep, growth in nursery, not weight in particular, developmental care NOT ON CHARTS YET.

Smith BP., Moore, K., & Peters, L. (2012). Implementing baby-friendly practices: strategies for success. MCN: American Journal of Maternal Child Nursing, 37(4), 228-233. Fantastic article of how to implement Birth KC. Relates that the Baby Friendly initiative is more than just starting breastfeeding, that it is encouraging mother infant bonding, providing education, support, and encouragement and that these elements are one of the important practices that are essential and required. Encouraging skin to skin contact, educating families and assisting them in breastfeeding is required. FT, Birth KC, BF, Baby Friendly, Implementation. Not on charts 8/7/2012 See also the Elizabeth Light 2012 article in Neonatal Network that is on the bib too. EXCELLENT ARTICLE FOR CERTIFICATION


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Smith, S.L. (1999). Skin-to-skin care in intubated very low birthweight infants. *Parent to Parent Update* (Univ. Utah Med Ctr in house newsletter). Summer 1999, pg. 4. 14 mechanically ventilated infants (X wgt=2 lbs. 3oz; X GA = 30.5 wks) were randomly assigned to cross over of 2 hrs of KC before 2 hrs of incubator or vice versa. During KC higher skin (37.02) and leg temps occurred than during incubator (36.38 for skin temp). Babies needed 14% more O2 during KC and their SaO2 was lower during KC than in incubator. Smith postulates that increased energy and O2 consumption occur during two hours of KC with ventilated infants. PT, RCT, VENT KC, 2/thigh temp, skin temp, FiO2, oxygenation, SaO2. Randomized cross-over study

Smith SL (2001). Physiologic stability of intubated VLBW infants during skin-to-skin care and incubator care. *Advances in Neonatal Care, 1*(1), 28-40. 14 bronchopulmonary dysplasia mechanically ventilated infants (X wgt=2 lbs. 3oz; X GA = 30.5 wks) were randomly assigned to cross over of 2 hrs of KC before 2 hrs of incubator or vice versa. During KC significantly higher skin (37.02) and leg temps occurred than during incubator (36.58 for skin temp). Babies needed 14% more O2 during KC significantly higher FiO2 and their SaO2 was lower but not significantly lower during KC than in incubator. Smith reported no stability in KC group, incubator group was more stable and she postulates that increased energy and O2 consumption occur during two hours of KC with ventilated infants. PT, VENT KC, randomized quasi experimental cross over study. Skin temp, thigh temps, SaO2, FiO2, stability.

Smith SL (2002). Infant holding in intensive care. *AACN News, 19*(2), pg. 4, 5. Short clinical scenario of KC with intubated infant that gives Smith chance to review the lit again and say that KC with intubated infants may not be the best practice. She reviews her 2001 study here as well. PT, Case Study, ventilated KC, temp

Smith SL. (2003a). Research corner: Myth vs. Reality: Holding intubated infants in the NICU. *AACN News*. Available on http://www.aacnnews.nsf. A case study of Jay, a 26 weeker who is 38 days old and intubated and given KC. This report relates myths that she dispels. Myth #1 is Intubated infants are physiologically more stable when held than when in incubator; She says the rectal temp of a 772 gram decreased to 37.2 during KC, showing the fragility of very small infants during KC (But 37.2 is a great temp! and near the upper limit of normal of 37.5 for this infant according to Scopes and Ahmed’s work). She reviews Neu’s work and concludes that giving Smith chance to review the lit again and say that KC with intubated infants may not be the best practice. She reviews her 2001 study here as well. PT, Case Study, ventilated KC, temp

Smith, S.L. (2003b). Heart period variability of intubated very-low-birth-weight infants during incubator care and maternal holding. *Am J Critical Care, 12*(1), 54-64. 14 preterm infants tested at mean of 34 postnatal days who were on mechanical ventilation (BPD babies) served as own controls and were randomly assigned to 2 hrs of intermittent KC for 2 consecutive days followed by 2 days of incubator care or vice versa. Multiple 300 second epochs of 5Hz data was analyzed. Mean interbeat interval (time domain assessment) was 332 ms during KC, 368 ms during incubator. No differences in low frequency, high frequency, low/high frequency ratio power (Frequency domain assessment) between KC and incubator existed (pg. 60). Mean LF for kc was 124.6 ms² (R=51.9-71.4 ms²), LF for incubator was 70.3 before KC, 71.4 after KC and 51.9-61.7 ms² during incubator period. Mean HF power was similar for KC (8.8) and incubator (6.1 ms²). LF/HF ratio was 6.7ms² during KC and was between 6.8- 8.1 ms² during incubator. Gestationally older infants (32-34 weeks corrected age) had increased power (but not significantly different) in the low and high frequency regions than 28-29, 30-31 wk infants. Refers to previous work, saying significantly higher temp and significantly higher FiO2 during KC than incubator, and lower (but not sig) SaO2, but the data are not given as these are reported in another study and just mentioned here. PT, Randomized Cross-over design I group, HRV, temp, SaO2, FiO2

Smith SL (2008). Re: a case study of the effect of kangaroo care on the physiologic parameters and ventilator settings in very low birth weight fraternal twins. *Advances in Neonatal Care, 8*(4), 192. This is Smith’s reply to an earlier publication (Bonner, 2008) about shared KC for ventilator dependent twins. She contests that Bonner says no research with ventilated infants in KC exists and cites her own study and tells Bonner to do a better job of reviewing the literature. Bonner also did not cite the Ludington-Hoe et al., 1998 studies and many others for ventilated infants i.e Swinth et al., but I did not write a punitive letter to the editor. I (S. Ludington) don’t think telling an author to do a better job of reviewing the literature builds the cadre of nurse researchers. PT, Case study, ventilator, twins

Smith SL, Doig AK, & Dudley WN (2004). Characteristics of heart period variability in intubated very low birth weight infants with respiratory disease. *Biology of the Neonate, 86*, 269-274. This was with 16 intubated infants at 30.4 week pma and it says that High frequency and low frequency powers were not different between awake and sleep states and that HF power did not improve with gestational age as expected and that LF power did increase with age, albeit nonsignificantly. THE NICU stimulates a sympathetic response in LBW infants with respiratory disease and it disrupts normal parasympathetic nervous system development. NOT A KC Study but related to Smith 2003a. Stress

against infection-related mortality include drying, skin-to-skin contact, delayed cord clamping, breastfeeding initiation, and delayed bathing,” (in abstract on page 1. Also, “WHO has identified simple interventions that, if applied routinely, mitigate some of the threats that newborns face. These early interventions are integral to hospital infection control practices because they reduce the risk of neonatal sepsis. Hypothermia is a threat. Thorough drying, direct skin-to-skin contact immediately upon delivery and covering with a blanket and bornet prior to cord clamping mitigates this threat. Sustained skin-to-skin contact also initiates colonization of the newborn with maternal flora (as opposed to hospital flora) and facilitates olfactory learning, successful intake of colostrum and sustained breastfeeding. The risk of neonatal sepsis. 481 deliveries were observed by trained physicians in 51 hospitals. Only 9.6% of infants got skin to skin contact in the delivery room. While 68.2% of infants were put to breast, all were separated two minutes later!!! Many vigorous infants were unnecessarily suctioned. Timing and sequence of interventions was poor and wrong and minute-by-minute care is below WHO standards. FT, birth KC, infection, third world, hypothermia

Sodemann M, Nielsen J, Veirum J, Jakobsen MS, Bjal S, & Asby P. (2008). Hypothermia of newborns is associated with excess mortality in the first 2 months of life in Guinea-Bissau, West Africa. Tropical Med and International Health 13(8), 980-986. This is NOT a KC study but it says that in community-based care of newborns they considered 34.5°C or less HYPOOTHERMIA. Whoa, that is low!!!. In US we consider 36.5 the onset of hypothermia... FT, temp.

Solomons, N., & Rosant, C.(2012). Knowledge and attitudes of nursing staff and mothers towards Kangaroo Mother Care in the eastern sub district of Cape Town. South African Journal of Clinical Nutrition, 25(1), 33-39. Mothers did not know about KMC until they were admitted to the KMC ward & 60% of nurses had no formal education about KMC, but the majority of mothers were pleased with KMC effects (i.e. better weight gain) and indicated that they would continue KMC at home, and all nurses working in the KMC wards had very positive attitude toward KMC and agreed that KMC was beneficial to mother and infant. PT, descriptive study, home KC, attitudes of staff, maternal perception, weight gain, NOT ON CHARTS 8/17/2012

Soni A, Amin A, Patel DV, Fahey N, Shah N, Phatak AG, Allison J, Nimbalkar SM. (2016-April). The presence of physician champions improved Kangaroo mother care in rural western India. Acta Paediatr. 2016 Apr 25. doi: 10.1111/apa.13445. [Epub ahead of print] This study determined the effect of physician champions on the two main components of Kangaroo mother care (KMC): skin-to-skin care and breastfeeding. KMC practices among a retrospective cohort of 648 infants admitted to a rural Indian neonatal intensive care unit (NICU) between 5 January 2013 and 7 October 2014 were studied. KMC champions were identified based on their performance evaluation. We examined the effect of withdrawing physician champions on overall use, time to initiation and intensity of skin-to-skin care and breastfeeding, using separate models. In comparison to when KMC champions were present, their absence was associated with a 45% decrease in the odds of receiving skin-to-skin care, with a 95% Confidence Interval (CI) of 64% to 17%, a 38% decrease in the rate of initiation skin-to-skin care (95% CI 53% to 82%) and an average of 1.47 less hours of skin-to-skin care (95% CI -2.07 to -0.86). Breastfeeding practices were similar across the different champion environments. Withdrawing physician champions from the NICU setting was associated with a decline in skin-to-skin care, but not breastfeeding. Training healthcare workers and community stakeholders to become champions could help to scale up and maintain KMC practices. PT, Quasi-experiment, BF use, BF initiation, BF intensity, KC initiation, KC use, KC intensity, implementation. New to bibliometric study

Sontheimer, D., Fischer, C.G., Scheffer, F., Kaempf, D., & Linderkamp, O. (1995). Pitfalls in respiratory monitoring of premature infants during Kangaroo care. Archives Disease in Childhood Fetal Neonatal Edition 72(2), F115-117. Case study of one preterm infant who had extrasystoles during KC. Could not find any clinical reason for it and checked wires, and then moved infant leads to axilla and extra systoles went away. Can get extrasystoles in infant HR if you put the leads on the ventral surface. Better to put leads in axilla in infant to avoid this. See also Klathe study. HR, negative outcome, preterm

Sontheimer, D., Fischer, C.G., & Buch, K.E.(2004). Kangaroo transport instead of incubator transport. Pediatrics 113(4), 920-923. 31 stable preterm and term infants were given “in transports” (n=13) and “back transports” (n=18). 27 were maternal KC transports, 1 paternal transport, 2 by RNs and one by MD. No differences between surrogate and maternal/paternal KC outcomes. HR, RR, SaO2(taken every 5 minutes throughout transport)and rectal temp (B4 and After transport- after transport was 36.5-37.4) were stable in all KC transports. One baby had HR increase from 130-165 after 1 hr of transport due to warming (so blanket was removed). No crying or agitated behavior observed. Parents felt comfortable and safe and appreciated this type of transport. Transports were by ambulance and helicopter and weights were 1220-3720 grams and took 2-400 km and 10-300 minutes. KC reduces jarring but may not be appropriate for critically ill infants who need repeated handling and therapeutic interventions during transport. Baby is tied to mother using a sling and two blankets. KC transport is safe, effective, and inexpensive method of transport. Article includes many pictures. Descriptive, PT, FT, HR, RR, SaO2, Rectal Temp, crying, agitation, Maternal feelings, Pat KC, surrogate KC.

Study #1: KC group (n=30) given 45 minutes KC under radiant warmer beginning after episiotomy repair; control (n=30) had mom and baby separated for 12-24 hours with FU at 35 days, 3,6,9,12 mos. KC group BF for mean 173 days during 1st year, controls for 274 days. Fewer infections in KC. Early postnatal KC did not result in an increase in BF. Study #2: KC (n=34) got 45 minutes post delivery, control (n=34) separated for 12-24 hours. KC group BF for mean 159 days over 1st year, control for 109 days: KC group BF longer, & fewer infections in KC. Study #3: KC (n=20) also got 45 minutes of KC, and controls (n=20) were separated for 12-24 hours and third group (n=20) got nude infant at 12 hrs age. KC group BF for mean # of 96 days over 1st year of life, controls BF for mean of 104 days. KC group did not BF longer in Study #3. Observations at 36 hours in study #3 showed KC moms had sig more maternal affectionate behavior (being en face, looking, talking, fondling, kissing, smiling to infant), but no diff in proximity behavior (keeping baby in mom’s bed or holding it close) or in taking care of baby (burping, wiping mouth). Conclusion: KC moms BF 50% longer than controls (p<.013). Wgt gain sig more at 6 months (4.5kg kc v 3.7kg non-KC) sig. More at 1 yr (6.0kg vs 5.7kg). 390 she provide a brief review of KC benefits to gas exchange, heart rate, apnea, weight gain, sleep, length of stay, infections. 391 She also states that KC improves milk production, BF initiation, BF duration, and then goes on to relate the QI project to increase KC at Children’s Hospital of Philadelphia that had 8 implementation parts: 1) random chart audits each month, 2) daily chart review, 3) patient packets about KC [they call it skin-to-skin contact], 4) Nursing staff education, 5) KC resource binder, 6) Visual cues at the bedside, like a calendar and pictures and recording form, 7) parent education, and 8) qualitative interviews with nursing staff. The QI project resulted in only a modest increase in use of SSC (from a mean of 1 to a mean of 4 babies doing, SSC over the course of 10 months) Figure 3 on page 391). Nurses do not document holding and SSC as often as it is done. Says “infant should be positioned skin to skin at the breast and mother should manually express a few drops.” (pg. 391) PT, Review, BF, QI, quality improvement, Implementation, KCBF, nurses’ recording of KC time, takes nursing time, nurse’s time NOT MUCH KC BEING DONE, little being done


Spatz, D.L. (2012). Innovations in the provision of human milk and breastfeeding for infants requiring intensive care. Journal of Obstetric, Gynecologic and Neonatal Nursing, 41(1), 138-143 DOI: 10.1111/j.1552-6909.2011.01315.x. Not a KC article per se, as this is about colostrum and oral care of preterm infants and how to maintain milk supply and transition the preterm to breastfeeding. On page 141 it says under the section on transitioning to breastfeeding: “Spatz (2004) detailed 10 specific steps that protect and promote breastfeeding in vulnerable infants including informed decision, establishment and maintenance of milk supply, breast milk management, feeding of breast milk, skin-to-skin care, nonnutritive sucking at the breast, transition to breast, measuring milk transfer, preparation for discharge, and appropriate follow-up. These 10 steps have been collapsed into a five-step pathway that can be implemented by the bedside nurse to achieve breastfeeding success with even the most vulnerable infants (Edwards & Spatz, 2010), including the initiation of pumping and maintenance of milk supply, mouth care with human milk, skin-to-skin care, nonnutritive sucking at the breast, and transitioning to breast feeds...”

For the mother, skin-to-skin contact has been associated with improved milk production and successful transition to KC.
breastfeeding as well as longer breastfeeding duration (Conde-Aguadelo, Belizan, & Diaz-Rosello, 2000). Colostrum is very important for infant: the immunological components of colostrum are critical in establishment of positive gut flora and priming the fragile gut wall. Infants should get 48-96 hours of colostrum (to mimic what healthy term infant will get). Preterm milk is higher in fats, protein, and CHO than full term milk and that these differences persist for 8 weeks. PT, BF, milk supply, duration, colostrum Not on Charts 2/7/2012.


Srinath BK, Shah J, Kumar P, Shah PS. (2016-May). Kangaroo care by fathers and mothers: comparison of physiological and stress responses in preterm infants. J Perinatol 36(5):401-404. doi: 10.1038/jp.2015.196. To compare physiological and biochemical responses in stable preterm neonates and their parents following kangaroo mother care (KMC) and kangaroo father care (KFC). We conducted a prospective cross-over design study of stable preterm neonates of <35 weeks gestation in a tertiary Neonatal Unit in Toronto. All neonates received KMC and KFC for 1 h on consecutive days in a random order. Heart rate, temperature, blood pressure, oxygen saturation and salivary cortisol in infants before and after kangaroo care and heart rate, temperature and salivary cortisol in parents before and after kangaroo care were measured. Pairwise comparisons of changes in these measures were analyzed. Twenty-six sets of neonates and their parents were studied for physiological parameters, of which 19 had adequate samples for salivary cortisol assessment. The infants had a mean birth weight of 1096 g (s.d.=217) and a mean postmenstrual age at study of 32 weeks (s.d.=2). There were no significant differences in the changes in mean heart rate (P=0.51), temperature (P=0.37), oxygen saturation (P=0.50), systolic blood pressure (P=0.32), mean blood pressure (0.10) and salivary cortisol (P=0.50) before and after KMC or KFC in the neonates. The changes in mean heart rate (P=0.62), temperature (P=0.28) and salivary cortisol (P=0.59) before and after kangaroo care were similar between mothers and fathers. No significant differences in physiological and stress responses were identified following KMC or KFC in preterm neonates. KFC may be as safe and as effective as KMC. DADDIES ARE AS EFFECTIVE AS MOTHERS IN kc.. PT, randomized cross-over quasi-experimental pretest-posttest, HR, temp, SaO2, systolic BP, mean BP, salivary cortisol, stress, stability, maternal KC, paternal KC. Canada, duration of KC

Srivastava, S., Gupta, A., Bhatnagar, A. & Ditta S. (2014). Effect of very early skin to skin contact on success at breastfeeding and preventing early hypothermia in neonates. Indian Journal of Public Health, 2014 Jan-Mar;58(1):22-26. doi: 10.4103/0019-557X.128160. Birth and immediate postpartum period pose many challenges for the newborn. The neonatal mortality rates are high in India, whereas the breastfeeding rates are still low. Hence, need exists for a simple and easily applicable intervention, which may counter these challenges. The present study was undertaken to evaluate the effects of very early skin-to-skin contact (SSC), in term babies with their mothers, on success of breastfeeding and neonatal well-being. Randomized control trial conducted over 2 years' period in a tertiary care hospital. Healthy babies delivered normally were included. Very early SSC between mothers and their newborns was initiated in the study group. We studied effective sucking (using modified infant breastfeeding assessment tool [IBFAT]), breastfeeding status at 6 weeks, maternal satisfaction, thermal regulation, baby's weight and morbidity. T-test, Pearson Chi-square test and non-parametric Mann-Whitney test were used through relevant Windows SPSS software version 16.0. We observed that SSC contributed to better sucking competence as measured by IBFAT score (P < 0.0001). More babies in the SSC group were exclusively breastfed at first follow-up visit (P = 0.002) and at 6 weeks (P < 0.0001). SSC led to higher maternal satisfaction rates, better temperature gain in immediate post-partum period, lesser weight loss was at discharge and at first follow-up (all P < 0.0001) and lesser mortality than the study group (P = 0.006). Very early SSC is an effective intervention that improves baby's sucking competence, maternal satisfaction, breastfeeding rates and temperature control and weight patterns. PT, RCT, exclusive BF, Birth KC, Temperature, hypothermia, maternal satisfaction, morbidity, weight loss, birth weight loss, sucking, 3rd world

Stanton CK, Rawlins B, Drake M, Dos Anjos M, Cantor D, Chongo L, Chavane L, da Luz Vaz M, Ricca J.(2013). Measuring Coverage in MNCH: Testing the Validity of Women's Self-Report of Key Maternal and Newborn Health Interventions during the Peripartum Period in Mozambique. PLoS One.2013 May 7;8(5):e60694. doi: 10.1371/journal.pone.0060694. As low-income countries strive to meet targets for Millennium Development Goals 4 and 5, there is growing need to track coverage and quality of high-impact peripartum interventions. At present, nationally representative household surveys conducted in low-income settings primarily measure contact with the health system, shedding little light on content or quality of care. The objective of this study is to validate the ability of women in Mozambique to report on facility-based care they and their newborns received during labor and one hour postpartum. The study involved household interviews with women in Mozambique whose births were observed eight to ten months previously as part of a survey of the quality of maternal and newborn care at government health facilities. Of 487 women whose births were observed and who agreed to a follow-up interview, 304 were interviewed (62.4%). The validity of 34 indicators was tested using two measures: area under receiver operator KCBib 2018
characteristic curve (AUC) and inflation factor (IF); 27 indicators had sufficient numbers for robust analysis, of which four met acceptability criteria for both (AUC >0.6 and 0.75<IF<1.25). Two of these indicators are considered high demand and are recommended for incorporation into international survey programs: presence of a support person during labor/delivery and placement of the newborn skin to skin against the mother. Nine indicators met acceptability criteria for one of the validity measures. All 13 indicators are recommended for use in in-depth maternal/newborn health surveys. Women are able to report on some aspects of peripartum care. Larger studies may be able to validate some indicators that this study could not assess due to the sample size. Future qualitative research may assist in improving question formulation for some indicators. Studies of similar design in other low-income settings are needed to confirm these results. PT, FT, descriptive, community KC, birth KC, essential care, guideline/policy, Qualitative, 3rd world, See also Moran 2013


Stening W. (1997). Die Kanguru-Methode (Haut-zu-Haut-Kontakt) bei fruhgeborenen Kindern (The kangaroo method (skin-to-skin contact) for premature infants. Kinderkrankenpfleger, 16(8), 308-310. A REVIEW article for nurses of all the benefits of KC. PT, Review

Stening W, Kribs S. Kiencke P. Stutzer H. Roth B. (1999). Die Verbreitung der Kanguru-Methoden in Deutschland. Monatschr Kinderheilkd, 147, 766-769. KC is routine in German NICUs to reduce respiratory difficulties and reduce length of stay. KC helps promote bonding and is widely used throughout German NICUs. PT, bonding GERMAN


Stening W, & Roth B (1999). Dissemination of the Kangaroo Method in Germany. Journal of Perinatology 19(6): 450-451. 91% of German NICUs offer KC, 3% of those to ventilated infants with “good or very good” experiences. Most offer it for 30-60 minutes, but they think this is too short. Hypothermia is infrequent, infection is not found, spontaneous extubation of ventilated pts. is a problem. Implementation, Infection, hypothermia, ventKC, extubation

Stenson, B. (2009a). Sudden unexpected early postnatal collapse. Archives Diseases in Childhood Fetal Neonatal Edition, 94(5), F313. Doi: 10.1136/adc.2009.170647. This is one paragraph that refers to “Peters et al’s report of 5 cases where apparently well newborn infants collapsed within 12 hours of birth, requiring CPT and went on to have very poor outcomes. This is increasingly reported and is now the subject of a British Paediatric Surveillance Unit Study to describe the condition more fully and work towards a standardized investigation protocol.” Go to http://bpsu.inopsu.com/studies/Neonatal_Collapse/

FT, Birth KC, life threatening events, comment NOT ON CHARTS 10/5/2011

Stenson, B. (2009b). Sudden unexpected postnatal collapse. Archives disease childhood fetal neonatal edition, 94(3), F157. Foran reports that a small number (12) of apparently healthy term newborns who were in good condition at birth but collapsed suddenly and unexpectedly at the median age of 75 minutes. All required CPR and median post resuscitation pH was 6.75. Collapse often occurred at the breast during or soon after the first feed and in these cases the infants followed a course suggestive of severe hypoxic-ischemic insult or severe respiratory problems and tended to have better neurological outcome. No infant had metabolic disease or infection. Full post mortem should be done. The British Paediatric Surveillance Unit study starts in Nov. 2009 and will run for 13 months to determine the incidence of this occurrence within 12 hours of birth. 


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Stevens B, Yamada J, & Ohlsson A. (2004). Sucrose for analgesia in newborn infants undergoing painful procedures. *Cochrane Database Syst Rev* 2004;(3):CD001069. Not a KC study, but a referral to KC. A meta-analysis of sucrose to reduce procedural pain. At end of meta-analysis, it says “The use of repeated administrations of sucrose in neonates needs to be investigated as does the use of sucrose in combination with other behavioural (e.g. facilitated tucking, kangaroo care) and pharmacologic (e.g. Morphine, fentanyl) interventions. Sucrose Meta-analysis. Refers to KC. , pain. Not a KC study.

Stevens, J, Schmied V, Burns E, Dahlen H (2014-Oct) Immediate or early skin-to-skin contact after a Caesarean section: a review of the literature. *Matern Child Nutr.* 10(4):456–73. doi: 10.1111/mcn.12128. The World Health Organization and the United Nations International Children's Emergency Fund recommends that mothers and newborns have skin-to-skin contact immediately after a vaginal birth, and as soon as the mother is alert and responsive after a Caesarean section. Skin-to-skin contact can be defined as placing a naked infant onto the bare chest of the mother. Caesarean birth is known to reduce initiation of breastfeeding, increase the length of time before the first breastfeeding, reduce the incidence of exclusive breastfeeding, significantly delay the onset of lactation and increase the likelihood of supplementation. The aim of this review is to evaluate evidence on the facilitation of immediate (within minutes) or early (within 1 h) skin-to-skin contact following Caesarean section for healthy mothers and their healthy term newborns, and identify facilitators, barriers and associated maternal and newborn outcomes. A range of electronic databases were searched for papers reporting research findings published in English between January 2003 and October 2013. Seven papers met the criteria. This review has provided some evidence that with appropriate collaboration skin-to-skin contact during Caesarean surgery can be implemented. Further evidence was provided, albeit limited, that immediate or early skin-to-skin contact after a Caesarean section may increase breastfeeding initiation, decrease time to the first breastfeeding, reduce formula supplementation in hospital, increase bonding and maternal satisfaction, maintain the temperature of newborns and reduce newborn stress. FT, C/S, barriers, birth KC, outcomes maternal and infant. FT, BF initiation, time till first bF, reduced formula, bonding, satisfaction, temp regulation, reduce stress.

Stevens J, Schmied V, Burns E, Dahlen H. (2016-June). A juxtaposition of birth and surgery: Providing skin-to-skin contact in the operating theatre and recovery. *Midwifery.* 37:41-8. doi: 10.1016/j.midw.2016.03.015. Purpose was to provide insight into the facilitators and barriers of providing skin-to-skin contact in the operating theatre and recovery ethnographic study utilising video recordings, field notes, focus groups and interviews. Australia. 21 low-risk mothers having a repeat caesarean section, 26 support people, >125 staff members involved in their care and 43 staff members involved in focus groups/interviews collecting video footage and field notes for up two hours post caesarean section births, interviews at six weeks post partum and staff focus groups/interviews. Data was entered into NVivo10 and analysed using critical ethnographic techniques providing skin-to-skin contact in the operating theatre and recovery presents unique challenges due to the 'juxtaposition' of providing social and emotional care in an intrinsically medicalised setting. Staff members suggest that skin-to-skin contact in this environment can be improved by increasing staff and parent knowledge, writing and implementing a policy, addressing staffing issues, improving staff communication, addressing time constraints, adjusting the placement of equipment in the environment and making small changes to the way equipment is utilised. Our findings show that skin-to-skin contact can be successfully implemented in the operating theatre and recovery room with staff members input into adjustments to existing care. *Birth KC, cesarean, New to Biblio study, Not on charts 5v-10-2016*

Stevens, J. Schmied, V., Burns, E., & Dahlen, H. (2016-Dec). Video ethnography during and after caesarean sections: Methodological challenges. *J. Clinical Nursing.* doi: 10.1111/jen.12677. This paper will describe the challenges of, and steps taken to successfully collect video ethnographic data during and after caesarean sections. Video ethnographic research utilises real-time video footage to study a cultural group or phenomenon in the natural environment. It allows researchers to discover previously undocumented practices, which in-turn provides insight into strengths and weaknesses in practice. This knowledge can be used to translate evidence-based interventions into practice. Video-ethnographic design means a video ethnographic approach was used to observe the contact between mothers and babies immediately after elective caesarean sections in a tertiary hospital in Sydney, Australia. Women, their support people and staff participated in the study. Data were collected via video footage and field notes in the operating theatre, recovery and the postnatal ward. Challenges faced whilst conducting video ethnographic research included attaining ethics approval, recruiting vast numbers of staff members and ‘vulnerable’ pregnant women, and endeavouring to be a ‘fly on the wall’ and a ‘complete observer’. There were disadvantages being an ‘insider’ whilst conducting the research because occasionally staff members requested help with clinical tasks whilst collecting data, however it was an advantage as it enabled ease of access to the environment and staff members that were to be recruited. Despite the challenges, video ethnographic research enabled the provision of unique data that could not be attained by any other means. Video ethnographic data is beneficial as it provides exceptionally rich data.
for in-depth analysis of interactions between the environment, equipment and people in the hospital environment. The analysis of this type of data can then be used to inform improvements for future care. FT, Research method for observations, not on charts 12/5/2016, new to biblio study. Usually about cesarean KC.

Stevens J, Schmied V, Burns E, Dahlen HG (2018). Who owns the baby? A video ethnography of skin-to-skin contact after a caesarean section. Women Birth. 2018 Feb 26. pii: S1871-5192(17)30240-8. doi: 10.1016/j.womb.2018.02.005. [Epub ahead of print] Providing skin-to-skin contact in the operating theatre and recovery is challenging. Barriers are reported in the provision of uninterrupted skin-to-skin contact following a caesarean section. To explore how health professionals’ practice impacts the facilitation of skin-to-skin contact within the first 2h following a caesarean section. Video ethnographic research was conducted utilising video recordings, observations, field notes, focus groups and interviews. The maternal body was divided in the operating theatre and mothers were perceived as ‘separate’ from their baby in the operating theatre and recovery. Obstetricians were viewed to ‘own’ the lower half of women; anaesthetists were viewed to ‘own’ the top half and midwives were viewed to ‘own’ the baby after birth. Midwives’ responsibility for the baby either negatively or positively affected the mother’s ability to ‘own’ her baby, because midwives controlled what maternal-infant contact occurred. Mothers desired closeness with their baby, including skin-to-skin contact, however they realised that ‘owning’ their baby in the surgical environment could be challenging. Health professionals’ actions are influenced by their environment and institutional regulations. Further education can improve the provision of skin-to-skin contact after caesarean sections. Skin-to-skin contact can help women remain with their baby and obtain a sense of control after their caesarean section. Providing skin-to-skin contact in the first 2h after caesarean sections has challenges. Despite this, health professionals can meet the mother’s desire to ‘own’ her baby by realising they are one entity, encouraging skin-to-skin contact and avoiding maternal and infant separation. FT, descriptive study cesarean KC. Not on Charts 3-25-2018

Stikes, R. & Barbier, D. (2013). Applying the plan-do-study-act model to increase the use off kangaroo care. Journal of Nursing Management, 21(1), 70-78. doi: 10.1111/jorm.12021. Clinical Report: The aim of this Quality Improvement Project at University of Louisville Hospital in Louisville, KY was to increase the rate of participation in KC within a level III NICU. Education was needed and given, surveys were developed and answered, and strategies to overcome barriers were implemented. 4 months after KC use increased by 31%. PT, Implementation, barriers, quality improvement

Stone, S., Prater, L., & Spencer, R. (2014). Facilitating Skin-to-Skin Contact in the Operating Room After Cesarean Birth. Nursing for Women’s Health, 18 (6), 486-499. doi: 10.1111/nwh.12161. We implemented an evidence-based practice change to provide early skin-to-skin contact (SSC) in non-emergent, full-term cesarean surgical births among low-risk healthy women. There were three aims of this project: (1) To develop a protocol for health care professionals’ roles in providing SSC in the operating room; (2) To implement the protocol; and (3) To evaluate the process of implementation of the evidence-based intervention. The “champion team” concept was crucial to the project’s success. SSC provides opportunities for early, instinctive initiation of breastfeeding and helps to decrease maternal anxiety and depression FT, descriptive evaluative study, Cesarean KC, in OR, Birth KC., protocol, policy GET THIS NOT ON CHARTS

Storkstories. (2010). Skin-to-skin minutes after cesarean section in the OR: Speaking up and making it happen. June 3, 2010. The is an online store of how one mother with a birth plan came to hospital and they found double footling breech and birth plan was discarded as she went to emergency cesarean, but the nurse did advocate for the mother who had “on chest and first feeding at breast” as part of her birth plan, so when the infant was delivered (robustly crying and pink), it was “automatically” taken to warmer unit and then mother cried out “You took him out of me, now he has to be ON me. I want him on me, now.” The anesthesiologist was starting to get some meds ready to calm the mother down, and then the nurse gave her her newborn who self-attached within 15 minutes of birth, and the anesthesiologist did not give the meds to the mother and released her right arm as well for holding her infant skin to skin and everything went well. The story notes that anesthesiology is one barrier to /6 KC, and the story includes a link in it to a 7 minute video of KC at cesarean birth. The textual content begins with “Kangaroo Care is an important part of the continuum of nurturing of pregnancy, the environment an institutional regulations. Further education can improve the provision of skin-to-skin contact after caesarean sections. Skin-to-skin contact can help women remain with their baby and obtain a sense of control after their caesarean section. Providing skin-to-skin contact in the first 2h after caesarean sections has challenges. Despite this, health professionals can meet the mother’s desire to ‘own’ her baby by realising they are one entity, encouraging skin-to-skin contact and avoiding maternal and infant separation. FT, descriptive study cesarean KC. Not on Charts 3-25-2018

Storkstories. (2010). Skin-to-skin minutes after cesarean section in the OR: Speaking up and making it happen. June 3, 2010. The is an online store of how one mother with a birth plan came to hospital and they found double footling breech and birth plan was discarded as she went to emergency cesarean, but the nurse did advocate for the mother who had “on chest and first feeding at breast” as part of her birth plan, so when the infant was delivered (robustly crying and pink), it was “automatically” taken to warmer unit and then mother cried out “You took him out of me, now he has to be ON me. I want him on me, now.” The anesthesiologist was starting to get some meds ready to calm the mother down, and then the nurse gave her her newborn who self-attached within 15 minutes of birth, and the anesthesiologist did not give the meds to the mother and released her right arm as well for holding her infant skin to skin and everything went well. The story notes that anesthesiology is one barrier to /6 KC, and the story includes a link in it to a 7 minute video of KC at cesarean birth. The textual content begins with “Kangaroo Care is an important part of the continuum of nurturing of pregnancy, the process of birth and the transition of nurturing from inside the mother to outside the mother. This is the natural habitat for the infant. This habitat was recognized by the American Academy of Pediatrics in 2000 in their changes to the Neonatal Resuscitation Program algorithm. The recommendation was to “keep the baby with his mother and provide all initial evaluations and steps with the baby on the mother’s chest. The recommendation was for all healthy babies.” (pg. 1) This citation is available from http://obnurse35yrs.wordpress.com/2010/06/03/skin-to-skin-minutes-after-cs-in-the-or-speaking-up-and-making-it-happen/ FT, Birth KC, cesarean, barriers, video. SML accessed this 9/19/2011 and it was up and running then.

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**GET THIS FOR SURE** Separation, breastfeeding

Strand, H., Blomqvist,Y.T., Gradin, M, Nyqvist, K.H. (2013-Nov, 29). Kangaroo mother care in the NICU: Staff attitudes and beliefs and opportunities for parents. *Acta Paediatrica*, doi: 10.1111/apa.12527 EPVs ahead of print. Descriptive comparative study of continuous vs intermittent KC NICUs. To compare attitudes towards Kangaroo mother care (KMC) among staff in two high-tech neonatal intensive care units, which provided parents with different opportunities to get involved in their infants’ care. Questionnaires were completed by healthcare staff in Unit A, which provided parents with unrestricted access so that they could provide continuous KMC, and Unit B, where parents could only practice KMC intermittently. Unit A staff were more positive about the benefits and use of KMC, including its use in unstable infants, and rated their knowledge and practical skills more highly than staff in the other unit. Unit B staff also appreciated the method, but expressed more hesitation in using it with unstable infants. In particular, they stressed the need to adapt the physical environment of the NICU to enable parents to stay with their infants and practice the method. Staff working in the NICU that gave parents unrestricted access were more positive about KMC than staff in the NICU that offered limited opportunities for parents to stay with their children. This finding suggests that it is important to eliminate unjustifiable obstacles to the presence of parents in the NICU, so that they can provide KMC. PT, duration of KC, staff issues, intermittent KC.

**NOT on charts 1/9/2013**

Sule SS & Onyade AA. (2006). Community-based antenatal and perinatal interventions and newborn survival. *Nigerian Journal of Medicine*, 15(2), 108-114 (Apr-June). Review of neonatal mortality (constitutes 40-70% of infant deaths; 99% of these deaths occur in developing countries, highest neonatal mortality rate is in sub-Saharan Africa. 4 million babies die in developing countries each year, 42% of deaths due to infection, 21% to perinatal asphyxia, 11% birth injuries, 10% LBW and prematurity, 11% congenital anomalies). 2/3 of deaths are in first week of life (2/3 of these occur in first 24 hours)). Skin-to-skin care (KC) needs to be incorporated into a functional and sustainable health care delivery system. *Preterm, review, mortality, infection, developing countries, community KC. Not on charts yet. KC should be sustainable, culture of consistent care*

Suman, R.P., Udani, R., & Nanavati, R., (2008). Kangaroo mother care for low birth weight infants: a randomized controlled trial. *Indian Pediatrics*, 45(1), 17-23. RCT in level III NICU in India. KMC = 103; controls = 103. Infants were > OR <2000 gm (article says both), both preterm and term SGA infants. KMC babies had better weight gain per day (kmc=23.99g, control =15.38 g; p<0.0001), head circumference weekly increments were higher in KC (0.75 cm) than controls (0.49 cm)(p=0.02) and length was longer in KMC (0.99 cm) than controls (0.70 cms, p<0.008). More control infants had hypothermia, hypoglycemia, sepsis. **No difference in length of stay** and more KC were EXCLUSIVELY breastfed (98% KC vs 78% controls) at end of study. KMC was acceptable to most mothers and fathers at home. KMC was continued at home. Evaluations were at 40wks pma and at 2500 g. weight. RCT, PT, FT Daily weight gain, head circumference, length, LOS, hypothermia, home KC, hypoglycemia, sepsis, EXCLUSIVE BF, maternal feelings


Essential point #12 was “skin-to-skin contact and early breastfeeding” and 4 = guideline mentioned both skin-to-skin and breastfeeding within one hour of birth; 3 = skin-to-skin and “early” breastfeeding without stating that feeding should occur within one hour of birth; 2 = mention of early breastfeeding or skin-to-skin but not both, and 1 = neither early breastfeeding nor skin to skin contact was mentioned.

Each of the 22 guidelines was given an overall quality score between 31 (31 essential points possible X score of 1 – lowest score possible for each essential point) and 124 (31 essential points X 4 –highest score possible for each of essential point). Compliance with recommended practice to support breastfeeding was measured by assigning a score between 9 (1 x 9) and 36 (4 x 9)(pg 3/14)- the “9” refers to 9 essential points outlining recommended practices to support breastfeeding (essential points #12- #20) in the Compliance Scoring system. To decide which essential points were followed by most guidelines, each essential point was given a score ranging between 22 (minimum score of 1 for all 22 guidelines) and 88 (maximum score for all of the 22 guidelines submitted). 22 guidelines were appraised from 23 centers. The appraisal criteria for each essential point were FOR ALL AT RISK BABIES: 1) guideline has a review date, 2) guidelines apply to all staff, 3) guidelines makes clear what documentation is required, 4) explanation for monitoring/audit included, 5) guideline includes flow KCBib 2018
The purpose of this QUALITY IMPROVEMENT PROJECT was to evaluate maternal satisfaction and maternal perception of pain when babies were placed in STS immediately after cesarean birth in the OR. This QIP was conducted at Baylor All Saints Medical Center-Andrews Women’s Hospital, an urban, nonprofit private hospital with an average of 5,000 births per year. Over a 90-day period, all women having cesarean birth were evaluated for two outcomes, maternal birth experience and pain perception during surgery. Following scheduled repeat c/s, satisfaction with the birth experience was compared to the previous birth experience. Pain control during surgery of women having cesarean birth with and without STS was evaluated. Postpartum interviews with the new mothers and review of their anesthesia records were used to determine project findings. Maternal satisfaction was higher and maternal perception of pain was lower for women who experienced STS in the OR when compared to women where STS was not performed. Babies can be placed STS in the OR with positive implications for mothers’ satisfaction with the birth experience and their perception of pain during the surgical procedure. Infant safety should be supported by a nurse with the mother and baby during the STS process.

FT, cesarean, quality improvement project, maternal pain, maternal satisfaction. NOT ON CHARTS 10/15/2015

affected maternal satisfaction with birth experience by increasing it and decreasing maternal perception of pain in surgery. A qualitative good review of literature is presented but studies that did not have anything to do with skin to skin contact during cesarean section (in OR or in recovery) were quoted (i.e. Bystrova, 2009 interaction in first yer of life study). Pain during childbirth affects maternal perception of satisfaction and pain/anxiety may be related to experiencing the unknown or unfamiliar process. Rationale for the pain outcome was based on Phillips 2013 article saying that mother may have less pain and anxiety because her focus changes to the infant. Group of champions was formed (called quality group) to discuss effects of OR KB on work flow, and met with anesthesia team who decided that if mom was stable and able to hold her infant, skin to skin would NOT interfere with anesthesia care (pg. 251). If mom became weak, nauseated, had concerns about holding her baby, or if infant became unstable, KC would cease (pg. 251). A baby nurse (from Infant special care unit) was stationed at head of bed where she can assist with infant positioning, address maternal concerns and assess infant vital signs and stability. No additional nurse staffing was required because baby nurse is already in OR. They adopted Hung & Berg’s protocol, gave an educational session about benefits of KC, protocol, assessments and evaluations that were to take place. Two maternal education pamphlets were developed and evaluated by legal and marketing depts. of hospital. And at all pre-op appointments, educational brochure about expectations and benefits of KC in OR was given to patients. Similar education was given in cesarean birth prep and recovery rooms and maternal choice to participate convey to anesthesiologist. Collected data for three month because would have sufficient sample size in three months. Evaluations: women were asked two questions in recovery room or postpartum roomRQ1: what was your level of satisfaction with previous birth experience? RQ2 was what is your level of satisfaction with this birth experience? Both measured on Likert scale and room for additional comments. Pain perception was measured by looking at anesthesia record to see if additional anesthesia was given during KC in the OR - meds by IV push or through epidural catheter. All women giving cesarean birth were included whether they had KC or not (pg. 253). After one week unit personnel and maternal feedback were obtained. Mothers and baby nurse were received by a sterile blanket and immediately put on mom’s chest, but they did not like the blood, fluid, vernix and meconium (SSC) on OR table. Barriers to use of BIRTH KC in the OR were variations in staff adherence, staff comfort level, and discrepancies in interpretation of the process to be followed. Staff did not consistently offer KC to patients so one-to-one discussions about individual concerns helped solve this problem. Mothers were very satisfied with BIRTHKC in the OR (“it was great”, “very sweet”, “much better than before”, I liked it a lot,” Negative comments were “It was hard to hold him because I was so shaky and it was hard to see him being so close to my face” and “I felt like the position was a little awkward” quotes are on page 254. FT, QIP report, BP, Maternal physiology, maternal satisfaction, quality improvement project, barriers, implementation, staff issues. Not on charts


Suzuki S (2013-Oct). Effect of early skin-to-skin contact on breast-feeding. J Obstet Gynaecol. 33(7):695-696. doi: 10.3109/01443615.2013.819843. We examined the effect of early skin-to-skin contact (SSC) on breast-feeding at 1 month after delivery, in Japanese women. We reviewed the obstetric records of healthy nulliparous women with vaginal singleton delivery at 37-41 weeks’ gestation, at the Japanese Red Cross Katsushika Maternity Hospital and between 1 February and 30 November 2011, there was a total of 403 women who planned to breast-feed their babies at birth. Of these, 272 women (67.5%) initiated early SSC in the delivery room and 131 women (32.5%) did not initiate early SSC. There were no significant differences in the obstetric characteristics and birth outcomes between the two groups of women with and without initiating early SSC. However, the rate of exclusive breastfeeding at 1 month after delivery in the group of women following early SSC (59.6%, 162/272) was significantly higher than that in the group of women without early SSC (45.8%, 60/131; crude OR 1.74, 95% CI 1.1-2.7, p = 0.009). The current results may support KCBib 2018
the benefit of early SSC in Japanese women after vaginal delivery. She mentions in this article that KC may help prevent PPH and this has been cited by Fritz et al., 2017. PPH. Not on charts 3-27-2017

Svedjé MJ, Campos JJ, & Emde RN. (1980). Maternal-infant “bonding”: Failure to generalize. Child Development, 51, 775-779. Randomized controlled trial. Extra contact or routine care. KC (n=15) for 15 min after episiotomy repair and then gowned moms had nude infant with them for 45 min when in their own room. Then 90 min of wrapped contact at each feeding for breastfeeding. Controls (n=15) got 1-5 min of contact at delivery with wrapped infant and 30 min at each feed starting 4-6 hrs after delivery. In the first 36 hrs, extra contact moms had 10 additional hours of contact as compared to 15 gowned mothers who looked at baby in a crib while still in the DR and held the wrapped infant briefly before going to the nursery. No differences in maternal behavior between groups or between situations were seen. RCT, fullterm, VE/KC or Early KC, maternal behavior, bonding. Birth KC

Svensson, K.E., Velandia, M.I., Matthesien, A.S., Welles-Nystrom, B.L., & Widstrom, A.M. (2013). Effects of mother-infant skin-to-skin contact on severe latch-on problems in older infants: a randomized trial. International Breastfeeding Journal, 8(1), 1. doi: 10.1186/1746-4358-8-1. Randomized controlled trial of women with severe latching on problems. Infants with latch-on problems cause stress for parents and staff, often resulting in early termination of breastfeeding. Healthy newborns experiencing skin-to-skin contact at birth are pre-programmed to find the mother's breast. This study investigates if skin-to-skin contact between mothers with older infants having severe latching on problems would resolve the problem. Mother-infant pairs with severe latch-on problems, that were not resolved during screening procedures at two maternity hospitals in Stockholm 1996–2004, were randomly assigned to skin-to-skin contact (experimental group) or not (control group) during breastfeeding. Breastfeeding counseling was given to both groups according to a standard model. Participants were unaware of their treatment group. Objectives were to compare treatment groups concerning the proportion of infants regularly latching on, the time from intervention to regular latching on and maternal emotions and pain before and during breastfeeding. One hundred and three mother-infant pairs (N=103; KC+BF=53, BF and no KC =50) with severe latch-on problems 1–16 weeks postpartum were randomly assigned and analyzed. There was no significant difference between the groups in the proportion of infants starting regular latching-on (75% experimental group, vs. 86% control group). Experimental group infants, who latched on, had a significantly shorter median time from start of intervention to regular latching on than control infants, 2.0 weeks (Q1 = 1.0, Q3 = 3.7) vs. 4.7 weeks (Q1 = 2.0, Q3 = 8.0), (p-value = 0.020). However, more infants in the experimental group (94%), with a history of “strong reaction” during “hands-on latch intervention”, latched-on within 3 weeks compared to 33% in the control infants (Fisher Exact test p-value = 0.001). Mothers in the experimental group (n = 53) had a more positive breastfeeding experience according to the Breastfeeding Emotional Scale during the intervention than mothers in the control group (n = 50) (p-value = 0.022). Skin-to-skin contact during breastfeeding seems to immediately enhance maternal positive feelings and shorten the time it takes to resolve severe latch-on problems in the infants who started to latch. An underlying mechanism may be that skin-to-skin contact with the mother during breastfeeding may calm infants with earlier strong reaction to "hands on latch intervention" and relieve the stress which may have blocked the infant's inborn biological program to find the breast and latch on. KMC helps problems with latch. FT, RCT, KC+BF, stress, maternal feelings, BF success, BF pain, mechanism, latch, BF difficulties/problems. Not on charts

Svensson K, Velandia M, Matthesien AS, & Widstrom A-M. (2007). Skin-to-skin contact between mother and baby as a therapy for breastfeeding problems. Presentation at the 2007 International Conference on the Theory and Practice of Human Lactation Research and Breastfeeding Management, Orlando, FLA Jan.13, 14, 2007. When breastfeeding is complicated, do fullterm babies who are more than 4 hours old do better with BF with KMC or without KMC? RCT of KMC after optimal counseling vs. no KMC after optimal counseling. BF was videotaped in hospital and at one week, one and four and 18 months postpartum. There was no significant difference between the groups in the proportion of infants starting regular latching-on (75% experimental group, vs. 86% control group). Experimental group infants, who latched on, had a significantly shorter median time from start of intervention to regular latching on than control infants, 2.0 weeks (Q1 = 1.0, Q3 = 3.7) vs. 4.7 weeks (Q1 = 2.0, Q3 = 8.0), (p-value = 0.020). However, more infants in the experimental group (94%), with a history of “strong reaction” during “hands-on latch intervention”, latched-on within 3 weeks compared to 33% in the control infants (Fisher Exact test p-value = 0.001). Mothers in the experimental group (n = 53) had a more positive breastfeeding experience according to the Breastfeeding Emotional Scale during the intervention than mothers in the control group (n = 50) (p-value = 0.022). Skin-to-skin contact during breastfeeding seems to immediately enhance maternal positive feelings and shorten the time it takes to resolve severe latch-on problems in the infants who started to latch. An underlying mechanism may be that skin-to-skin contact with the mother during breastfeeding may calm infants with earlier strong reaction to "hands on latch intervention" and relieve the stress which may have blocked the infant's inborn biological program to find the breast and latch on. KMC helps problems with latch. FT, RCT, KC+BF , stress, maternal feelings, BF success, BF pain, mechanism, latch, BF difficulties/problems. Not on charts

Svensson K, Velandia M, Matthesien AS, & Widstrom A-M. (2007). Skin-to-skin contact between mother and baby as a therapy for breastfeeding problems. Presentation at the 2007 International Conference on the Theory and Practice of Human Lactation Research and Breastfeeding Management, Orlando, FLA Jan.13, 14, 2007. When breastfeeding is complicated, do fullterm babies who are more than 4 hours old do better with BF with KMC or without KMC? RCT of KMC after optimal counseling vs. no KMC after optimal counseling. BF was videotaped in hospital and at one week, one and four and 18 months postpartum. Results are yet to come. RCT, BF, BF difficulties

(SAREC) Swedish Agency for Research Cooperation with Developing Countries. (1985). Breathing and Warmth at Birth: Judging the Appropriateness of Technology (Sarec Report R2. Sterky G, Tafari N, Tunel R (Eds.). This report says that one of the best way for developing countries to keep babies warm is Kangaroo Care and it recommends that for prevention and recovery from Hypothermia. POLICY, warming, temperature, guideline.


Swinth JY, Anderson GC, & Hadeed AJ. (2003). Kangaroo Care with a preterm infant: Before, during and after mechanical ventilation. Neonatal Network. 22(6), 33-46. Case study of infant with mild RD at 2-18 hrs postbirth without improvement til KC began. 4.75 hrs of pre-ventilation KC, 4 hrs of VentKC, and 6.0 hrs of post-ventilations KC given. KC assisted in recovery from RD and fostered

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maternal relaxation and reduces maternal stress. Vent KC, Case study, Maternal relaxation, Mat stress, sleep, crying, FiO2, SnO2, protocol for positioning and securing lines on pg. 35. Guidelines.

Swinth JY, Nelson LE, Hadeed A, & Anderson, GC. (2000). Shared kangaroo care for triplets. MCN Amer.J. Maternal Child Nursing, 25(4): 214-216. Mom had 4 kids at home, had naturally occurring triplets at 35 weeks. One was IUGR. Held all 3 simultaneously at 6 days of life and quickly came to know each baby as an individual. Babies nuzzled up easily in KC. Vital signs stable. Triples were co-bedded in nursery. Triplet preterm KC. Shared KC, attachment, co-bedding, HR, RR, temperature, case study

Siylla, M., Kassogue, D., Traore, I, Diall, H., Charpak, N., Dicko-Traore, F, N’diaye, M, Doumbia, D, Kamissoko, F, Sidibe, T., & M. Keita, M. (2011). Towards better care for preterm infants in Barnako, Mali. Current Womens’ Health Reviews, 7(3), 302-309. Doi:10.2174/1573404117963555199 This study assessed the feasibility, acceptability, and outcome of KMC (24/7 in one unit) on 480 LBW infants, including morbidity and mortality. Longitudinal study, moms were M=28 yrs and had 3 prenatal visits and deliveries were in community and district health centers, M ga was 32.5 wks, M birthweight was 1432 g, height M=41 cm, head circumference M=29 cm.. Mortality was very high (4.4%) before KMC; more than 1/3 of those surviving until off oxygen support were admitted to KMC unit. Somatic growth was satisfactory, weight gain was M=19g/day. Mean entry age into outpatient (KMC at home/community) program was9.16 days (R=2-32 days). Mortality of KMC unit infants was 7.91% (vs 51.5% of those who stayed in NICU). Most KMC deaths occurred between discharge and 30 wks postmenstrual age. Problems with home KMC program were non-compliance with visits, and GI, infection, failure to thrive, and neurological problems. KMC was accepted by all mothers and families. Problems remains with post-discharge home KC. PT, 3rd world, KMC, unit, 24/7 KMC, weight, home-based KMC, post-discharge KMC, home KC, mortality, acceptance. Morbidity, maternal feelings/perceptions NOT on Charts 10.2/2011


Szucs KA, Rosenman MB. (2013-May) Family-Centered, Evidence-Based Phototherapy Delivery. Pediatrics, 131(6):e1982-5. doi: 10.1542/peds.2012-3479 Jaundice develops in most newborn infants and is one of the most common reasons infants are rehospitalized after birth. American Academy of Pediatrics clinical practice guidelines strongly support the recommendation that clinicians promote and support breastfeeding. Recognizing that the disruptions associated with phototherapy interfere with breastfeeding, the challenge often faced by clinicians is how to provide effective phototherapy while supporting evidence-based practices, such as rooming-in, skin-to-skin contact, and breastfeeding. We report here on a case that reflects a common clinical scenario in newborn medicine in order to describe a technique for providing phototherapy while maintaining evidence-based practices. This approach will assist clinicians in providing best-practices and family-centered care. PT? FT, breastfeeding, hyper bilirubinemia, phototherapy, family centered, parents as providers. Only on bilirubin chart so far 5/25/2013. See also Ludington-Hoe et al’s report in neonatal network.

Taddio, A., McMurtry CM, Shah V, Pillai Riddell R, Chambers CT, Noel M, MacDonald NE, Rogers J, Bucci LM, Moumansis P, Lang E, Halperin SA, Bowles S, Halpert C, Ipp M, Asmundson GIG, Rieder MJ, Robson K, Uelryk E, Antony MM, Dubey V, Hanrahan A, Lockett D, Scott J., Votta-Bleeke E, HELPinKids&Adults. (2015-Sept). Reducing pain during vaccine injections: clinical practice guideline. CMAJ, 187(13), 975-982/ doi: 10.1503/cmaj.150391 No guidelines for conducting vaccinations in children exists so this report explains the process the team used to develop the guidelines and how they are based on the article of Taddio and Shah 2015 that follows. In Table 1 (part 1 of 3) that summarizes the guidelines, the following is written on page 977 “Positioning: skin-to-skin contact: We recommend skin-to-skin contact during vaccine injections” This recommendation is MORDERATE in confidence, applicable to infants <3 yrs and infants < 1 month (pg. 977). And under the recommendation that holding be used rather than child lying supine during vaccine injections on page 978 it states “Positioning that is comfortable and promotes proximity soothing from a caregiver should be used.” Neonates that are not breastfed can be positioned skin-to-skin (also known as “kangaroo care”), which involves placing a diaper-clad baby prone on the mother’s bare chest before commencing vaccine injection and continuing during and afterwards. In three studies including 736 neonates, skin-to-skin contact reduced acute distress during the procedure (SMD = 0.65, 95% CI = 0.50 to –0.25) and it cites another Taddio & Shah article that follows this one. PT, FT, vaccination, pain, guidelines Not on chart 12/31/2015 Positioning that is comfortable and promotes proximity soothing from a caregiver should be used.

Trials and Quasi-Randomized Controlled Trials. Clin J Pain. 2015 Oct;31(10 Suppl):S20-37. doi: 10.1097/AJP.0000000000000264. This systematic review evaluated the effectiveness of physical and procedural interventions for reducing pain and related outcomes during vaccination. Databases were searched using a broad search strategy to identify relevant randomized and quasi-randomized controlled trials. Data were extracted according to procedure phase (preprocedure, acute, recovery, and combinations of these) and pooled using established methods. A total of 31 studies were included. Acute infant distress was diminished during intramuscular injection without aspiration (n=313): standardized mean difference (SMD) -0.82 (95% confidence interval [CI]: -1.18, -0.46). Injecting the most painful vaccine last during vaccinations reduced acute infant distress (n=196): SMD -0.69 (95% CI: -0.98, -0.4). Simultaneous injections reduced acute infant distress compared with sequential injections (n=172): SMD -0.56 (95% CI: -0.87, -0.25). There was no benefit of simultaneous injections in children. Less infant distress during the acute and recovery phases combined occurred with vastus lateralis (vs. deltoid) injections (n=195): SMD -0.70 (95% CI: -1.00, -0.41). Skin-to-skin contact in neonates (n=736) reduced acute distress: SMD -0.65 (95% CI: -1.05, -0.25). Holding infants reduced acute distress after removal of the data from 1 methodologically diverse study (n=107): SMD -1.25 (95% CI: -2.05, -0.46). Holding after vaccination (n=417) reduced infant distress during the acute and recovery phases combined: SMD -0.65 (95% CI: -1.08, -0.22). Self-reported fear was reduced for children positioned upright (n=107): SMD -0.39 (95% CI: -0.77, -0.01). Non-nutritive sucking (n=186) reduced acute distress in infants: SMD -1.18 (95% CI: -1.58, -0.87). There was no benefit of warming the vaccine in adults. Muscle tension was beneficial in selected indices of fainting in adolescents and adults. Interventions with evidence of benefit in select populations include: no aspiration, injecting most painful vaccine last, simultaneous injections, vastus lateralis injection, positioning interventions, non-nutritive sucking, external vibrating device with cold, and muscle tension. PT, FT, Systematic Review, Pain, Vaccinations

Takahashi Y, Jonas W., Ransjo-Arvidson AB, Lidforss L, Uvnas-Moberg K, & Nissen E. (2015 - June). Weight loss and low age are associated with intensity of rooting behaviours in newborn infants. Acta Paediatrica, 104(11), 13077. Little is known about the developing breastfeeding behaviour of newborn infants. This study describes infants' pre-breastfeeding behaviour during the second day of life and explores possible associations with infant characteristics. We studied 13 mothers and healthy full-term infants after normal births. At 24-48 hours of life, the newborns were placed in skin-to-skin contact with their mothers for breastfeeding and were video filmed. The order, frequency and duration of pre-defined infant pre-breeding behaviours and sucking were coded and analysed using computer-based video software. Pre-breeding behaviours occurred in the following order: rooting, hand to mouth movements, licking of the nipple and hand to breast to mouth movements. The durations of rooting movements during the last minute before breastfeeding was inversely related to neonatal age (r=0.001) and positively related to neonatal weight loss (p=0.02) after birth. Infants exhibited a distinct sequence of pre-breeding behaviours during the second day of life and our findings suggest that rooting movements were governed by mechanisms involved in the regulation of food intake and weight gain. FT, Descriptive evaluative, BF, pre-breeding behaviors, Postpartum (2nd day).

Takahashi Y, Tamakoshi K, Matsuhashima, M., & Kawabe T. (2011). Comparison of salivary cortisol, heart rate and oxygen saturation between early skin-to-skin contact with different initiation and duration times in healthy full term infants. Early Human Development, 87(3), 151-157. This is a two group, two hospital study of fullterm infants who got KC within 5 minutes of birth (n=32), or later than 5 minutes of birth (n=36) and infants who got 60 minutes or less of KC in the first two hours postbirth (n=18) and those who got more than 60 minutes of KC (n=61). Place nelloir oxygen saturation on right sole as soon as born and recorded HR and SaO2 – recorded continuously but data from every 10 seconds for first 120 minutes post-birth. Mean duration of SSC was over 60 minutes for both groups. Birth KC group started KC at mean of 1.60 ±1.10 minutes and Very Early KC group started KC at mean 26.3± 4.97 minutes. Birth KC group was born and after 1 minute APGAR was diapered, head cap put on, warmed towel + blanket across back and prone on chest. When KC ended (they don’t say what impetus to stop KC was), infant taken to radiant warmer for warming and measurements and then put along side mother until 120 minutes post birth. The Very Early KC group was born and immediately taken to radiant warmer, weighted, measured, banded, and kept under radiant warmer until all episiotomy and rupture repairs were finished, then infant put prone on chest with head cap and warm towel and blanket. Duration of SSC was a mean 51.1 minutes (started at mean 7.5 minutes after birth) in BIRTH KC group and 8 minutes in VEKC group (Started at mean 15.2 minutes of life). Salivary Cortisol taken 1 minute after the 1 minute APGAR and at 60, and 120 minutes of birth. Found that HR stability at 120-160 bpm occurred with better probability in infants who started KC within 1st five minutes post-birth (2.52 times the efficacy of reaching HR stability when start KC within 5 minutes compared to more than 5 minutes postbirth). 65/68 infants had HR stability within 30 minutes of birth (pg. 154) and Birth KC group had significantly lower HRs at 5, 10, 15, 20 minutes post-birth than Very Early KC group and there is a table of Birth KC and VEKC mean heart rates per minute for the first 30 minutes on page 154. But I have entered in the first ten minutes of data below. Definition of HR stability was the first of three consecutive readings of HR between 120-160 (pg. 152) and SaO2 stability was the first of three consecutive Readings of ≥96% (Pg. 152). Oxygen saturation between 92-96% was not significantly different between the groups. SaO2 at 1 min was 6.10 µg/dl BKC,6.29 in VEKC; at 60 minutes it was 4.72 for BKC (because infants were no longer in KC) and 4.03 for VEKC; at 120 minutes BKC = 2.71, VEKC =
2.01. Salivary cortisol levels decreased about 2 μg/dl in both groups. Salivary cortisol levels were significantly lower between 60 and 120 min after birth in the SSC group continuing for more than 60 min compared with the SSC group for 60 min or less (P=0.046). Sig lower salivary cortisol levels between 60-120 minutes post birth in the infants who were in KC longer than 60 minutes. Salivary cortisol showed a decreasing trend in both groups as soon as KC started (pg 154). Controlled for many variables influencing stress too. Temperatures at 60 and 120 minutes were significantly lower in Birth KC than VEKC group (pg 154) and all were in normal range. No infant had tachycardia, bradycardia, or dyspnea during study. No values were given for 1, and 2 minutes after birth.  

| Heat rate values according to SSC initiation time after birth. | 1 min | 2 min | 3 min | 4 min | 5 min | 6 min | 7 min | 8 min | 9 min | 10 min | 11 min | 12 min | 13 min | 14 min | 15 min | 16 min | 17 min | 18 min | 19 min | 20 min | 21 min | 22 min | 23 min | 24 min | 25 min | 26 min | 27 min | 28 min | 29 min | 30 min |
|---------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 3 min                                                         | 156.8±11.6 | 176.5±13.7 | 0.13  | 4 min | 160.1±12.8 | 169.7±16.0 | 0.11  | 5 min | 157.0±21.8 | 171.5±20.6 | 0.01  | 6 min | 157.7±14.7 | 172.4±19.0 | 0.01  | 7 min | 158.0±22.7 | 173.7±19.7 | 0.01  | 8 min | 156.3±18.7 | 175.8±18.3 | 0.01  | 9 min | 154.7±14.5 | 179.6±16.7 | 0.01  | 10 min | 151.8±13.4 | 171.6±17.0 | 0.01  | 11 min | 152.4±12.7 | 170.7±17.2 | 0.01  | 12 min | 151.0±13.1 | 167.9±15.3 | 0.01  | 13 min | 150.8±12.2 | 164.9±15.3 | 0.01  | 14 min | 152.0±11.7 | 165.3±13.8 | 0.01  | 15 min | 151.6±13.4 | 161.9±15.1 | 0.01  | 16 min | 152.6±14.0 | 164.6±20.1 | 0.01  | 17 min | 150.7±13.4 | 162.0±14.0 | 0.01  | 18 min | 151.5±11.4 | 158.1±14.0 | 0.05  | 19 min | 150.1±10.9 | 157.5±15.3 | 0.05  | 20 min | 149.8±11.5 | 156.7±13.7 | 0.05  | 21 min | 150.3±11.0 | 157.3±13.3 | 0.22  | 22 min | 150.2±13.1 | 152.9±12.0 | 0.33  | 23 min | 151.1±11.5 | 153.6±12.2 | 0.42  | 24 min | 149.1±10.9 | 152.2±13.3 | 0.28  | 25 min | 150.3±10.8 | 153.2±12.0 | 0.70  | 26 min | 149.0±11.9 | 151.1±11.7 | 0.46  | 27 min | 148.5±11.0 | 152.2±12.0 | 0.21  | 28 min | 148.7±11.1 | 152.2±12.0 | 0.42  | 29 min | 148.0±11.0 | 151.8±11.2 | 0.22  | 30 min | 149.3±12.4 | 150.6±11.6 | 0.68  |

Data are mean±SD. *In conclusion: Earlier KC beginning within five minutes postbirth and longer KC continuing for more than 60 minutes within 120 minutes post birth are beneficial to cardiopulmonary dynamics and reduction of infant stress during early postbirth period.*  
FT, quasi experimental, HR, salivary cortisol, stress, SaO2. Birth KC temp, stability, Bradycardia, tachycardia, hypoxia. Look at Branson article from California for similar data.  

Tallandini, M.A. & Scalembra, C. (2006). Kangaroo mother care and mother-pregnant infant dyadic interaction. *Infant Mental Health Journal* 27(3), 251-275. 21 preterm >1800 grams infant/mother dyads got a minimum of 60 mins per day (some mothers did more, pg. 258) from 32-34 weeks (at least two weeks of KC) while mother reclined next to incubator (birth through discharge for some babies) and 19 other dyads at another hospital (Not an RCT) got traditional care (no KMC but swaddled holding ad lib). KMCers had better mother-infant interactive style, sig. decrease in maternal emotional stress (Parent Stress Index—Short Form, Barnard, 1975) and better infant ability to make requests and respond to parental interaction style (Barnard’s Nursing Child Assessment: Feeding Scale). Weight gain per day was 14.6 g for KCC and 10 g for condition over hospitalization (almost exactly same as De Leeuw et al., 1991 results) and during the two weeks of KC the KC group gained 19.72 g per day (pg. 265). Length of hospital stay was reduced in KCers too (p=0.001; pg. 265). PT. Quasi-Experiment, Mother infant relationship, maternal anxiety and infant interactive signals, weight, length of stay, development, stress, interaction STRESS INDEX. Used two hospitals like Feldman did.  

Tanner article from harb 11/10/2011 it is about stress of the NICU environment and how some nurses 5% tried KC to reduce stress but 85% did massage to reduce stress.  


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NIU nurses are aware of alarmfatigue and alarm hazards. Now management of alarms and alarm systems is part of Joint Commission’s 2003 National Patient Safety Goals and 2005 Environment of Care Standards (Harris et al., 2011). See also Heinemann ET AL.,2013 that says parents find the alarms in Ncu STRESSFUL.

Taylor PM, Maloni JA, Taylor FH, & Campbell SR. (1985). Extra early mother-infant contact and duration of breast-feeding. Acta Paediatrica Scandinavica 316(Supplement), pp. 15-22. This is an “extra contact” study in which 50 primiparous mothers and their babies, including skin-to-skin contact, found that skin-to-skin contact alone had no significant effect on breastfeeding duration. However, when suckling occurred with early skin-to-skin contact (that is, feeding within the first 30-70 minutes post-birth), women were more likely to still be breastfeeding at 2 months postpartum compared to those who did not suckle during extra contact. Fullterm, RCT, breastfeeding, Birth KC,


Temple Newhook J, Newhook LA, Miododzi WK, Murphy Goodridge J, Burrage L, Gill N, Halfyard B, Twells L. (2017-May). Determinants of Nonmedically Indicated In-Hospital Supplemention of Infants Whose Birthing Parents Intended to Exclusively Breastfeed. J Hum Lact. 33(2):278-284. doi: 10.1177/0898361516659204. This is a regression analysis study. Despite high rates of intention to exclusively breastfeed, rates of exclusive breastfeeding in Canada are low. Supplementation may begin in hospital and is associated with reduced breastfeeding duration. The aim of this investigation was to explore determinants of in-hospital nonmedically indicated supplementation of infants whose birthing parents intended to exclusively breastfeed. This study is a cross-sectional one-group nonexperimental design, focused on participants who intended to exclusively breastfeed for 6 months (n = 496). Data were collected between October 2011 and October 2015 in Newfoundland and Labrador. Variables measured included age; rural/urban location; education; income; race; marital status; parity; smoking status; having been breastfed as an infant; previous breastfeeding experience; Iowa Infant Feeding Attitude Scale score; delivery mode; infant birth weight; birth satisfaction; skin-to-skin contact; length of participant's hospital stay; breastfeeding advice from a lactation consultant, registered nurse, or physician; and first impression of breastfeeding. We evaluated determinants of in-hospital nonmedically indicated supplementation using bivariate and multivariate logistic regression analyses. Overall, 16.9% (n = 84) of infants received nonmedically indicated supplementation in hospital. Multivariate modeling revealed four determinants: low total prenatal Iowa Infant Feeding Attitude Scale score (odds ratio [OR] = 1.96, 95% confidence interval [CI] [1.18, 3.27]), no previous breastfeeding experience (OR = 2.03, 95% CI [1.15, 3.61]), negative first impression of breastfeeding (OR = 2.67, 95% CI [1.61, 4.43]), and receiving breastfeeding advice from a hospital physician (OR = 2.86, 95% CI [1.59, 5.15]). Elements of the hospital experience, self-efficacy, and attitudes toward infant feeding are determinants of nonmedically indicated supplementation of infants whose birthing parents intended to exclusively breastfeed; skin-to-skin contact was NOT a determinant of supplementation. FT, regression analysis of contributions to supplementation, BF. Not on charts 4: 28-2017

Therhaa, M. & Starr, KP. (2007). Skin-to-skin care: Focusing on the maternal-infant dyad. eNeonatal Review Newsletter 4/12,8 pages (August 2007). Available from eNeonatal Review Newsletter. news@johnshopkins.fcp.com The newsletter has several components, the first of which is a brief introduction called “In this Issue” which states that KC is “supported by strong research and advocated by respected organizations, including the World Health Organization. Despite a growing body of evidence detailing the benefits of this intervention, SSc (skin-to-skin contact) has yet to be adopted as standard practice within NICUs across the nation and the world” (pg. 1). The newsletter reviews the most recent literature (5 articles: Morelius et al., 2005; Feldman et al., 2002; Charpak & Ruiz-Pelaez, 2006; Heyns et al., 2006; Ludington-Hoe et al., 2006; Ludington-Hoe et al., 2005) including research on maternal and infant outcomes as well as barriers to implementation. The authors want the information to assist clinicians in evaluating the readiness of their NICUs to implement KC. Actually, this is a continuing education offer and physicians can take a post-test on the knowledge they gain and to determine how well they meet the medical continuing education unit objectives of describing the influence of KC on both the neonate and the mother. Explain the effects of KC on pain in the neonate, and discuss common barriers to the implementation of KC in NICUs. Review, Preterm, physician continuing medical education units and post-test, barriers, implementation of KC. Not yet on charts.

Tessier R, Charpak N, Giron M, Cristo M de Calune ZF & Ruiz-Pelaez JG. (2009). Kangaroo mother care, home environment, and father involvement in the first year of life: a randomized controlled trial. Acta Paediatrica. 98(9), 1444-1450. 194 families in KMC, 144 families in non-KMC (incubator only) followed from biggest social security hospital in Colomba. KMC was 247 until no longer tolerated by infant at 37-38 wks pma. HOME (KMC produced a more stimulating context and better caregiving environment, father involvement (environment was + correlated to father involvement,), and family environment with male infants were most improved by KCBib 2018
KMC. KMC has positive impact on home environment. Both parents should be involved as direct caregivers in KMC and this intervention should be directed more specifically to infants more at risk at birth. Griffiths developmental quotient results are not reported in abstract. PT, RCT, development, HOME, fathers, KMC. Not on charts yet.

Tessier, R., Cristo, M., Nadeau, L., & Schneider, C. (2011). Prematurity and morbidity: Could KMC reverse the process? Current Women's Health Reviews, 7(3), 254-261. doi: 10.2174/1573404355144. Premature birth is now known to be associated with cognitive deficits, poorer academic performance, attention problems, and less social competence than full term peers, and these consequences have impact on adolescence and adulthood. Can KMC reduce/reverse this trend? In short term KMC reduces length of stay and exposure to stressful NICU environment. When carried by parents noise is reduced and absorbed by clothing and body. Parents feel more confident and positive regarding the infant. Parents accept KMC and accary it out without ANY difficulty. Infants gain weight faster, breathe better, have less apnea, maintain body temp better, have fewer iatrogenic problems due to hospital stays. In the medium term (12-24 months) KMC protects fragile infants at birth and they have higher developmental quotient (10-13 points higher for the most fragile infants) than extremely preterm infants who only get conventional (incubator and swaddled holding) care. KMC infants also benefit from a family environment (Including father involvement) that is more dynamic and stimulating. Questions remain particularly in relation to neurological outcomes. Can KMC repair the brain to some extent at a very early age? Current neurophysiology studies on brain development and functioning should guide medical and rehab interventions aimed atmimizing long termneurodevelopmental disability in Preterms. Review, PT, NICU environment, development, family environment, length of stay, parental acceptance, weight, apnea, breathing pattern, body temp, iatrogenic problems (ie infection). Not on charts 10/22/2011

Tessier R, Cristo MB, Velez S., Giron M, Nadeau L, Figueroa de Calume Z, Ruiz-Palaez JG,& Charpak, N. (2003). Kangaroo mother care: A method for protecting high risk, low birth weight and premature infants against developmental delay. Infant Behavior and Development 26 (3), 384-397. Randomized trial of 431 LBW and premature (<1801 g) given KMC (start when able to breastfeed, and off of all breathing support, did it for 24 hours a day until 37-38 weeks PCA, and other Kcres i.e father, grandmother) or incubator care (kept in incubator till appropriate wt gain of 20 grams/day or more and discharged at 1700gm). At 12 months 336 took Griffiths test. At 12 months KCers had higher IQ, and the more premature the infant (30-32 weeks) and sicker and for those with diagnosed abnormal or doubtful neuro develop at 6 months age, the higher the significance. The main kmc effect was on 3 subscales: Hearing and Speech, Peronal-Social( development of personal relations)and Performance, and on planning functions related to brain developmental stage at birth. KMC provides BRAIN CARE. RCT, 24 hr KC, Development, Paternal KC, Surrogate KMC, Mixed fullterm with Preterms and LBW. Length of stay, Grandmother

Tessier, R., Cristo, M., Velez, S., Giron, M., Figueroa de Calume, Z., Ruiz-Palaez, J.G., Charpak, Y., Charpak, N. (1998). Kangaroo Mother Care and the Bonding Hypothesis. Pediatrics, 102(2) Abstract e17, pg. 390-391. Web pages 1-8 available from http://www.pediatrics.org/cgi/content/full/102/2/e17. 100 dyads randomized into KMC group (BW= 1660; GA=33.10 wks) or Control (BW= 1736, GA= 33.70 weeks). Video recordings of Nursing Child Assessment Feeding Scale (NCAST and Mother’s Perception of Premature Baby . Questionnaire KMC group gave 24/7 KMC for 2.5-3.5 weeks. Outcomes measured at 41 weeks postmenstrual age they found that a delay before implementing KMC was a moderating variable. KMC mothers had greater sense of competence (1-2 days delay X=26 SD=3 and Controls=15; 14 days delay X=0.15 and controls =10; >14 days delay X= 0.09 and controls =12). KMC group (X=0.24) had greater sensitivity and less stress when separated from their babies while control moms were more stressed when separated from infant for longer when compared to KMC moms (X=0.05). KMC moms felt less socially supported than controls but did have greater sense of competence than controls. Both groups showed greater sensitivity when infant was in NICU and infants gave clearer cues and were more responsive to mothers too. Preterm, RCT, attachment, maternal feelings, maternal stress, maternal sensitivity, interaction cues, separation.

Tesser R et al. See under ABSTRACTS for KMC as method of protecting high risk preemies against developmental delay. Also published as Tesser, Cristo et al., 2003 in Infant Behavior and Development.


Thach, B.T. (2014, April). Deaths and near deaths of healthy newborn infants while bed sharing on maternity wards. Journal of Perinatology, 34(7), 275-279. doi: 10.1016/j.jp2013.184. Aim was to evaluate programs promoting bed sharing on maternity wards and determining ways to reduce these risks.Members of the National Association of Medical Examiners were contacted requesting information on deaths of healthy infants while bed sharing on maternity wards.Fifteen deaths and three near deaths are reported. One or more factors that increase the risk of bed sharing were present in all cases. Accidental suffocation was deemed the most likely cause of these incidents.Cases of infant deaths and near deaths while bed sharing on maternity wards are under reported. The 'Baby KCBib 2018
An early skin-to-skin contact and its role in the promotion of successful breastfeeding are widely known and well recognized. One rare but potentially devastating consequence is an apparent life threatening event, or ALTE. A review of current literature reveals that an exact definition for an ALTE is vague, however several common themes emerge including a decrease in the level of consciousness of the neonate, loss of muscle tone, apnea and pallor/cyanosis. ALTEs are thought to occur most commonly in the first 24 hours of life in a healthy full-term (40 wks) GBS+ female neonate (bw=3683 grams) parous mother who was holding her baby prone skin-to-skin across her abdomen. At birth, the infant was apneic and immediately intubated (no meconium below vocal cords) so he was extubated and received 20 seconds of positive pressure ventilations via bagmask before spontaneously crying, “Apgars were 8 and 9 and then placed skin-to-skin with mother for breastfeeding and bonding (pg. 210-211).” (How can one minute apgar be 8 when he is being intubated?) “Baby did breastfeed and was checked frequently by the labor nurse At 50 mins after birth the admission nurse came to obtain Vital Signs and administer erythromycin and Vit K. The baby was observed to be lying prone across the mother’s abdomen, skin-to-skin with the baby’s abdomen against the mother’s. Present in the room were mother, father, and doula, all of whom were conversing. When taking the baby from the mother, the nurse noted the baby to be cyanotic, limp, and apneic with no apparent movement and no spontaneous breathing detected. The mother gasped when seeing her baby and began to sob. After placing the infant on the radiant warmer, the nurse called for help. When baby did not respond to vigorous stimulation PPV was immediately initiated. Several labor aand delivery nurses responded to the call for help, after 30 seconds of PPF, Baby X started to actively crying and became in pink with a flexed position. The neonatologist was present by the time the baby regained consciousness. Baby went to transitional nursery for cardiac/respiratory monitoring before being able to room in with her mother. Mother pressured baby to be sleeping. Room was darkened.” (pg. 211). Author does identify primiparous, unexperienced mother, maternal fatigue as risk factors, and says that first step to reduce SUPC is to educate staff, then inform parents to constantly be aware of their baby’s color and to avoid asphyxiating positions, check newborn frequently in first two hours, keep light up so baby’s color can be seen, do not occlude nose by breast or abdomen, and educate parent to avoid positions occluding the nose and frequently re-educate the parents about this poor position. Parents should be taught to assess baby’s airway, breathing, and color during BF and skin-to-skin contact. If mother is tired, put baby in crib or have baby be held by others. The most common precipitating event appears to be skin-to-skin contact or breastfeeding. Further research is needed to develop standard definitions, reporting mechanisms and prevention and
response protocols for ALTE incidents. (pg. 211) FT, Review, life threatening event, SUPC, Birth KC, Educate staff and parents New to Biblio study, Not on Charts 4/20/16


Thukral A, Chawla D, Agrawal R, Deorari AK, & Paul VK. (2008). Kangaroo Mother care: An alternative to conventional care. Indian J. Pediatrics 75(5), 497-503. doi: 10.1007/s12098-008-0077-7 The term kangaroo mother care (KMC) is derived from practical similarities to marsupial care-giving, i.e., the premature infant is kept warm in the maternal pouch and close to the breasts for unlimited feeding. It is a gentle and effective method that avoids agitation routinely experienced in a busy ward with preterm infants. An important main stay of kangaroo mother care is breastfeeding encouragement. Observational studies have shown reduction in mortality after institution of KMC. Preterm babies exposed to skin to skin contact showed a better mental development and better results in motor tests. It also improves thermal care. All stable LBW babies are candidate for KMC. Often this is desirable, until the baby's gestation reaches term or the weight is around 2500 g. The mother and family members are encouraged to take care of the baby in KMC and should be counseled to come for follow-up visits regularly. PT, REVIEW

Thukral, A., Sankar, M.J., Agarwal, R., Gupta, N., Deorari, A.K., & Paul, V.K. (2012). Early skin-to-skin contact and breastfeeding behavior in term neonates: a randomized controlled trial. Neonatology 102(2), 114-119. Aim: To evaluate if early skin-to-skin contact (SSC) improves breast-feeding (BF) behavior and exclusive BF (EBF) rates in term infants at 48 h of age. Methods: Term infants born by normal delivery were randomized at birth to either early SSC (n = 20) or conventional care (controls; n = 21). SSC was continued for at least 2 h after birth. Subsequently, one BF session of the infants was video recorded at about 48 h of life. The primary outcome, infants' BF behavior at 48 h of life, was assessed using the modified infant Breast-Feeding Assessment Tool (BAT; a score consisting of infant's readiness to feed, sucking, rooting and latching, each item scored from 0 to 3) by three independent masked observers. The secondary outcomes were EBF rates at 48 h and 6 weeks of age and salivary cortisol level of infants at 6 h of age. Results: Baseline characteristics including birth weight and gestation were comparable between the two groups. There was no significant difference in the BAT scores between the groups [median: 8, interquartile range (IQR) 5-10 vs. median 9, IQR 5-10; p = 0.6]. EBF rates at 48 h and at 6 weeks were, however, significantly higher in the early-SSC group than in the control group (95.0 vs. 38.1%; relative risk (RR): 2.5, 95% confidence interval (95% CI): 1.4-4.3 and 90 vs. 28.6%; RR: 3.2, 95% CI: 1.6-6.3). Interpretation: Early SSC did not improve BF behavior at discharge but significantly improved the EBF rates of term neonates. FT, RCT, BF, birth KC, duration of 2 hours after birth, infant salivary cortisol, odds ratio, risk ratio

Tieder JS, Bonkowski JL, Etzel RA, Franklin WH, Gremse DA, Herman B, Katz ES, Krilov LR, Merritt JL 2nd, Norlin C, Percey J, Sapiné RE, Shiffman RN, Smith MB; SUBCOMMITTEE ON APPARENT LIFE THREATENING EVENTS. (2016-May). Brief Resolved Unexplained Events ( Formerly Apparent Life Threatening Events) and Evaluation of Lower-Risk Infants. Pediatrics. 137(5), 1-50 doi: 10.1542/peds.2016-0590.Erratum in Tieder JS, Bonkowski JL, Etzel RA, et al. Clinical Practice Guideline: Brief Resolved Unexplained Events (Formerly Apparent Life-Threatening Events) and Evaluation of Lower-Risk Infants. Pediatrics. 2016;137(5):e20160590. [Pediatrics. 2016] This is the first clinical practice guideline from the American Academy of Pediatrics that specifically applies to patients who have experienced an apparent life-threatening event (ALTE). This clinical practice guideline has 3 objectives. First, it recommends the replacement of the term ALTE with a new term, brief resolved unexplained event (BRUE). Second, it provides an approach to patient evaluation that is based on the risk that the infant will have a repeat event or has a serious underlying disorder. Finally, it provides management recommendations, or key action statements, for lower-risk infants. The term BRUE is defined as an event occurring in an infant younger than 1 year when the observer reports a sudden, brief, and now resolved episode of 2 of the following: (1) cyanosis or pallor; (2) absent, decreased, or irregular breathing; (3) marked change in tone (hyper- or hypotonia); and (4) altered level of responsiveness. A BRUE is diagnosed only when there is no explanation for a qualifying event after conducting an appropriate history and physical examination. By using this definition and framework, infants younger than 1 year who present with a BRUE are categorized either as (1) a lower-risk patient on the basis of history and physical examination for whom evidence-based recommendations for evaluation and management are offered or (2) a higher-risk patient whose history and physical examination suggest the need for further investigation and treatment but for whom recommendations are not offered. This clinical practice guideline is intended to foster a patient- and family-centered approach to care, reduce unnecessary and costly medical interventions, improve patient outcomes, support implementation, and provide direction for future research. Each key action statement indicates a level of evidence, the benefit-harm relationship, and the strength of recommendation. PT, FT, SUPC, life threatening event, ALTE, BRUE NOT on CHARTS See also Kondamudi 2017 and Zwemer and Arane articles


Tinker AG, Paul VK, & Ruben JD. (2006). The right to a healthy newborn. International J. of Gynecology and Obstetrics. 94, 269-276. This is a report of Saving Newborn Lives’ efforts to strengthen and expand proven and cost effective interventions such as training in essential newborn care, kangaroo mother care, essential newborn care services, behavior change communication and social mobilization for maternal neonatal tetanus immunization (pg. 275). States that Malawi has adopted essential newborn care including kangaroo mother care for all newborns (pg. 275). Review, global policy, essential newborn care. Not on charts yet.

Today Show. (2010-Sept.3,Friday). “Mom’s hug revives baby that was pronounced dead. Premature infant stirs to life after two hours of kangaroo care.” This was a 6 minute, 39 second interview on the Today show with Amy Robach in which the parents of the 27 week preterm. twin showed pictures and video of the infant reviving in KC. The title here is inaccurate, the infant was resuscitated for 20 minutes, did not show any signs of life other than morbid gasping for air, so doctor (Dr. John D’Arcy of Australia, the obstetrician) was sure baby was dead and gave “dead” baby to parents and then he and most others left the room. Shortly after starting KC the infant moved, sucked milk from mother’s finger and then looked at her. The staff called the Dr. three times and it took the doctor 2 hours to get back to the delivery room and undeclared the baby as dead. Dr. D’Arcy said he could not believe the baby was alive, he was really dead when he gave the baby to the mother, but the baby had been gasping occasionally during the resuscitation effort. The interview shows video of infant with both parents so someone was with them and videotaped the infant’s rescue. The video of the interview and the parents video of the baby at birth are available from http://today.msnbc.msn.com/id/38988444/ns/today-parenting/ or it is also called “Mothers touch saves baby’s life” and is also available from http://today.msnbc.msn.com/id/21134540/vp/38989084. See also CNN 2010. PT, End of life KC. Contact them at TodayShow.com

Tofteland, L. (2006). Conceiving care. How the desires of nursing mothers transformed the delivery of our care. AWHONN Lifelines. 10(4), 312-319. Descriptive. A lactation program to increase BF initiation rate in fullterm infants was started in 1994 and evaluated in 2001. BF initiation rate in 2005 was 85%. 292 moms completed the evaluation. The most helpful thing contributing to mothers finishing their BF goals was lactation support after discharge. Then in 2003 they evaluated the program again; 167 (45%) moms returned questionnaires. In hospital lactation consultant visits were most helpful in increasing BF initiation rates and post discharge lactation services (by phone & visits) for sustaining BF. Barriers to BF were going back to work, insufficient prenatal BF education, disruptive hospital practices (PG. 317) & policies. Skin-to-skin time was noted by 3 mothers in 2003 as being influential (in 2001 only one mother identified it as such (pg. 318). Without knowing how many mothers actually did KC, these data have little meaning for us other than very few mothers identified KC as being influential on their breastfeeding. (Dr. Morrison says some moms may not make any connection between KC and BF). Fullterm, Descriptive, Breastfeeding influences, breastfeeding barriers, implementation, Intermediate KC

Tokun-Maimon, O. Joseph LJ., Bromiker, R. & Schimmel, MS (2006). Neonatal cardiopulmonary arrest in the delivery room. Pediatrics 118(2). 847-848. “Cardiopulmonary arrest of a healthy term infant in the delivery room after an uneventful vaginal delivery is an extremely rare events (cites Gatti 2004 and Espagne, 2004). But, authors found 2 cases in term infants after non-medicated vaginal deliveries in which infants were found motionless after a few minutes of breastfeeding during birthKC. In the first, breast feeding was initiated in the DR, unobserved, immediately after birth. A short time later infant was found pale and motionless while still on the breast. After resuscitation and NICU care, discharge home without obvious neurologic deficit. Similarly, the 2nd infant initiated BF unobserved in the delivery room shortly after birth. A few minutes later, the mother noticed the infant was motionless. Resuscitation, respiratory support, inotropic and anticonvulsive therapies were required during 3 month stay in NICU. Infant is severely neurologically impaired (pg. 847). Both infants were prone on mother’s abdomen during first breastfeeding (just like Gatti and Espagne). Most likely cause is acute respiratory (oronasal) obstruction and second most likely cause is increased vagal tone. Vagal tone is increased during the posidelivery period (Cordero) and the phenomenon of increased vagal tone can be activated by the initial sucking by the infant on the mother’s nipple and/or compounded by initiation of the gastric vagal axis (Von Berger, Widstrom). Vagal overactivity (hyerreactivity) has been implicated in sudden infant death (Lucet). Or infant position and maternal feeding technique are more likely mechanisms. Then he cites the American Academy of Pediatrics 2005 policy (Gartner et al. 2005) on skin-to-skin contact immediately after delivery until first feeding is accomplished and says “This policy clearly should continue to be encouraged.”(pg. 848) They recommend proper supervision and attendance by caregivers during initial breastfeeding in the DR by inexperienced primiparous mothers. Careful monitoring and positioning of the infants during this time should be done in an unobtrusive manner to allow natural instinctual interactions. Citations are: Cordero Jr, & Hon EH. 1971. Neonatal bradycardia following nasopharyngeal stimulation at birthJ Pediatr, 78, 441-447; Von Berger L, Henricus J. Raptis, S. et al., 1976. Gastroin concentration in plasma of the neonate at birth and after the first feeding. Pediatrics 58, 264-267; Widstrom AM, Winberg J. Werner S. Seversson K, Polstonc E & Uvnas-Moberg K. 1988. Breast feeding-induced effects on plasma gastrin and somatostatin levels and their correlation with milk yield in lactating females. Early Human Development. 16, 293-301; Lucet V,Le Gail MA, Shojaci T. et al., 2002. Vagal hyperreactivity and sudden infant death: study of 15 families. Archives Malaise Coeur Viass, KCBib 2018
D.L. was in stable condition, with a natural airway and on room air. His intravenous access included an umbilical artery catheter for intensive care immediately after term birth for monitoring and evaluation prior to his stage 1 palliative surgery. On the second day of life, D.L. was diagnosed with hypoplastic left heart syndrome (HLHS). He was admitted to cardiac intensive care immediately after term birth for monitoring and evaluation prior to his stage 1 palliative surgery. On the second day of life, D.L. was in stable condition, with a natural airway and on room air. His intravenous access included an umbilical artery catheter for intensive care immediately after term birth for monitoring and evaluation prior to his stage 1 palliative surgery.
continuous BP monitoring and one umbilical venous catheter, infusing PGE at 0.01 mcg/kg/min. Mother and father were visiting at bedside. The Clinical Nurse Specialist went to see the mother because of complaints of decreased production of breast milk. After counseling the mother that milk production is commonly low in the first 24-48 hours post birth, the CNS suggested KC as a way to improve mother’s milk supply. The mother agreed to perform KC after receiving education about the procedure. The infant’s VS before KC were T 37.6, HR 165, RR 90, BP 60/27 (40), and SpO2 97%. Mom changed into hospital gown, and the CNS transferred DL from warmer into mother’s arms. During KC, DL’s VS remained stable: T 37.6, HR 155, RR 43, BP 73/32(45), spO2 97%. Total duration of KC was 45 minutes. DL’s pain scores by FLACC remained zero before, during and after KC. The second case in this case study was the infant KS. “KS was prenatally diagnosed with complete heart block and IUGR. She was born via cesarean section at 30 weeks gestation due to very low heart rate in utero. Immediately after birth she underwent a median sternotomy for placement of temporary pacing wires. Her underlying HR was in the 40’s to 50’s. Weighing only 975 grams, she would have to almost double her weight before she could have an internal pacemaker implanted. Two weeks later, KS was stable, temporarily placed at a rate of 96, and gaining weight. When her incubator required cleaning, the team decided she was stable enough to be held by her mother skin-to-skin. The next day, KS’s vital signs were still stable T=36.3, HR =96, RR=47, BP=68/33 (450, SpO2 = 97%). For 30 minutes KS remained stable with no pacing difficulties, no discomfort, and no thermoregulation issues. The mother requested that the father have the opportunity to Kangaroo, so the CNS moved the infant from the mother’s arms into her own while the father took the mother’s seat and then placed the infant in her father’s arms. Vital signs did not change with transfer and the father kangarooed his daughter for 30 minutes and then returned her to her incubator by standing transfer technique. KS’s vital signs were stable and all pacing wires remained intact and secure. Parental responses to KC were “I was nervous at first but the nurses made me feel comfortable” “It helped make me more confident as a mother and allowed me to bond with my son”, “the big thing is that it is scary with all the lines to be able to do the normal mom things…change diapers, feed him, etc. To be able to hold him so closely like that does help.”

Torowicz, D., Lisanti, A.J., Rim, J-S., Medoff-Cooper, B. (2012). A developmental care framework for a cardiac intensive care unit. Advances in Neonatal Care, 12(5S), S28-S32. No doi. A clinical report on how neonatal developmental care is appropriate for cardiac care too and has a whole section on Kangaroo care on page S31-S32 but did not include any of the case study elements listed directly above, but rather talks about need for policy and getting MD confirmation that post-op CHD infants with various lines may need approval to be moved into and out of KC. She also talks about having a policy to help these infants get to the breast for breastfeeding. PT, FT, policy paper, policy, guidelines, implementation, NOT ON CHARTS 10/2/2012

Torres J, Palencia D, Sanchez DM, Garcia J, Rey H, & Echandia CA. (2006). Kangaroo mother program: Results of follow up to one year of infants in same hospital. Archives de Pediatrie, 22(2), 166-170. Skin-to-skin care in the delivery room increases mother-newborn bonding, reduces the newborn’s stress level, and facilitates breastfeeding. However, a few reports of life-threatening events in newborn infants during skin-to-skin care have prompted suggestions that SpO2 monitoring may be of value in the delivery room. The present study compared SpO2 monitoring with standard clinical practices during skin-to-skin care in the delivery room. The midwife’s opinion and the mother’s anxiety level were assessed for both procedures. The midwife’s opinion was measured on a Likert scale and the mother’s anxiety level was measured on the State-Trait Anxiety Inventory Y-A and Y-B scales. Two procedures (standard clinical practice vs. SpO2 monitoring) were compared prospectively in two consecutive 3-month periods. Seventy case report forms were completed for the “standard clinical practice” group and 62 were completed for the “SpO2 monitoring” group. The care procedure was considered to be satisfactory or quite satisfactory in 60 cases (96.8%) in the “SpO2 monitoring” group and in 57 cases (81.4%, P < 0.05) in the “standard clinical practice” group. There was no significant difference between the groups in terms of the mean maternal anxiety level SpO2 monitoring during skin-to-skin care in the
delivery room was well accepted by the midwife. Relative to standard clinical practice alone, SpO2 monitoring was not associated with elevated maternal anxiety levels. FT, case reports, maternal anxiety/stress, staff opinion. Not on Charts 3/30/2015

Tozier, P.K. (2012). Tackling newborn hypoglycemia in the delivery room: utilizing colostrum, skin to skin, and state of the art policies. Journal Obstetric, Gynecologic and Neonatal Nursing, 41(Suppl 1): S 32-S33. doi: 10.1111/j.1552-6909.2912.01360.x. Report of a quality improvement project with full term infants to reduce hypoglycemia in the delivery room which is a “wide challenge”. When infant is separated from mom or are breastfed, they are given formula as a quick fix to increase blood glucose levels which is not good because formula really stimulates insulin production, decreases breastfeeding success, and exposes infant to unstable glucose levels. The proposed changes were to attain stable blood glucose levels by giving infants drops of colostrum, feeding the babies before checkin blood glucose, and keep them in continuous skin to skin contact, and establish ways to give colostrum to newborns who were not able to latch effectively. She rewrote the policy, wanted nurses to adhere more vigilantly to the skin to skin policy, wrote a policy for hand expression of colostrum. They have accepted a new hypoglycemia algorithm that accepts lower glucose values initially, has newborn feed first, do first blood glucose check by 90 minutes post birth, implemented wide-spread hand expression of colostrum before and after childbirth for diabetic patients, and they have maintained continuous BirthKC as a norm. Outcomes to date are decreased separation of dyad, higher newborn glucose levels, higher patient satisfaction, and better success in breastfeeding. FT, quality improvement project, implementation, hypoglycemia- blood glucose, separation, BF, maternal satisfaction/colostrum. Not on charts 1-2-2013.

Tracy E.E., Haas, S., & Lauria, M.R. (2012). Newborn care and safety: the black box of obstetric practices and residency training. Obstet Gynecol. 2012 Sep;120(3):643-6. doi: 10.1097/AOG.0b013e318265affa EETracy@partners.org. Certain causes of newborn mortality such as sudden unexpected infant death, which includes sleep-related infant death and sudden unexplained infant death syndrome, are potentially preventable. Obstetricians are uniquely positioned to counsel new parents about safe practices regarding newborn sleep, feeding, and transportation. Patients often do not develop a relationship with their pediatricians until the neonate has been discharged, and the newborn period is a time of particular vulnerability. Newborn safety should be routinely taught in obstetric curricula, and the American College/Congress of Obstetricians and Gynecologists and the American Academy of Pediatrics (AAP) should partner to disseminate updated literature and guidelines to health care providers regarding newborn safety. Current guidelines from the Academy of Pediatrics Task Force on Sudden Infant Syndrome are summarized in this article and are listed in AAP 2013 referene above. FT, PT, Life Threatening. SUPC, guidelines Not on charts 4/15/2014

Trelaven, E. (2020). Connecting across borders to implement kangaroo mother care. Healthy Newborn Network: Washington, DC: Save the Children, appeared 1/27/2012. This is a blog report available from HealthyNewbornNetwork.org/blog. This tells about the first international conference of Caribbean and latin American Kangaroo Mother Care convention and that 12 nations were represented and that there were 62 registrants and that ehy want to establish common outcome evaluation criteria to show the p roam is a success and to develop a “community of support” to sustain the program. 3rd World, PT, implementation.

Trevisanuto, D., Arnolda, G., Chien, T.D., Xuan, N.M., Thu, L.T., Kumara, D., Lincetto, O, & Moccia, L. (2013). Reducing neonatal infections in south and south central Vietnam: the views of healthcare providers. BMC Pediatrics, 19(1), 51. doi: 10.1186/1471-2431-13-51. Infection causes neonatal mortality in both high and low income countries. While simple interventions to prevent neonatal infection are available, they are often poorly understood and implemented by clinicians. A basic understanding of healthcare providers’ perceptions of infection control provides a platform for improving current practices. Our aim was to explore the views of healthcare providers in provincial hospitals in south and south central Vietnam to inform the design of programmes to improve neonatal infection prevention and control. All fifty-four participants who attended a workshop on infection prevention and control were asked to complete an anonymous, written questionnaire identifying their priorities for improving neonatal infection prevention and control in provincial hospitals in south and south central Vietnam. Hand washing, exclusive breastfeeding and safe disposal of medical waste were nominated by most participants as priorities for preventing neonatal infections. Education through instructional posters and written guidelines, family contact, kangaroo-mother-care, limitation of invasive procedures and screening for maternal GBS infection were advocated by a smaller proportion of participants. The opinions of neonatal healthcare providers at the workshop accurately reflect some of the current international recommendations for infection prevention. However, other important recommendations were not commonly identified by participants and need to be reinforced. PT, 3rd World, infection


KCBib 2018
KMC (KMC) is a low-cost intervention that, whenever possible, is strongly recommended for temperature maintenance. During KMC, the World Health Organization (WHO) guidelines recommend the use of a cap/hat, but its effect on temperature control during KMC remains to be established. In the hospitals participating in the projects of the non-governmental organization CUAMM, KMC represents a standard of care, but the heads of the babies often remain uncovered due to local habits or to the unavailability of a cap. The aim of the present study will be to assess the effectiveness and safety of using a woolen cap in maintaining normothermia in low-birth-weight infants (LBWI) during KMC. This is a multicenter (three hospitals), multicountry (three countries), prospective, unblinded, randomized controlled trial of KMC treatment with and without a woolen cap in LBWI. After obtaining parental consent, all infants with a birth weight below 2500 g and who are candidates for KMC, based on the clinical decision of the attending physician, will be assigned to the KMC with a woolen cap group or to the KMC without a woolen cap group in a 1:1 ratio according to a computer-generated, randomized sequence. The duration of the study will be until the patient's discharge, with a maximum treatment duration of 7 days. The primary outcome measure will be whether the infants' temperatures remain within the normal range (36.5-37.5°C) in the course of KMC during the intervention. In all participants, axillary temperature will be measured with a digital thermometer four times per day. In addition, maternal and room temperature will be recorded. Secondary outcome measures will be: episodes of apnea; sepsis; mortality before hospital discharge; in-hospital growth; and age at discharge. The findings of this study will be important for other units/settings in high- as well low-resource countries where KMC is routinely performed. Based on the results of the present study, we could speculate whether the use of a woolen cap may help to maintain the neonate within the normal thermal range. Furthermore, potential complications such as hyperthermia will be strictly monitored and collected. PT, LBW, hypothermia, KMC is routine/standard care, RTC of woolen cap vs. no woolen cap on temp, future study, apnea, sepsis, mortality, growth, discharge age. Not on chart 7-9-16; new to biblio study.

Trotter, S. (2005). Skin-to-skin contact: therapy or treatment? Midwifery 8(5), 202-203. A case study of a full-term infant who started KC immediately after birth and had a successful breastfeeding at that time. Within 8 hours of birth (actually at 6 hours post-birth) the infant developed tachycardia and tachypnea, but stayed in KC based on Anderson et al.’s 2003 Cochrane analysis saying KC stabilizes vital signs. By 24 hours of age, HR = 140-160, RR = 88 with grunting and mild chest retractions. Body temp was stable, no cyanosis, no nasal flaring. MD reviewed case and let baby stay in KC until 36 hours postbirth when next exam done. HR, RR were normal and infant was declared fit. No further problems. “Had this infant been separated from his mother and transferred to the potentially stressful environment of the neonatal unit, it is possible that his condition would have deteriorated further, necessitating invasive procedures (Peters KL, 1992).” Does routine nursing care complicate the physiologic status of premature neonates with respiratory distress syndrome? J Preant and Neonatal Nursing, 6(2), 67-84. The positive outcome suggests that, in carefully selected cases, it may be wise to instigate a period of observed KC. Sensory stimulation involving warmth, touch, and smell is an extremely powerful vagal stimulant causing oxytocin release. This in turn raises the skin temperature of the breast, decreasing anxiety, increasing calmness and enhancing parental behaviors (Uvnas-Moberg, 1998). Says skin to skin, as in co-bedding of twins, leads to immediately and consistent cessation of unstable symptoms and cities Lutes Km 1996 in Neonatal Network 15(7), 61-62. FT, Case study, birth KC, VEKC, separation, oxytocin, transient respiratory distress, BF. NOT ON CHarts YET.

Tsao JCI, Evans S, Meldrum M, Altman T & Zeltzer LK. (2008). A review of CAM for procedural pain in infancy: Part 11. Other interventions. Evid Based Complement Alternat Med 5(4), 399-407. This is review article that is very similar to the Tsao publication in 2007. This reports the Gray et al. 2004 study, and Johnston et al. 2003 studies on page 403. On page 405 it states “KC is an appealing method of pain management in infants undergoing painful medical procedures and appears to be safe for both term and preterm infants. However, only two trials of KC have been conducted (BIG MISTAKE!!!) and the generalizability and standardization of this intervention is complicated by variations in maternal attitudes and comforting styles. In several trials, mothers introduced additional comforting techniques such as stroking or verbalization when providing KC, which exerted unknown effects. Moreover, Johnston et al. (2003) reported a 45% refusal rate among mothers, indicating that not all women were comfortable with the approach; women who are less comfortable may be less effective in relieving their newborn’s distress. Further research on this method and the variable impact of maternal style and attitude are indicated. (pg. 405). Review, FT, PT, Pain, % women who refuse, other comforting issues.

Tsao JCI, Meldrum ML, & Zeltzer LK. (2007). Complementary and alternative approaches to pain in infancy. Chapter 21 in Anand KJS, Stevens BJ, and McGrath PJ (Eds.) Pain in Neonates and Infants (3rd Ed.) N.Y.: Elsevier, Pp, 279-287. KMC is reviewed as an complementary, alternative medical therapy for pain. The discussion begins on page 283 and states that “KC is advocated as a natural, non-invasive method of providing analgesia during heel sticks and other painful procedures. Evaluation of this method in a well-controlled study is complex, both because it may be difficult to blind observers to the condition and because mothers may introduce an unknown factors of bias by additional touch or verbal interactions, unless otherwise instructed."Pg. 283. She then cites Gray et al., 2000 and Johnsent et al., 2003 and concludes: “Thus, existing evidence supports KC as a safe alternative analgesic for both preterm and term infants. KC may exert its effects via state regulation (de Leeuw et al., 1991; Ludington-Hoe et al., 2000); maternal touch has been implicated in the development of humans and animals (Fleming et al., 1999). However, as noted by Johnston et al. (2003), their study had a 40% refusal rate indicating that those mothers who were not as comfortable with the procedures may not have been as effective in providing KC to their
infants. Further research on the generalizability of KC and maternal attitudes toward it are warranted.”(pg. 283). Review, Pain, alternate therapy.

Tudhope D, Vento M, Bhutta Z, Pichi P. (2013). Nutritional requirements and feeding recommendations for small for gestational age infants. Journal of Pediatrics, 162(3 Suppl):S81–9. doi: 10.1016/j.jpeds.2012.11.057. Clinical report of nutrition needs of SGA infants. We define the small for gestational age (SGA) infant as an infant born ≥35 weeks’ gestation and <10th percentile on the Fenton Growth Chart. Policy statements from many organizations recommend mother’s own milk for SGA infants because it meets most of their nutritional requirements and provides short- and long-term benefits. Several distinct patterns of intrauterine growth restriction are identified among the heterogeneous grouping of SGA infants; each varies with regard to neonatal morbidities, requirements for neonatal management, postnatal growth velocities, neurodevelopmental progress, and adult health outcomes. There is much we do not know about nutritional management of the SGA infant. We need to identify and define: infants who have “true” growth restriction and are at high risk for adverse metabolic outcomes in later life; optimal growth velocity and “catch-up” growth rates that are conducive with life-long health and well being; global approaches to management of hypoglycemia; and an optimal model for postdischarge care. Large, rigorously conducted trials are required to determine whether aggressive feeding of SGA infants results in improved nutritional rehabilitation, growth, and neurodevelopmental outcomes. Before birth, maternal supplementation with specific nutrients reduces the rate and severity of growth restriction and may prevent nutrient deficiency states if infants are born SGA. After birth, the generally accepted goal is to provide enough nutrients to achieve postnatal growth similar to that of a normal fetus. In addition, we recommend SGA infants be allowed to “room in” with their mothers to promote breastfeeding, mother-infant attachment, and skin-to-skin contact to assist with thermoregulation. PT, IUGR, SGA, clinical review, thermoreg, temp

Tully KP, Holditch-Davis D, White-Traut RC, David R, O’Shea TM, Geraldo V. (2016-Jan). A Test of Kangaroo Care on Preterm Infant Breastfeeding. J Obstet Gynecol Neonatal Nurs. 45(1):41-51. doi: 10.1016/j.jogn.2015.10.004 To test the effects of kangaroo care (KC) on breastfeeding outcomes in preterm infants compared with two control groups and to explore whether maternal-infant-characteristics and the mother’s choice to use KC were related to breastfeeding measures.Secondary analysis of a multisite, stratified, randomized three-arm trial. The treatment groups used KC, auditory-tactile-visual-vestibular (ATVV) intervention, or received preterm infant care information.Newborn care units from 4 hospitals in the United States from 2006 to 2011. Racially diverse mothers (N = 231) and their preterm infants were born weighing less than 1,750 g.Mothers and their infants were enrolled once the infants were no longer critically ill, weighed at least 1,000 g, and could be safely held outside the incubator by parents. Participants were instructed by study nurses; those allocated to the KC or ATVV groups were asked to engage in these interactions with their infants for a minimum of 3 times a week in the hospital and at home until their infants reached age 2 months adjusted for prematurity. Feeding at the breast during hospitalization, the duration of postdischarge breastfeeding, and breastfeeding exclusivity after hospital discharge did not differ statistically among the treatment groups. Regardless of group assignment, married, older, and more educated women were more likely to feed at the breast during hospitalization. Mothers who practiced KC, regardless of randomly allocated group, were more likely to provide their milk than those who did not practice KC. Breastfeeding duration was greatest among more educated women. As implemented in this study, assignment to the KC group did not appear to influence the measured breastfeeding outcomes. PT, RCT, BF in hospital, BF EXCLUSIVITY, BF duration at home, negative outcome, duration of KC, home KC till 2 months = community KC. NEW for biblio study

Tully, K., Stuebe, A., Seashore, C., & Sullivan, C. (2017-Oct). POSTNATAL UNIT EXPERIENCES OF MOTHERS IN THE UNITED STATES, BY CESAREAN SECTION OR VAGINAL CHILDBIRTH. Breastfeeding Medicine, 12 (51): 38. Postpartum hospitalization entails dyadic support for interrelated maternal-newborn health issues and needs differ by childbirth mode. The objective was to investigate maternal report of their postpartum unit experiences, by childbirth mode, to improve the patient-centeredness of care. After approval from the UNC-Chapel Hill Non-Biomedical IRB (16-2511), data were obtained through an online survey distributed from November 2016-May 2017 to women who were at least 18 years of age, residing in the United States, and had given birth within 5 years. Participants (N = 2760) were 92.8% White, 93.8% non-Hispanic, and 97.4% were married or otherwise living with their partner. For participants’ most recent deliveries, 58.1% reported the birthing facility as being Baby-Friendly designated, 99.5% intended to breastfeed, 27.1% underwent cesarean section (n = 747), and 89.1% of infants were born 37 weeks gestation or greater. Those who underwent cesarean section were more likely to have delivered less than 37 weeks gestation (cs 83.4%, vag 91.1%, p < .00). There were no other significant differences in measured characteristics between the groups. Women who underwent cesarean section reported a variety of suboptimal experiences, including: no skin-to-skin within two hours of birth (cs 28.5%, vag 6.6%, p < .00); being routinely woken by staff (cs 87.1%, vag 78.4%, p < .00); asked for newborn separation (cs 25.0%, vag 19.7%, p < .00); have staff offer to take newborns out of rooming-in (cs 43.0%, vag 31.9%, p < .00); and have infant separations for non-treatment reasons (cs 22.9%, vag 16.9%, p < .00). Women who had cesareans were more likely to call postpartum staff for non-medical needs (cs 29.9%, vag 17.7%, p < .00), but help was more likely to be received only “sometimes” or “never” as soon as requested(cs 21.0%, vag 16.8%, p = .02). Women who underwent cesarean were less likely to report having met their breastfeeding goals (cs 90.9%, vag 93.9%, p = .01). Women who experience cesarean section may benefit from more tailored postpartum unit support to facilitate realization of their breastfeeding goals and support other health needs compared to women who experience vaginal birth. (FT, BF) not on charts

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Prevention of neonatal cold injury in preterm infants. Acta Paediatrica 93 (3), 350-355. A commentary on an RCT using a heated, water-filled mattress in the same issue. This commentary says KMC should be tested instead. Cold injury contributes to neonatal death. KMC is effective, affordable, available method to prevent neonatal hypothermia in developing countries. In developed countries use of incubators does the job, but incubators overstimulate babies. This is a randomized controlled trial of KMC and cot-nursing with a heated, water filled mattress. KMC is as good a tool as incubator, radiant warmer, and heated mattresses in providing warmth to preterms in modern neonatal intensive care units. According to Jackson, 2010, Tunnell states that KMC is usually practiced at birth with fullterm infants and has recently spread to the nICU. (That is an interesting perspective-SML) Commentary PT, temp., RCT?, incubators are bad

Tunnell R. (2004). Prevention of neonatal cold injury in preterm infants. Acta Paediatrica 93 (3), 350-355. A commentary on an RCT using a heated, water-filled mattress in the same issue. This commentary says KMC should be tested instead. Cold injury contributes to neonatal death. KMC is effective, affordable, available method to prevent neonatal hypothermia in developing countries. In developed countries use of incubators does the job, but incubators overstimulate babies. This is a randomized controlled trial of KMC and cot-nursing with a heated, water filled mattress. KMC is as good a tool as incubator, radiant warmer, and heated mattresses in providing warmth to preterms in modern neonatal intensive care units. According to Jackson, 2010, Tunnell states that KMC is usually practiced at birth with fullterm infants and has recently spread to the nICU. (That is an interesting perspective-SML) Commentary PT, temp., RCT?, incubators are bad


Tuomi, C., Scaramuzzo, R.T., Ghiri, P., Boldrini, A., & Bartalena, L. (2012). Kangaroo mother care: four years of experience in very low birth weight and preterm infants. Minerva Pediatrics, 64(4), 377-383. Retrospective analysis of 213 infants, aged <37 wks GA and weighing <1500 gram were divided into two groups (91 KMC vs. 71 in conventional care) at University of Pisa, Italy to determine general health of infants (growth, duration of breastfeeding and hospitalization). The indices of growth and duration of hospital stay were not significantly difference in the two groups, but it was worth noting how KMC is more efficacious in the very tiny VLW infants and that the means of the growth parameters in the KMC infants are greater than those referring to the conventional care subjects. Body temperatures taken at the beginning and end of a KMC session are higher, and the mother-child relationship facilitates better sucking-feeding. While KMC is equivalent to conventional care in terms of safety, thermal protection, morbidity and auxologic development, KC appears to promote humanization of infant care and mother-child bond more quickly. PT, LOS, micropreemies, smaller/sicker infants, temperature, suckling/feeding, breastfeeding, growth/weight., implementation evaluation, safety. Morbidity, auxologic development, bonding/attachment. GET THIS ARTICLE and see what other growth measures are beyond weight.


Turnbull V, & Petty J. (2013). Evidence-based thermal care of low birthweight neonates. Part two: family-centered care principles. Nursing of Children and Young People, 25(3):26-9. Barnet Hospital, London. victoria.steele@nhs.net. Clinical review paper. Parents should be involved in the care of, and decision making for, their newborn, and separations should be minimised. Their needs should be anticipated, respected and catered for in the neonatal unit. Open, clear, consistent information and communication should be maintained. Recommended facilities include accommodation and equipment for expressing breast milk, 24-hour visiting, psychological support services and maximised opportunities for parents to provide positive, gentle touch and skin-to-skin contact with their child during the admission. Clinical, PT, Separation, family care, temperature, 24/7KC, duration GET THIS ARTICLE TO GET SPECIFICS.


Uneké CJ, Sombie I, Keita N, Lokossou V, Johnson E, Ongolo-Zogo P. (2016-Aug). An assessment of maternal, newborn and child health implementation studies in Nigeria: implications for evidence informed policymaking and practice. Health Promot Perspect. 2016 Aug 10;6(3):119-27. doi: 10.15171/hpp.2016.20. Introduction of implementation science into maternal, newborn and child health (MNCH) research has facilitated better methods to improve uptake of research findings into practices. With increase in implementation research related to MNCH world-wide, stronger scientific evidence are now available and have improved MNCH policies in many countries including Nigeria. The purpose of this study was to review MNCH implementation studies undertaken in Nigeria in order to understand the extent the evidence generated informed better policy. This study was a systematic review. A MEDLINE Entrez PubMed search was performed in August 2015 and implementation studies that investigated MNCH in Nigeria from 1966 to 2015 in relation to health policy were sought. Search key words included Nigeria, health policy, maternal, newborn, and child health. Only policy relevant studies that were implementation or intervention research which generated evidence to improve MNCH in Nigeria were eligible and were selected. A total of 18 relevant studies that fulfilled the study inclusion criteria were identified out of 471 studies found. These studies generated high quality policy relevance evidence relating to task shifting, breastfeeding practices, maternal nutrition, childhood immunization, kangaroo mother care (KMC), prevention of maternal to child transmission of HIV, etc. These indicated significant improvements in maternal health outcomes in localities and health

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facilities where the studies were undertaken. There is a dire need for more implementation research related to MNCH in low income settings because the priority for improved MNCH outcome is not so much the development of new technologies but solving implementation issues, such as how to scale up and evaluate interventions within complex health systems. PT, FT policy, 3rd WORLD (NIGERIA, CAMEROON), implementation. Not on charts 1/2017


UNICEF, (1998). Reassessment of Baby-Friendly Hospitals and Maternity Services: A Guide to Developing a National Process. Part VII. Pp. 3-5. New York: UNICEF Programme Division. Problems and barriers in implementing Step 4 of Baby Friendly criteria (placement of infant skin-to-skin within 30 minutes of birth) have been documented since the early years (1992) of implementation. Among the common barriers are lack of staff time in general, need to finish newborn procedures, the mother may drop the baby, need for episiotomy repair, the mother must be cleaned up first, need to move the mother from the delivery room, or the delivery room is too cold. Guidelines, Implementation, barriers, Birth KC, VEKC, BF, Staff time

UNICEF, (2007). Breast crawl. (This is really Gangal’s report. See Gangal, 2007 above). This is a very big document that accompanies the video that everyone/anyone can see called BREAST CRAWL on the website http://www.breastcrawl.org. The film only shows a fullterm infant being placed between the breasts (not on the mother’s belly, so no crawl from belly to breast is possible), and moving his head over to a nipple and latching on. The infant’s head remains wet, and there is no covering over the infant’s back, so this film is not an optimal film to use in non-tropical environments especially. However, the Breast Crawl document does address KC: FT, BF, crawl


UNICEF UK. (2010). Skin-to-skin contact. In The Baby Friendly Initiative. I don’t know how to get this, but we should.

UNICEF/WHO. (2006). Baby-Friendly Hospital Initiative. Revised, Updated, and Expanded for Integrated Care. Section 3.2 Session Outlines. Breastfeeding promotion and support in a Baby-Friendly Hospital. A 20-Hour course for Maternity Staff. Preliminary Version for Country Implementation. Jan. 2006. N.Y.: UNICEF; pp. 1-237. This is a summary of the 20 hour course and for integrated care measures in the hospital and in the community after hospital discharge so babies being breastfed in the hospital will continue to be breastfed for many months not just two weeks. In Section 1 called Background and Implementation there is section 1.3 Global Criteria that states “The antenatal discussion covers the importance of breastfeeding, the importance of early skin-to-skin contact, early initiation of breastfeeding…” (pg. 28). Page 28 continues with the following criteria for successfully being Baby Friendly: “at least 70% of mothers are able to adequately describe what was discussed about two of the following topics: importance of skin-to-skin contact, rooming-in, and risks of supplements while breastfeeding in the first 6 months.” (pg. 28). On page 29 of this section, it states “Step 4 is interpreted as: Place babies in skin-to-skin contact with their mothers immediately following birth for at least an hour and encourage mothers to recognize when their babies are ready to breastfeed, offering help if needed.” The criteria for step four are that “out of randomly selected mothers with vaginal births or cesarean sections without general anesthesia in the maternity wards: at least 80% confirm that their babies were placed in skin-to-skin contact with them immediately or within five minutes after birth and that this contact continued for at least an hour, unless there were medically justifiable reasons for delayed contact. And at least 80% of mothers were encouraged to look for signs for when their babies were ready to breastfeed during this first period of contact and offered help, if needed. (The baby should not be forced to breastfeed but, rather, supported to do so when ready.) (Note: mothers may have difficulty estimating time immediately following birth. If time and length of skin-to-skin contact following birth is in the mothers’ charts, this can be used as a cross check.)” pg. 29 of Section 1. “If any of the randomly selected mothers have had cesarean deliveries with general anesthesia, at least 50% should report that their babies were placed in skin-to-skin contact with them as soon as the mothers were responsive and alert, with the same procedures followed. At least 80% of the randomly selected mothers with babies in special care report that they have had a chance to hold their babies skin-to-skin or, if not, the staff can provide justifiable reasons why they could not. Observations of vaginal deliveries, if necessary to confirm adherence to Step 4, show that in at least 75% of the cases, babies are placed with their mothers, held skin-to-skin within five minutes after birth, for at least 60 minutes, and that mothers are shown how to recognize the signs that their babies are ready to breastfeed and offered help, or there are justified reasons for not following these procedures.” pg. 29 of Section 1. On page 85 which is in Section 3.2 on how to teach the content, it states again “Place babies in skin-to-skin contact with their mothers immediately following birth for at least an hour and encourage mothers to recognize when their babies are ready to breastfeed, offering help if needed.” (UNICEF/WHO, 2006.p. 85). Guideline, Cesarean section, birth KC.

UNICEF/WHO. (2009). Baby-Friendly Hospital Initiative. Final Version for Country Implementation. This reports that skin to skin contact should begin within 5 minutes for vaginal and cesarean and remain uninterrupted

KCBib 2018
Despite the recognition, benefits, and longevity of KMC, few developing countries have made the intervention available. The definition by Cattaneo, Davanzo, and Uxa, 1998 is then cited: “Skin to skin care is recommended for all babies immediately after delivery for every baby as part of routine care to ensure that all babies stay warm in the first two hours of life, and for sick newborns during transport for referral. LBW infants, however, require SSC for a longer period of time, depending on their weight and condition.”

Also, on page 28 is the Section 1.2: Annex 1 table entitled “Applying the Ten Steps in Facilities with High HIV Prevalence.” Step 4 in the table says in the section “Guidance on applying the “TEN STEPS” in facilities with High HIV Prevalence” “Place all babies in skin to skin contact with their mother immediately following birth for at least an hour. Encourage mothers who have chosen to breastfeed to recognize when their babies are ready to breastfeed, offering help if needed. Offer mothers who are HIV positive and have chosen not to breastfeed help in keeping their infants from accessing their breasts.”

United Nations Population Division. (2012). Born TOO Soon Report. Neonatal mortality is not dropping as fast as under-five mortality and in 2010, 40% of childhood mortality occurs in the neonatal period with Preterm Birth being the #1 cause of neonatal mortality. There are 1.1 million preterm deaths per year and that is more than 125 deaths per hour which is equivalent to a commercial jet liner crashing every 3 hours and commercial jet liner crashes get way more attention that PT deaths. KMC could aver about 450,000 deaths per year if near-universal coverage could be achieved, but several challenges exist to achieving this goal. PT, guidelines, review, mortality, implementation, barriers.

United States Agency for International Development, Maternal and Child Health Integrated Program (April 2012). Kangaroo Mother Care Implementation Guide. Washington, DC: Maternal and Child Health Integrated Program. Available by writing to MCHIP, Jhpiego, 1776 Massachusetts Ave., NW Suite 300, Washington, DC 20036, USA phone: 202-835-3100. The goals of this book is to introduce, expand, and strengthen KMC practices to improve survival of low birth weight and preterm babies. The book provides pertinent guidelines for national-level policymakers and managers of maternal and newborn health programs. The chapters detail key steps in the development, implementation, and expansion of sustainable, facility-based KMC services in developing countries. KMC should be standard thermal care (pg 1) and KMC is ESSENTIAL NEWBORN CARE (meaning that it is a strategy to improve the health of newborns through preventive care, and early identification and treatment of problems (Pg 2). On page 2 it differentiates KMC from skin-to-skin care, saying that the WHO recommends “skin to skin immediately after delivery for every baby as part of routine care to ensure that all babies stay warm in the first two hours of life, and for sick newborns during transport for referral. LBW infants, however, require SSC for a longer period of time, depending on their weight and condition.”

The definition by Cattaneo, Davanzo, and Uxa, 1998 is then cited. “Skin to skin care is recommended for all babies immediately after delivery to ensure warmth. It is also a recommended method when transferring sick newborns to a health facility” “Despite the recognition, benefits, and longevity of KMC, few developing countries have made the intervention available and accessible to families with LBW babies. (pg 2) Quotes from page 3 are that KMC should be practiced because “KMC ensures warmth by keeping the baby skin-to-skin with the other or a substitute such as the father, ensures nutrition by supporting the mother to breastfeed her baby frequently and EXCLUSIVELY (or other appropriate choice as per the mother’s status), prevents infection prevention while in the facility and is empahsed before discharge. Enables early discharge with follow-up.” (pg 3) The chapters of the book are Chapter 1: Introduction to KMC, Chapter 2: Introduction and Expansion of KMC Services, Chapter 3: Development and Adaptation of KMC Policy and Materials, Chapter 4: Training Service Providers in KMC, Chapter 5: Achieving and Maintaining Quality of Care with Supportive Supervision, Chapter 6: Increasing Support for Facility-Based KMC Through Sensitization and Mobilization, Chapter 7: Monitoring, Evaluation and Documentation of KMC Services, Chapter 8: Action Planning for KMC Implementation and Scale Up, Chapter 9: Available KMC Resources (The United States Institute for Kangaroo Care is not listed as a resource). The Appendices are interesting: Appendix A Evaluation checklist for kangaroo mother care implementation (and for the five criteria for placement of the baby it lists, baby is vertical, baby is in direct skin to skin contact on mom’s chest, legs are flexed in a frog position, check is in contact with the chest o the mother, etc.)
baby is fixed firmly to the chest of the mother/caregiver with a cloth/shawl or lycra band. Appdx B is Checklist for KMC Unit, Appdx C: KMC Indicators and Data Source (these are evaluation markers like # of infants who get KMC, # of institutions in a country that provide KMC, etc). Appdx F: Sample National Action Plan for a KMC Program (ie. steps to follow, like introducing it, holding stakeholder’s meeting, engaging national committees, having working meetings at regional, district, and community levels, plan and implement mobilization. Appdx G: Facility-Level Action Plan for KMC Program Implementation, health policy guidelines, not used much, paternal K, infection, essential newborn care. NOT ON CHARTS 1-8-2013.

United States Breastfeeding Committee. (2010). Implementing the Joint Commission perinatal care core measures on exclusive breastfeeding. 2nd rev ed. Washington, D.C.: United States Breastfeeding Committee. This states that on Nov. 30, 2012 the Joint Commission announced that the Perinatal Care Core measure set would become mandatory for all hospitals with 1, 100 or more births per year, effective January 1, 2014. Exclusive breast milk feeding is defined as a newborn receiving only breast milk and no other liquids or solids except expressed mother’s milk as well as donor human milk, both of which may be fed to the infant by means other than suckling at the breast. While breastfeeding is the goal for optimal health, it is recognized that human milk provided indirectly is still superior to alternatives (pg. 1). Infants who are excluded are if they meet criteria in which breastfeeding is contraindicated (i.e HIV, Human T-lymphotropic virus, substance abuse/ETOH abuse, active untreated TB, Chemotherapy meds, radioactive isotopes, antiretroviral meds, radiation therapy, active untreated varicella or herpes with breast lesions, admission to NICU, adoption or foster home placement of newborn, previous breast surgery i.e. bilateral mastectomy, breast reduction or augmentation), and all infants who have ever been admitted to the Neonatal Intensive Care Unit. USBFC suggests changing terminology so that BOTTLE is not synonym for FORMULA. Treat formula like a medication and have it put in the med drawers and be signed out in medication system. On page 8 it says, “Documentation that allows staff to record the length of time of skin-to-skin contact, especially immediately after birth” is an additional measure that should be documented to facilitate meeting the mandate. “Documentation that supports workflows that eliminate mother-infant separation and disruptive procedures for the first two hours after birth” is also an additional measure to be documented (pg. 8).

“Keeping mothers and babies together offers the most significant opportunity for improvement of exclusive breastfeeding, however (cites Moore, Anderson, & Bergman, 2007- also on this bib) This includes continuous, uninterrupted skin-to-skin contact immediately after birth until the first feeding occurs, continued skin-to-skin contact during the hospital stay, and rooming-in both day and night.”(pg. 21). Pg. 23, under the section of “Recommendations for Evidence-Based BEST Practices. Labor and Delivery Care. A. Initial skin to skin contact. Practice: Emphasize skin to skin contact immediately after birth to facilitate imprinting of proper breastfeeding technique by the infant. The infant is quickly dried and then placed naked on mother’s bare chest immediately after birth; then both are covered, except for the baby’s head, with warmed blankets. A cup maybe placed on the infant’s head but his face should be visible. Ensure the infant is dried between his skin folds, and that wet towels around clothing are not in contact with him. The umbilical cord is not clamped until the infant is dried and on the mother’s chest. …Emphasize skin to skin contact as soon after birth as possible in cases of cesarean delivery. Ideally this should be with the mother as son as she is stabilized, but other family members can serve until the mother becomes available. For mothers and infants having non-emergent cesarean births, immediate skin to skin contact after birth, while incisions are being closed, may help prevent both maternal and neonatal hypothermia and provide a pleasurable distraction during the remainder of the surgery. Rationale: This practice, part of the 1997 WHO initiative “The Warm Chain” (WHO, Thermal protection of the newborn: a practical guide. Geneva. 1997) helps promote breastfeeding and prevents hypothermia and hypoglycemia. Being near the mother helps the infant adjust to extra-uterine life, with the familiar sound of her heartbeat and voice, and with warmth from her body heat. Studies show that the mother’s body responds to the infant’s body temperature, aiding in thermoregulation of the infant (Cites Mori et al., 2009 but this was really published as Mori et al., 2010; and Bergstrom 2007 which is correct).” (pg. 23) “Then, in the next section called “b. Initial breastfeeding opportunity”, it says: “Practice: Emphasize breastfeeding opportunities in the first hour of life. Infants immediately place skin-to-skin with their mother after birth without interruption tend to find the breast and spontaneously initiate breastfeeding within the first hour. It is usually not necessary to bring the infant to the breast. ‘Ventral positioning’ may facilitate this process: with the mother semi-reclining, the infant is placed prone on the mother’s chest, with the infant’s head between her breasts and abdomen resting on hers. This crucial time can include transport of the infant and mother from the delivery area to the postpartum areas while the infant is skin to skin on the mother’s chest, as is recommended by the WHO 1997. During this time, the infant should NOT be removed for bathing, weighing, examinations, or medications, according to WHO guidelines (WHO 1997). Diapering may be postponed until after the first feed. Anticipatory guidance may be necessary for family members so that they will allow the infant and mother to have this uninterrupted time together skin to skin. “(pg. 23). “It may take some infants longer than one hour to spontaneously initiate breastfeeding. Rationale: Evidence has shown that postponing the first feeding is a strong predictor of breastfeeding failure. In addition to increased risk of neonatal hypothermia, immediately bathing of the infant and mother may disrupt initial breastfeeding behavior. Infants appear to have a heightened sense of

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olfactory learning in the first hour after birth, naturally seeking their mother’s breast by smell, particularly if any amniotic fluid is present there. Immediate skin to skin contact after birth results in the infant having enhanced recognition of own mother’s milk and is associated with longer breastfeeding duration. (Mizuno, et al., 2004)

Append resources for implementing cesarean KC

United States Department of Health and Human Services, Centers for Disease Control and Prevention. (2010). Maternity Practice in Infant Nutrition and Care in Ohio. Centers for Disease Control and Prevention. On the website: www.cdc.gov/mpinc. Accessed July 28, 2010. This one page from the website says that in 2007 the CDC administered the first national Maternity Practices in Infant Nutrition and Care (mPINC) survey. This report relates the results for Ohio hospitals and reveal that “Strengths in BF support in Ohio Facilities” are Documented of Mother’s Feeding Decision (100 do this), Availability of Prenatal BF Instruction occurs in 99 of facilities. Areas in which there is “Needed Improvement In Ohio Facilities” are 1. Appropriate use of BF supplements (on ly 24% of facilities adhere to standard clinical practice guidelines against routine supplementation with formula, glucose water, or water. 2. Inclusion of Model BF Policy Elements. Only 9% have comprehensive BF policies including all model BF policy components recommended by the ABM. 3) Use of Combined Maternal/Baby Hospital Feeding. Only 60% of facilities in Ohio report that healthy fullterm infants remain with their mothers for at least 24 hours/day throughout hospital stay. And 4) Initiation of mother and infant skin-to-skin care. Only 33 of Ohio facilities initiate skin-to-skin care for at least 30 minutes upon delivery of the newborn. The paper concludes with BF being a national priority and that establishing BF supportive maternity practice as standards of care in US hospitals and birthcenter will help meet Health People 2010 objectives (Susan’s addition: and these practices are on the way to being Joint Commission requirements). Policy, BF, term infants, Birth KC, guidelines NOT ON CHARTS

United States Dept. of Health and Human Services, Centers for Disease Control and Prevention. (2013, Sept. 4). The CDC Guide to Strategies to Support Breastfeeding Mothers and Babies is listed under CDCP as requested by the CDCP.


United States Department of Health and Human Services. Office on Women’s Health. (2011). Your Guide to Breastfeeding For African-American Women. Washington, DC: USDHHS. Available from www.womenshealth.gov or from USDHHS, Office on Women’s Health, 200 Independence Ave. S.W. Room 712 E, Washington, DC 20201. Pg.9 has picture of KC, “Skin-to-skin contact helps baby and father bond much like it does for mother and baby.” (pg. 10). “Hold your baby, wearing only a diaper, against your bare chest. Your baby will be comfortable in the cozy valley between your breasts. Your skin temperature will rise to warm your baby,” (pg. 12). “Are you or your baby frustrated? Try holding him or her between your breasts, skin-to-skin.” (pg. 13). “Being skin-to-skin helps babies cry less and stabilize the baby’s heart and breathing rates.”(p. 15). Under the Premature andLow Birth Category on pg.29 it says “Most babies who are low birth weight and born after 37 weeks can beging breastfeeding right away. They will need more skin-to-skin contact with mom and dad to help them stay warm.”(pg. 29). “Once your premature baby is ready to breastfeed directly, skin-to-skin contact can be very calming and a great start to your first feeding.” (pg. 29). FT, PT, Guidelines, Breastfeeding, stress, temperature, stabilization. Not on Charts 10/20/2010 FANTASTIC RESOURCE

United States Department of Health and Human Services. Office on Women’s Health. (2013). It’s Only Natural. Mother’s Love, Mother’s Milk. Washington, DC: USDHHS. August 27, 2013. Available from www.womenshealth.gov/itsOnlonlynatural or from USDHHS, Office on Women’s Health, 200 Independence Ave. S.W. Room 712 E, Washington, DC 20201. This is a three page summary that says your baby was born to breastfeed and on page two is has a dirty diaper chart and a breastfeeding chart. your baby’s tummy is tiny, holding only 1-2 teaspoons and at one week it holds two ounces (the size of an almond). Do not give cereal to babies < 6 months old and don’t supplement with formula without checking with health care provider. Relates that your breast milk is unique in that it adjusts according to your baby’s needs and is easy to digest. It says your baby like to be snug up against you, with his belly button facing toward you, not the ceiling. Try football hold to get baby closer. Your baby will be comfortable in the cozy valley between your breasts. Your skin temperature will rise to warm your baby.” (pg. 12). “Are you or your baby frustrated? Try holding him or her between your breasts, skin-to-skin.” (pg. 13). “Being skin-to-skin helps babies cry less and stabilize the baby’s heart and breathing rates.”(p. 15). Under the Premature and Low Birth Category on pg.29 it says “Most babies who are low birth weight and born after 37 weeks can begin breastfeeding right away. They will need more skin-to-skin contact with mom and dad to help them stay warm.”(pg. 29). “Once your premature baby is ready to breastfeed directly, skin-to-skin contact can be very calming and a great start to your first feeding.” (pg. 29). FT, PT, Guidelines, Breastfeeding, stress, temperature, stabilization. Not on Charts 10/20/2010. FANTASTIC RESOURCE
Uvnas-Moberg, K. (2005). The Oxytocin Factor. Tapping the hormone of calm, love, and healing. Cambridge, MA: Da Capo Press. Pages 93-103. Pages 96 and 98 have KC on them. “Newborn babies nowadays are often placed skin to skin on the mother’s chest immediately after delivery. If left to do so as they please, they will crawl up to the mother’s breast by themselves within one to two hours after birth and start to suckle or breastfeed. As they root around for the nipple, they massage the mother’s breast with their hands. During this time, repeated pulses of oxytocin are released into the mother’s system. The stimulation of the breast by baby’s hands and the sucking activity are strongly and statistically significantly correlated to the number of oxytocin pulses. This interaction is important. These not only stimulate the ejection of milk but also dilate the blood vessels in the mother’s chest. In this way, as we have seen, the mother provides warmth to the infant. It is also possible that phenomones are released at this time, influencing mother and baby. This close, skin to skin contact also affects the babies. They become calmer and do not cry as long as they are allowed to stay on their mothers’ chests. They show that they are relaxed through an increased blood flow in their hands and feet. (Blood vessels dilate in relaxation) (pg. 96). This nuanced interplay between mother and infant is also evident in the increased warmth in the baby’s feet as well as in the mother’s body temperature.” (pg. 97). Women whose babies have been delivered by cesarean section have on the average fewer oxytocin pulses in connection with breastfeeding two to three days after birth when compared with women who have delivered vaginally. The mothers after surgery are also generally less calm than mothers who delivered vaginally, and also have less interaction with those around them. We do not know whether these differences are due to a reduced release of oxytocin during birth, delayed skin-to-skin contact after birth, or pain and stress caused by surgery. (pg. 99). Oxytocin induces social memory and calmness in the infant. (pg. 103). Review, FT, oxytocin pulses, C/S have fewer oxytocin pulses compared to vaginal delivery, breastcrawl.

Breastfeeding, sleep, brain dev. Not on charts yet

Uvnas-Moberg, K., Aron, J., Magnusson, D. (2005). The psychobiology of emotion: the role of the oxytocincergic system. International Journal of Behavioral Medicine, 12(2), 59-65. No doi. Not a KC study per se, but has relevance to KC because KC is pleasing touch and with pleasing touch the oxytocincergic system goes into play, contralateral to the stress fight-flight system. In stress system: sympathetic nervous system is activated and the catecholamines epinephrine and norepinephrine are released in response to stimuli experienced as demanding, harmful, threatening, painful, tissue damage, cold, hunger and other somatic triggers sensitive to being separated from mother. The amygdala then creates the emotional state of fear (pg 59). If a person perceives a threat, the central stress system is activated via the amygdala-limbiccomplex (pg 60). These chemicals cause arousal, anxiety, aggression, increased cardiovascular activity, and elevated blood glucose levels. Corticotrophin-releasing factor (CRF) and vasopressin from hypothalamic and brainstem norepinephrine emanating from the locus coruleus (LC) play regulatory roles in behavioral and physiologic components of fight-flight response at the level of the central nervous system. The pituitary secretes adrenocorticotropic hormone (ACTH) which stimulates adrenal cortex to produce corticosteroids, which indicate a more sustained stress-related effect. There is also a “calm and connected” system characterized by wellbeing, calm, and positive social interactions. The physiologic pattern consists of relaxation of muscles, decreased cortisol levels, decreased cardiovascular activity, enhanced gastrointestinal tract activity that promotes digestion and anabolism. The vagal, parasympathetic nervous system is activated and the hypothalamic-pituitary-adrenocortical (HPA) axis and the sympatho-adreno-medullary (SAM) system are both shut down. The calm and connection pattern is triggered by calming physiologic stimuli (i.e. nonnoxious somatosensory stimulation like touch and warmth) and by environmental and psychological triggers of analogous type. Signs of calm and connection system may be delayed (not instantaneous like HPA signs), and are decreased HR, decreased BP, HR and BP are
kept at low, healthy, balanced level. Vagally controlled GI tract is activated, promoting digestion and storage of nutrients (weight gain). Growth and restorative processes are stimulated and energy would rather be used for anabolism than muscular or thermogenic activity. Reduced arousal, development of calm prevails. Positive social interactions occur. This is sense of RELAXATION AND WELL-BEING. Oxytocin is released in males and females, produced in paraventricular nucleus and supraoptic nucleus of the hypothalamus. Magnocellular oxytocinergic neurons in these nuclei project to the posterior pituitary. Parvocellular oxytocinergic neurons of the paraventricular nucleus ramify within the brain to reach limbic, medullary, and spinal areas. Thus, oxytocin fibers reach the amygdala (shut off the fear), the nucleus stratus solitaries, the vagal motor nucleus, the LC, the raphe nuclei of the brain stem (and the projection pattern of oxytocin nerves is same in males and females). Estrogen increases the release of oxytocin and the number of oxytocin receptors via receptors of alpha and beta type. A release of oxytocin in amygdala occurs after suckling and oxytocin is released from nerve terminals in the specific brain regions receiving oxytocinergic nerve projections. Thus, oxytocin is a hormone and a neuropeptide. Oxytocin stimulates maternal behaviors, attachment, anxiolytic effects (through oxytocin receptors in the amygdala), sedative effects (pg. 61), and increases pain threshold, and recognition of others. Repeated administration of oxytocin induces long lasting effects via changed function in transmitter systems. Five daily injections of oxytocin for up to 3 weeks produced effects which lasted for 1-3 weeks after treatment (pg. 61). Oxytocin has anti-depressant –like properties (pg. 61). To survive, the individual must be adaptable. Effective adaptation is dependent on integrated psychophysiological systems. The brain play a role in these processes by transforming information into mental, behavioral and physiological responses. Thus, incoming information is linked to existing structures of emotions, values, and goals which vary based on past and present experiences (cites Magnusson 2003). One component is the stress system (fight or flight) and another is oxytocinergic system which regulates calm, connection, underlyng well being and socialization processes. Stress system works by activation of sympathetic nervous system and the catecholamines epinephrine and norepinephrine are released in response to demanding, harmful or threatening. When stress is sustained, corticosteroids are released from adrenal cortex in response to adrenocorticotropic hormone (ACTH) which is secreted by the pituitary. These chemicals prepare body for fight or flight. Fight or flight behavioral responses are arousal, anxiety, aggression, increased cardiovascular activity, elevated blood glucose levels. Then corticotrophin releasing factor (CRF) and vasopressin from hypothalamus and the brainstem norepinephrine system emanating from the locus ceruleus play regulatory roles in behavioral and physiologic responses in the central nervous system (pg. 59). Pain, tissue damage, cold, hunger, environmental dangers and maternal separation are somatic triggers that activate stress mechanisms in the hypothalamus and brainstem and the emotional state of fear in amygdala (pg. 59), called the amygdala-hippocampal complex (pg. 60). The analogous wellbeing psychophysiological pattern is characterized by well-being, calm, positive social interactions, relaxation of muscles, decreased cortisol levels, decreased cardiovascular activity, enhanced activity in the GI tract promoting digestion and anabolism. The vagal, parasympathetic nervous system is activated and the hypothalamic-pituitary-adrenocortical system is shut down. Hypothalamic oxytocin plays an important role in the calm and connection pattern (pg. 60). The calm and connection pattern is triggered by calming physiologic stimuli such as nonnoxious somatosensory stimulation (touch and warmth) and by environmental and psychological triggers of analogous types. The psychophysiological pattern of calm and connection appear with some delay and are a lower balanced pulse rate and blood pressure, activating of the vagally controlled GI tract, promotion of digestion and storing of nutrients (weight gain). Growth and restorative processes are stimulated and energy is used for anabolic purposes than muscular and thermogenic activity. Reduced arousal and calm prevail and positive social interactions ensue as do a sense of wellbeing and relaxation. This is state of eustasis (pg. 60), “Oxytocin stimulates digestion, anabolic processes, as well as weight gain, growth, and healing.” (pg.61). Oxytocin is released in males and females and is produced in the hypothalamus and secreted from the posterior pituitary. Magnocellular oxytocinergic neurons project to posterior pituitary, amygdala, limbic, medullary and spinal areas. Oxytocin fibers reach the amygdala, nucleus tractus solitarius (NTS), vagal motor nucleus, the LC, and the raphe nuclei of the brain stem. Release of oxytocin and number of oxytocin receptors is greater in females than in males.When baby suckles, oxytocin is released in amygdala to obliterate fear and act as anxiolytic, and stimulate social behavior – all occur in amygdala. Oxytocin also increases PAIN threshold and reduces plasma corticosterone levels which last for 1-3 weeks after the end of treatment. Oxytocin acts as a hormone and a neuropeptide. Repeated administration of oxytocin induces long lasting effects via a changed function in other transmitter systems (the noradrenergic, cholinergic, serotonergic and opioid systems) (i.e. increased opioidergic activity lies behind prolonged elevation of pain threshold and enhanced δ2 adrenoceptor function in the amygdala, hypothalamus, LC and NTS cause long term anti-stress effects (pg.61). The norepinephrine system emanating in the LC is strongly related to arousal, is inhibited by δ2 adrenoceptor activation as is the function in the sympathetic nervous system, whereas parasympathetic tonus is increased. Treatment with oxytocin attenuates arousal and stress levels and stimulates energy conservation. Oxytocin increases serotonin synthesis and changes cholinergic and dopamine transmission in the central nervous system. Also, learning deficits due to a high stress level are markedly improved by oxytocin treatment, and oxytocin has anti-depressant properties (pg. 61). Oxytocin is released in response to suckling, in response to labor, in response to nonnoxious touch in all parts of the body, in response to sex and massage, and during breastfeeding and by provision of a stable, calming, friendly, and supportive environment (that defines KC, doesn’t it?). Oxytocin levels in the plasma and cerebrospinal fluid rise in males and females. Oxytocin released in the hypothalamus and amygdala decrease the release of CRF, which is involved in fear and distress reactions. So oxytocin is health promoting (pg. 62). Stressful experiences in infancy reset the activity of the neuroendocrine system involved in stress so that stress reactions are more easily triggered for the rest of life and risk for cardiovascular and metabolic disease is increased. Brain imaging shows early stress (child abuse) alters the size of the hippocampus and amygdala – permanent brain changes related to high levels of anxiety and fearfulness. Rats with extra oxytocin as newborns have lower activity in HPA axes and lower blood pressure as adults and functional changes appear in the amygdala which plays a decisive role in emotionality. High amounts of maternal interaction during the first week of life have more oxytocin receptors in amygdala as adults and are less anxious and more...
A retrospective economic evaluation conducted in Al-Zahra Teaching Maternity Hospital of Tabriz, Iran by participating 45 LBW and preterm neonate in each therapeutic groups (90 neonates). Convenience sampling used to select participants from KMC and conventional care method (CCM) (incubator) groups in 2010-2011. Baseline characteristics, therapeutic interventions, resources utilization data and clinical events during the initial hospitalization and at 2-month follow-up were collected according a detailed case report forms. Data are described as mean (standard deviation) and no (percentage) and were compared with Student's t-test, χ(2) and Fisher exact test between groups. P ≤ 0.05 were considered to be statistically significant. Data were analyzed using the SPSS-16 statistical package.

The mean birth weight (BW) of the patients in KMC group was 1240.89 (5.98) g and in CCM was 1133.78 (139.06) g, hence differences in BW was statistically significant (P = 0.011). Greatest cause of problem in groups was icter and after that preterm birth and House Dust Mite (HDM) with icter were the most frequent problem between neonates. In 2 months follow-up period, 3.7% of infants cared with KMC and conventional methods died respectively (P = 0.078). Daily weight gain was 12.28 g in KMC group and 9.65 g in conventional group (P = 0.011). The mean cost of hospitalization per individual infant for KMC was 3539.47$, whereas for Conventional group was 2907.27$. KMC promoted weight gain in LBW infants better than conventional care. Although KMC’s unit cost is a little higher than Conventional method, but comparing its positive outcomes on breastfeeding's and mortality it can be considered as cost effective method. Quasi-Experimental, cost, LBW, PT, mortality, BF, weight.

Vaidya K. Sharma A. & Dhungel S. (2005). Effect of early mother-baby close contact on the duration of exclusive breastfeeding. NepAL Medical College Journal. 7(2), 138-140. 92 lactating mother-infant pairs were followed for six months to determine effect of perinatal factors on duration of exclusive breastfeeding. Early postpartum KC had powerful influence (p<0.001) over duration of exclusive BF up to 4-6 month and was more significant than early initiation of BF (p<0.05). Mode of delivery had no effect on duration of exclusive BF. Recommends that a “few minutes of early postpartum KC and early initiation of BF to promote BF”. Fullterm, descriptive, KCBib 2018
exclusive BF, BF duration, birth KC? (Says early postpartum but until we get the article we don’t know if early postpartum = birth KC or later), third world, 6 month follow-up.

Vaivre-Douret L, Papiernik E, & Relier JP. (1996). Kangaroo method and care. Archives Pediatrics, 3(12),1262-1269. Review article of KC’s development, KC’s use in many countries, its advantages (temperature regulation, better BF, promotion of maternal infant interactions, decreased mortality) In Europe it is mostly intermittent for a few hours each day and suggests putting the incubator in the mother’s room, and KMC requires qualified and devoted staff. Review, temperature, BF, maternal-infant interactions, 24 hour KC, KC staff requirements, use in countries. NOT ON CHARTS YET.


Van den Bosch, C., & Nhalne, C. (1993). Problems with Kangaroo babies in Africa. J. Tropical Pediatrics, 29(3): 193-194 [Letter]. Reports that two infants suffocated during 24/7 KMC when mothers fell asleep and there is lack of good support in slings with other babies. Timing of KC (i.e. birth kc or later) was not specified nor was time of death of newborns Preterm, commentary, negative outcome, life threatening event.

Vanderbilt University Medical Center (VUMC). (2007). NICU Kangaroo Care, AS 209137-10-40. Available from http://vumc.policies.mc.vanderbilt.edu/E-Manual/Policy.nsf/AllDocs/61081E8DA303B60. This is a NICU policy/guideline for Kangaroo Care in the NICU. Preterm, Guidelines, policy.

VanDevanter, N, Gemme S., Budin W, Calalang-Javiera H., Nguyen M. (2014). Evaluating implementation of a Baby Friendly Hospital Initiative. MCN: American J. of Maternal Child Nursing, 39(4), 231-237. Qualitative evaluation based on focus groups, informant interviews, and observations in predominantly poor minority (Black) women in NYC. Says it was community-based participatory research study The community partners were nurse nd physician leaders responsible for maternal child health in the urban hospital setting (pg. 233), “Studies have shown that skin to skin contact between mother and baby immediately after birth has a positive effect on breastfeeding initiation and duration (Quote Moore etal, 2007). Babies are most responsive to SSC in the first few hours after birth; thus, this is optimal time to build the foundation for a successful first breastfeeding. Researchers have found that SSC provides the necessary odor, thermal and tactile cues that help babies breastfeed successfully (Moore et al., 2007).” “Although written policies were developed for two of the ten steps (initiation of breastfeeding immediately after birth and giving newborns exclusively breast milk unless medically indicated), they were not consistently followed “pg. 234, System level strengths, challenges and provider level strengths, challenges, maternal level strengths and challenges and environmental observations are provided. Some staff and mothers perceived fewer services from WIC if they declared exclusive breastfeeding and some staff defined EXCLUSIVE Breastfeeding as “the infant having breastmilk only on day of discharge” pg. 234. “Nurses attending births felt that many of the immediate postpartum procedures were barriers to establishing SSC between other and baby within the first hour after birth. Suggestions to improve operationalizing this step were to postpone all but essential procedures ad focus on establishing SSC.” Pg. 234-235. “Although didactic education is useful to increase motivation, practice opportunities are essential for behavior change.” Pg. 235 Expansion of provider EDUCATION, more patient interventions, enhancement of environmental structural supports and continuation of program evaluation activities are Needed. FT, Implementation, Birth KC, BF, barriers to KC, Exclusive BF


Van Rooyen, E., Pullen, A.E., Patterson, R.C., & Delport, S.D. (2002). The value of the kangaroo mother care unit at Kalafong Hospital. Geneeskrunde. The Medical Journal, April 2002, 6-10. This is a report of 18 months of mandated practice of KC with low birthweights PRETERM infants in South Africa at the public hospital. 466 infants were admitted to the 24-hour/day KC unit over 18 months. 81% (n=375) of the infants weighed less than 1751 grams; 12% weighed less than 1251 grams. Average Length of stay was 13 days, average wgt gain was 23g/day. 85% were fully BF at discharge (the other 15% had HIV). One infant died in the KMC unit and 32 were transferred back to NICU for infection. Length of stay for infants <1300 g was decreased by 3 days when compared to Length of Stay prior to KMC. Before KMC follow-up was <50%; after KMC follow-up was 321 (69%), and 47% attended more than once. Implementation, Preterm, 24 hr/day KMC, wgt gain, length of stay (LOS), BF, infection, follow-up.

van Sleurwen BE, Engelberts AC, Boere-Boonkamp MM, Kuis W, Schulpen TWJ, & L’Hoir MP. (2007). Swaddling: A systematic review. Pediatrics 120, e1097-1106. 78 studies of swaddling effects were reviewed and revealed that swaddling had beneficial effects on sleep continuity, sleep duration, temperature regulation (prevention of hypothermia is better with swaddling than being in a crib but swaddling is not as effective as KC in preventing hypothermia) and soothing after a painful experience. Swaddling also had special benefit to preterm and brain injured neonates. Swaddled babies have more sudden infant death (if prone positioned), poorer
weight gain when swaddled and separated from mom at birth, and more respiratory infection when swaddled too tightly than unswaddled infants. PT, FT, REVIEW, pain, swaddling, temp, hypothermia.

van Zanten H.A., Havenaar A.J., Sticht H.J.H., Ligthart P.A.H., & Walther F.J. (2007). The kangaroo method is safe for premature infants under 30 weeks of gestation during ventilatory support. J. Neonatal Nursing 13, 186-190. A pretest-posttest (called case control study) of 34 premature <30 wks gestation in two groups separated by gestation (n=18 of infants <28 weeks; n= 16 of infants 28-30 wks gestation) who were getting mechanical ventilation, Nasal CPAP, or Infant Flow, postnatal age <7 days and had an arterial line. If they had double phototherapy, chest tubes, high frequency oscillating ventilation, were within 2 days post major surgery, skin infection of parent or unstable medical condition of infant they were not included. Measures were taken daily for a maximum of 5 days, depending on how long infant needed ventilation. HR, RR, SaO2 and arterial blood pressure (MAP) were taken every 5 minutes for one hour before, during and after KC. No bradys, no tachycardias were seen during or after KC. HR dropped during KC and remained lower after KC (in <28 weeks the posttest decrease was 2.1-3.9% less than pretest; 28-30 weeks had a decrease of 2.7-4.2% from baseline during posttest (p. 188). RR decreased during KC & increased after KC but still the mean RR was lower than pretest values (pg. 188). <28 weeks showed decreased RR of 4.5% during KC and an increase of 0.5% after KC (not significant); 28-30 weeks showed decreased RR of 12.6% during and 4.0% after KC (not significant). SaO2 increased during KC and remained high after KC. o2 requirements did not increase and ventilator settings did not change during and after KC. < 28 weeks SaO2 increased by 1.2% during KC (significantly different from pretest), and remained 0.7% higher after KC (not significant); 28-30 weeks increased 0.7% during KC (sig) and remained 0.4% higher after KC. MAP BP rose during KC and returned to less than pretest values after KC. <28 weeks’ MAP rose 8.3% during KC (significant) & decreased to 2% below pretest values after KC (not sig); 28-30 weeks’ MAP rose 6.8% during KC (significant) and were 1.4% less than pretest values after KC (not sig). Skin temp dropped during KC and remained low after KC (<28 weeks dropped 1.1°C during KC (significant) and 1.4°C after KC(significant); 28-30 weeks’ decreased 0.5°C during KC (not sig), and 0.8°C after KC (sig). Male skin temp dropped more rapidly than girls’ (not sig). No sig differences in skin temp between maternal and paternal KC. All values remained within acceptably clinical range at all times (pg. 189). HR, RR, SaO2 improved during and after KC. Infants <30 weeks have to have their temps carefully monitored and be kept warm. PT, Pretest-test-posttest. HR, RR, SaO2, BP, Bradycardia, Tachycardia, temperature, residual effect, KCVent, CPAP, micropreemie, Paternal KC, 28 weeks NOT ON CHARTS YET as of 9/2/09.

Vareni N, Tessier R, Tarabulsy G, Pierce T. (2018-April). Cortisol and blood pressure levels decreased in fathers during the first hour of skin-to-skin contact with their premature babies. Acta Paediatr. 107(4):628-632. doi: 10.1111/apa.14184. Premature birth is an extremely stressful experience. In 2013 to 2015, we explored the physiological stress responses of fathers during their first skin-to-skin contact (SSC) with their new baby. We recruited 49 fathers whose partners had given birth to a premature baby of up to 33 weeks and three days. The study, in the neonatal intensive care unit (NICU) of a Quebec hospital, measured the physiological stress responses of the fathers before and after they first experienced SSC with their new baby. Cortisol levels and blood pressure were measured, and a generalised estimating equation was used for the data analysis. The fathers' cortisol levels decreased from 10.55 nmol/L, with a 95% confidence interval (95% CI) of 9.61-11.59 at the beginning of the experiment to 8.26 nmol/L (95% CI: 7.31-9.07) after 75 minutes. Meanwhile, their systolic blood pressure decreased from 135.16 mmHg (95% CI: 130-140) to 125.25 mmHg (95% CI: 121-129). Fathers who held their baby in SSC for the first time showed a significant reduction in physiological stress responses. Our findings support hospital practices that enable fathers to experience their first intimate contact with their newborn infant in the NICU. PT, descriptive evaluative study, paternal KC, pat BP, Pat Cortisol, pat stress. Not on charts 3-25-2018 Article on electronicKCart in office.

Vareni H, & Porter RH. (2001). Breast odour as the only maternal stimulus elicits crawling towards the odour source. Acta Paediatrica, 90(4), 372-375. Fullterm infants will breastcrawl toward the nipple when they smell the breast odour. And the breastodor comes with skin-to-skin contact. Similar work is one in which 22 babies on warming bed exposed to pad with mom’s breast odour 17 cm in front of baby’s nose and others had a clean pad. More babies moved and reached breast pad than clean pad. Natural breast odours unsupported by other stimuli appear to be sufficient to attract and guide neonates to odour source (Vareni H, Porter RH. 2001. Breast odour as the only maternal stimulus elicits crawling towards the odour source. Acta Paediatrica 90(4), 372-375). Unpleasant odors induce avoidant behavior. Full term, Birth KC, breast crawl, breastfeeding. Not on charts yet.

Vareni H, Porter RH, & Winberg, J.(1994). Does the newborn baby find the nipple by smell? Lancet 344(8928), 989-990. 30 full-term newborns were placed in birth KC. One breast was washed, one was not and then baby moved to starting position: nose in midline of mom’s chest and eyes at nipple level. Data collection began 5-13 minutes postbirth and continued till infant found nipple and vigorously sucked. , 25 completed breast crawl and grasped nipple and sucked by 22-100 minutes (average was 51 minutes), 5 reached nipple but needed help to attach, and then none were in the “not moving, not reaching the nipple” category. 22/30 infants went to unwashed breast. Specifies starting position for breast crawl as infant prone, nose in midline of mother’s chest, eyes at the level of the nipples and between breasts (not on lower abdomen). Prefeeding behaviors were rooting, hand-to-mouth movement, head turning side to side, hand to areola/nipple contact, mouth to areola, mouth to nipple contact, head lungening, sucking attempts before sustained sucking, sucking latency KCBib 2018
Breast temps were taken to determine if infant went to warmer breast, but washed/unwashed breast temp difference was only 0.5C (actual breast temps not given). Areola secretes milk, colostrum and is dense with glands that secrete attractive odours. Breastfeeding is sensitive to even minor disturbances of the spontaneous interactions between mother and baby (pg. 990). Attention should be given to biological factors and do not eliminate biologically relevant chemical signals. Even bottle fed infants prefer breast milk scent & at two weeks postbirth bottle fed infants spent more time turned toward a breastpad from an unfamiliar nursing mother more than in the direction of a pad treated with their familiar formula (Porter RH, Makan JW, Davis LB, Christensen KM. 1991. An assessment of the salient olfactory environment of formula-fed infants. Physiol Behav 50, 907-911.)

Vareni H, Porter RH, & Winberg J. (1996). Attractiveness of amniotic fluid odor: Evidence of prenatal olfactory learning? Acta Paediatrica 85, 1223-1227. 31 fullterm infants in birth KC were watched for breast crawl towards a nipple moistened with amniotic fluid and an untreated breast with natural odour. 23/30 infants chose amniotic fluid treated breast. 22 completed the breast crawl, 8 reached the nipple but needed help to latch on, and one failed to move at all. Amniotic fluid on hands of infant, and substance on breast has similar scent as amniotic fluid and draws infant to the nipple. Infants preferred amniotic fluid treated breast (these findings are in contrast to 1997 study in which 1-4 day old babies preferred unwashed natural odour breast to amniotic fluid treated breast (especially the girls) and in another study 28 babies by days 2-5 had no difference in # choosing Amniotic Fluid treated to natural odour breast and then days later all infants chose natural odour breast, not amniotic fluid breast (Vareni H, Porter RH, Winberg J. 1997. Natural odour preferences of newborn infants change over time. Acta Paediatrica 86(9), 985-990.)

Nurses had to be educated about breastfeeding and on day 2 of a 3 day education class, they were taught BF basics which included anatomy and physiology of lactation, milk supply, skin-to-skin and kangaroo care, correct latch and expressing and feeding human milk.(pg. 40 in Table 2), but the online education program for physicians and advanced practice nurses DOES NOT INCLUDE KC AT ALL on page 41 in Table 3, but on page 44 in Table 4 it states in the table of Barriers “ Babies not being placed skin-to-skin and removed from room to do routine nursing and medical tasks.” And under the Education/Intervention column it relates “In-services and unit campaign on benefits of skin-to-skin, contest with recognition and coffee gift cards for RN who do the most skin-to-skin, Physician education on skin-to-skin and rooming-in, including provision of portable examination supplies for easier infant assessment in mother’s room” (pg. 44 in Table 4). Challenges to completion were the myriad social issues of the mothers (non-English speaking, drug abuse, poverty, homelessness), constantly changing perinatal health care workers with little or no breastfeeding knowledge, hospital practices that do not support rooming-in and skin-to-skin contact, and lack of overall patient breastfeeding education. On pae 42 there is a whole section entitled SKIN to SKIN CONTACT, defines STSC, says it improves breastfeeding and Baby Friendly requires healthy term infants be placed skin-to-skin within one hour of birth and that infants stay skin to skin for prolonged periods following birth and that skin-to-skin be used as a FIRST intervention for breastfeeding problems. In vaginal births skin-to-skin was easy, but for cesarean births it was harder. Implementation of KC was hindered by parental concern about infants getting cold and nurses perception that KC was culturally INAPPROPRIATE. “Once staff realized improvements in breast-feeding behaviors, they became skin-to-skin champions” (PG. 43)

“Currently, most infants are kept skin to skin throughout the hospital stay and fathers participate in this intervention as well. Inspired by the results of postpartum skin-to-skin, a quality improvement project was initiated this year to place infants skin to skin in the operating room suite right after cesarean sections. Initial data collection has showed positive results in decreased formula supplementation, quicker post-operative reunification, and maternal satisfaction.” Breastfeeding initiation rates went from 81% in 2002 to 98% in 2010. Exclusivity rates did not change. Taking babies to nursery DISRUPTS establishment of breastfeeding because once there, infant tasks were clustered (bathing, Physical exam, blood screens), increasing separation time from mother for hours and when infant got fussy, they were given formula because it is not considered harmful. Taking baby to nursery is a lost opportunity to maintain breastfeeding in the critical hours after delivery. Pouch size Q cards can help with essentials BF management and skin-to-skin management. Implementation suggestions are CUE CARDS for pockets, having nurses sponsor a bake sale and table so whole hospital becomes familiar with what is happening (changes the hospital culture), hold a KC fair, attach brochures about KC to pay stubs, hang a huge banner to increase staff awareness, hang lots of posters showing KC. GOOD IMPLEMENTATION IDEAS. FT, Breastfeeding, Implementation (CUE CARDS, ONLINE COURSE), separation, taking to nursery, little KC being done (Not on charts), cesarean birth KC, barriers, satisfaction, postpartum KC, quality improvement project

Vaughans, B. (1990). Early maternal-infant contact and neonatal thermoregulation. Neonatal Network 8: 19-21. Newborns dried and placed under radiant warmer immediately after birth were compared to 11 other fullterms who were dried, covered with warm blanket and put into KC immediately after birth. After 10 minutes, no sig. diff. in axillary temperatures. Kcers had temps similar to those under radiant warmer. FULLTERM, axillary temps, Quasi-Experiment


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randomized to 30 mins (5 mins with mom and then either 25 mins in mat (n=17) or pat KC (n=20) group) for a total of 30 mins of KC after cesarean section with either mother or father after an initial 5 minutes of maternal KC after cesarean birth; parent who did not get assigned to do the 30 mins of KC was the control group (20 moms and 15 pops in control group). There were 37primip mothers and 35 fathers. All infants had KC with one parent or the other. Videos of infant in KC and of parent who did not get KC were simultaneously made. Immediately after delivery, infant was dried, covered with towel and placed in KC transverse with head to the right. All moms got 5 mins of KC and then went to assigned group: staying with mom or going to father for 25 more mins as father sat in armchair beside wife’s head in the operating head. At birth, all infants started to cry and birth cry lasted for a mean 1.19 mins. Parental vocalization were video- and audio-recorded and scored for newborns’ and parents’ soliciting, newborn crying & whining, parental speech directed to other parent and to newborn. Parents talked to baby first, pops at 7.1 & moms at 7.2 mins postbirth and infant first made soliciting noise at 12.33 min with pat KC and at 14.71 mins with mat KC. Soliciting calls from baby lasted 4.16 mins with dad and 2.97 mins with mom. 9 moms and 9 pops responded to infant with soliciting noise. If infant did not solicit, parents did not solicit. Newborn solicitations increased over time, mothers and fathers in KC group communicated more vocally with infant than parents without KC; fathers in KC communicated more with mothers and performed more soliciting responses than no-KC fathers. Infants in paternal KC cried less than those in maternal KC and shifted to a relaxed state or sleep earlier (at 5.5 mins after birth) in pat KC than in maternal KC (at 11.25 mins after birth) and slept for 3.79 mins with pop and 3.3 mins with mom (pg 196). Crying was more with moms and decreased significantly between 10 and 15 mins postbirth with dads, but did not decrease with moms probably because moms were made to scrub their chests with chlorhexidine, which is an unpleasant order and unpleasant odors induce avoidant behavior (Varendi & Porter, 2001). Infants in mat KC whined less than in pat KC, and no difference in amt of time of silence in infants. Mat KC moms directed more speech to baby than control moms and no difference in moms first soliciting sounds between mom groups, occurred at 13.8 mins for KC moms and at 12.5 mins for control moms and lasted for 0.68 mins (KC mom) and 0.42 mins (control mom). All KC fathers talked more to mom and baby than controls; and made more soliciting sounds than controls and first soliciting sound occurred at 18.9 mins and lasted for 1.4 mins. Control dads made no sounds (pg. 197). Mothers and fathers and infants had reciprocal parent-infant interaction. All infants touched parent’s breast, nipple, or both (for 13.8 mins with dad and 18.25 mins with mom) KC after c/section promotes vocal interaction and when in KC and exposed to parents’ speech, infants initiated communication with soliciting calls (a short, contact-seeking, ringing sound by baby or parent) with the parents within 15 minutes of birth. These vocalizations are inbred prefeeding behavior. The soliciting vocalizations occur after hearing the parents voices and activate speech motor areas in newborn (Gentilucci, M. & Dalla Volta, R. (2008) Spoken language and arm gestures are controlled by the same motor control system. Quarterly Journal of Experimental Psychology (Colchester) 2008, 61(6): 944-957.) and may be an imitation of parent soliciting sounds due to activation of mirror neurons (Lepage JF, Theoret H. 2007. The mirror neuron system: grasping other’s actions from birth? Developmental Science, 10(5), 513-523). Oxytocin released during KC facilitates communication by increasing parental responsiveness to infant cues (oxytocin increases vocalizations in pigs and rats and cites #25, 26 in reference list). BE SURE TO INCLUDE FATHERS, don’t wash maternal breasts because it confuses newborn’s olfactory cues, and avoid infant separation. FT, RCT, immediate BirthKC and for first 30 mins of life, paternal KC, crying, birth cry = 1.19 min, vocalizations, cesarean section, RELAXATION (behavioral state?), SLEEP, APGARS go up at 5 and 10 mins, reciprocal interactions, oxytocin, neurons, separation. (NOT ON CHARTS as of 10/14/2010). Soliciting noise with birth KC (See also Widstrom et al. 2011 on the 9 behaviors for self-regulation)

Velandia, M., Uvnas-Moberg, K., & Nissen, E. (2012). Sex differences in newborn interaction with mother or father during skin-to-skin contact after Cesarean Section. Acta Paediatrica, 101, 360-367. Doi: 10.1111/j.1651-2227.2011.02523.x. Randomized controlled trial of 20 girls and 17 boys (all fullterm 38-42 wks, Apgars of 7 or more at 1 min; planned C/S to primum uncomplicated pregnancy in Sweden over 4 years (1997 until 2001) to 25 mins of Birth KC (placed on mom’s chest in transverse position at 1 min postbirth and covered with warm towels and all stayed in maternal KC for 5 minutes and then assigned to maternal or paternal chest for 25 minutes pg. 361) either with mom or with father (infant’s eyes level with father’s nipple as Daddy sat in chair at head-end of operating table) and then all infants went to maternal KC for the next 90 minutes. Interaction was videotaped. Girls started rooting earlier than boys with either parent (p=0.027). First Breastfeeding appeared significantly earlier when in maternal KC than paternal KC. Maternal KC resulted in earlier start of breastfeeding during the first 3-50 mins of Birth KC (p=0.018). Girls cried more than boys in SSC with either parent (p=0.02), and girls did breast-massage earlier than boys (pg 364) and mothers used more touching behavior than fathers (p=0.001) and fathers did more talking than touching, especially with boys. Mothers touched girls less than boys (p=0.038) and used fingertip touch (fathers used palmar touch). Fathers directed less speech towards girls than boys (p=0.042). Vocalization is as important as touch in activation of neuroendocrine mechanisms involved in the regulation of social bonding in humans (Seltzer LJ, Ziegler TE, Pollak SD. 2010. Social vocalizations can release oxytocin in humans. Proc Biol Sci, 277, 2661-2666). Sensory nerves were activated and caused a consequent release of oxytocin (Loken I, Wessberg J, Morrison I, McGlone F, Olausson H., 2009. Coding of pleasant touch by unmyelinated afferents in humans. Nat Neurosci 12, 547-548). Touch, warmth, stroking, light pressure stimulate oxytocin release and induce oxytocin-related effects (Uvnas-Moberg, K. Oxytocin may mediate the benefits of positive social behavior and emotions. Psychoneuroendocrinology, 1998, 23, 819-835). The results highlight the importance of immediate infant-parent skin-to-skin contact, even after cesarean section. The parents interacted differently with their infant (and the mother’s behavior is the same as maternal rats in which rats touch males more than females). Uninterrupted SSC with the mother facilitated the initiation of breastfeeding in the mother-infant dyad exposed to a planned cesarean section. If the mother is unable to provide SSC immediately after birth, the father is a valuable alternative because SSC promotes his
interaction with the newborn” (pg. 360). RCT, FT, cesarean, birth KC, breastfeeding, interaction, crying, paternal KC, maternal behaviors, oxytocin, c, afferent nerves

Venancio, SI, & de Almeida H. (2004). Kangaroo Mother Care application in Brazil: scientific evidences and impact on breastfeeding. J Pediatr (Rio de Janeiro) 80(6 Suppl), S173-S180. Review article of KMC history and review of Cochrane review by Conde-Agudelo et al. Reports that Cochrane found KMC is protection factor for breastfeeding at discharge, reduced risk of nosocomial infection at 41 wks PCA, reduced risk of severe illness, reduced risk of lower respiratory tract disease at 6 months, and better weight gain/day. Psychomotor dev at 12 months was same and no difference in infant mortality. Cites many dissertation and studies in Brazil that were reported at a conference but these citations are not available for retrieval. PT. Review, Portuguese, infection, breastfeeding, development

Veras, R.M. & Traverso-Yepes, M. (2011). The Kangaroo program at a Brazilian maternity hospital: the preterm/low–weight babies’ health-care under examination. Nursing Inq, 18(1), 84-91. DOI: 10.1111/j.1440-1800-2011.00523.x A review of the program shows that KC has been effective in saving lives and improving some of the infants’ health outcomes. There are conflicting relationships between health care providers and KC users, lack of socioeconomic and emotional support are impeding implementation of the program. Moms have low literacy rate and hospital uses this to keep moms uninformed about their right to leave the hospital; KC is a choice in private health system but mandatory in social health system. 3rd world, PT, KMC implementation, barriers. Not on charts 2/17/2011

Verder H. (2007). Nasal CPAP has become an indispensable part of the primary treatment of newborns with respiratory distress syndrome. Acta Paediatrica 96 (4), 482-484. Clinical report of a treatment package for respiratory distress that includes CPAP rather than mechanical ventilation. This hospital uses the Scandinavian model of preterm care, defined as gentle ventilation at birth, minimal handling, NIDCAP, high priority of breastfeeding, use of Kangaroo Care (which facilitates observation and nursing of sick infants and optimizes possibility of early mother-child contact). Incidence of bronchopulmonary dysplasia is less of a problem in centers using nasal CPAP as primary treatment for respiratory distress. Preterm, clinical report, respiratory distress, CPAP, BPD, minimal handling Not yet on charts.

Verger, R. (2014). Kangaroo mother care could save millions of lives in poor countries. Newsweek Global, 163(7), 73-77. Review of KC to morbidity and mortality. Says KC is modeled on the kangaroo and her joey and KMC allows infants to be in SSC with their mothers and stay warm by conductive and radiant heat transfer and be in close proximity to milk. 3rd world report, pt, mortality. Not on Charts. Get this

Vesel L, Bergh AM, Kerber KJ, Valsangkar B, Mazia G, Moxon SG, Blencowe H, Darmstadt GL, de Graaf Johnson J, Dickson KE, Ruiz Peláez J, von Sydow S, Lawn JE; KMC Research Acceleration Group. (2015). Kangaroo mother care: a multicountry analysis of health system bottlenecks and potential solutions. BMC Pregnancy Childbirth. 15 Suppl 2:S5. doi: 10.1186/1471-2393-15-S2-S5. Preterm birth is now the leading cause of under-five child deaths worldwide with one million direct deaths plus approximately another million where preterm is a risk factor for neonatal deaths due to other causes. There is strong evidence that kangaroo mother care (KMC) reduces mortality among babies with birth weight <2000 g (mostly preterm). KMC involves continuous skin-to-skin contact, breastfeeding support, and promotion of early hospital discharge with follow-up. The World Health Organization has endorsed KMC for stabilised newborns in health facilities in both high-income and low-resource settings. The objectives of this paper are to: (1) use a 12-country analysis to explore health system bottlenecks affecting the scale-up of KMC; (2) propose solutions to the most significant bottlenecks; and (3) outline priority actions for scale-up. The bottleneck analysis tool was applied in 12 countries in Africa and Asia as part of the Every Newborn Action Plan process. Country workshops involved technical experts to complete the survey tool, which is designed to synthesise and grade health system "bottlenecks", factors that hinder the scale-up, of maternal-newborn intervention packages. We used qualitative and quantitative methods to analyse the bottleneck data, combined with literature review, to present priority bottlenecks and actions relevant to different health system building blocks for KMC. Marked differences were found in the perceived severity of health system bottlenecks between Asian and African countries, with the former reporting more significant or very major bottlenecks for KMC with respect to all the health system building blocks. Community ownership and health financing bottlenecks were significant or very major bottlenecks for KMC in both low and high mortality contexts, particularly in South Asia. Significant bottlenecks were also reported for leadership and governance and health workforce building blocks. There are at least a dozen countries worldwide with national KMC programmes, and we identify three pathways to scale up KMC: (1) champion-led; (2) project-initiated; and (3) health systems designed. The combination of all three pathways may lead to more rapid scale-up. KMC has the potential to save lives, and change the face of facility-based newborn care, whilst empowering women to care for their preterm newborns. PT, program evaluation, bottlenecks/barriers, national KMC programmes, enablers for scale-up, country implementation. NOT ON CHARTS

early maternal separation is a traumatic event that, depending on various conditions, may shape its behavioral and neurochemical phenotype in adulthood. Studies on rodents demonstrated that a very brief separation followed by increased maternal care may positively affect the development of the offspring but that prolonged separation causes significant amounts of stress. The consequences of this stress (particularly the hyperreactivity of the HPA (hypothalamic-pituitary-adrenal) axis) are expressed in adulthood and persist for life. Maternal separation in rodents, particularly rats, was used as a model for various psychotic conditions, especially depression. The most popular separation procedure of a 3-h daily separation from the second to the 12th postpartum day yields a depression model of high construct and predictive validity. The results of studies on maternal separation in rats and monkeys prompt a discussion of the consequences of traditional procedures in the maternity wards of developed countries where attention is focused on the hygiene of the neonates and not on their psychological needs. This alternate focus results in a drastic limitation of mother-infant contact and prolonged periods of separation. It is tempting to speculate that differences in the course and severity of various mental disorders, which are usually less prevalent in underdeveloped countries than in developed countries (as noted by Kraepelin), may be related to different modes of infant care. Only recently has so-called kangaroo mother care (establishing mother-infant skin-to-skin contact immediately after birth) become popular in developed countries. In addition to its instant benefits for the neonates, this procedure may also be beneficial for the mental health of the offspring in adulthood. FT, PT, Review, separation, mental development. Not on Charts 3/14/2014

Victor, L., & Persson, J. (1994). Implementation of kangaroo care: A parent-health care team approach to practice change. Critical Care Nursing Clinics of North America, 4(4): 891–895. This article discusses how the neonatal intensive care unit at Children's Health Care St. Paul became the first in the nation to successfully implement KC in a nonresearch based environment. This systematic process included use of research materials indicating positive outcomes, recruitment of primary nurses, and staff educational sessions that encouraged problem solving for potential adverse effects. IMPLEMENTATION

Victora, C.G., Rubens, C.E., & GAPPs Review Group. (2010). Global report on preterm birth and stillbirth (4 of 7): delivery of interventions. BMC Pregnancy Childbirth, 2010 Feb 23;10 Suppl 1:S4. The efficacious interventions identified in Barros et al. (2010) will fail unless they are delivered at high and equitable coverage. This article discusses critical delivery constraints and strategies. BARRIERS TO SCALING UP INTERVENTIONS: Achieving universal coverage entails addressing major barriers at many levels. An overarching constraint is the lack of political will, resulting from the dearth of preterm birth and stillbirth data and the lack of visibility. Other barriers exist at the household and community levels, such as insufficient demand for interventions or sociocultural barriers; at the health services level, such as a lack of resources and trained healthcare providers; and at the health sector policy and management level, such as poorly functioning, centralized systems. Additional constraints involve weak governance and accountability, political instability, and challenges in the physical environment. STRATEGIES AND EXAMPLES: Scaling up maternal, newborn and child health interventions requires strengthening health systems, but there is also a role for focused, targeted interventions. Choosing a strategy involves identifying appropriate channels for reaching high coverage, which depends on many factors such as access to and attendance at healthcare facilities. Delivery channels vary, and may include facility- and community-based healthcare providers, mass media campaigns, and community-based approaches and marketing strategies. Issues related to scaling up are discussed in the context of four interventions that may be given to mothers at different stages throughout pregnancy or to newborns: (1) detection and treatment of syphilis; (2) emergency Cesarean section; (3) newborn resuscitation; and (4) kangaroo mother care. Systematic reviews of the literature and large-scale implementation studies are analyzed for each intervention. Equitable and successful scale-up of preterm birth and stillbirth interventions will require addressing multiple barriers, and utilizing multiple delivery approaches and channels. Another important need is developing strategies to discontinue ineffective or harmful interventions. Preterm birth and stillbirth interventions must also be placed in the broader maternal, newborn and child health context to identify and prioritize those that will help improve several outcomes at the same time. The next article discusses advocacy challenges and opportunities. FT, PT, Review, separation, mental development. Not on Charts 3/14/2014


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The essence of professional caregivers' experiences to enhance organizational perspective and general group experiences rather than individual personal experiences with SSC. This meta-impede implementation or examined the experience from the organizational perspective. Most studies surrounding the caregiver's perspective and SSC have focused on barriers primarily focuses on parents' experiences; yet it is crucial to describe the experiences of nurses. Reported knowledge about SSC has improved, confusion still exists regarding safety and appropriateness. Existing qualitative literature primarily focuses on parents' experiences; yet it is crucial to describe the essence of professional caregivers' experiences to enhance facilitation and implementation of SSC. Most studies surrounding the caregiver's perspective and SSC have focused on barriers that impede implementation or examined the experience from the organizational perspective and general group experiences rather than individual personal experiences with SSC. This meta-ethnography integrated the findings from several discrete studies into a salient KCBib.
interpretative perspective, creating a relevant understanding of the process of SSC as a means of enhancing facilitation and implementation of SSC with hospitalized infants. An ethnographic meta-synthesis of qualitative literature was completed. As a result of this synthesis, the caregivers' experiences were separated into themes to articulate the phenomena juxtaposed from the 8 original studies that influence facilitation of SSC for the parent-infant dyad. Qualitative data analysis uncovered 4 overarching themes: (1) varying thresholds of getting started; (2) defining adequate resources; (3) navigating the demands and complexity of the infant; and (4) balancing parental readiness with infant needs. This ethnographic meta-synthesis confirms nurses have good intentions in supporting SSC practices, yet struggle to meet competing demands in their daily practice. Innovative and practical translations of SSC are needed to normalize SSC as the daily standard for premature infants. PT, ethnographic qualitative study, Maternal involvement, maternal feelings.

Vittner D, Cong X, Ludington-Hoe SM, McGrath JM.(2017-Feb). A survey of skin-to-skin contact with perinatal nurses. Appl Nurs Res. 33:19-23. doi: 10.1016/j.apnr.2016.09.006 This study explored perinatal nurses' knowledge, attitudes and practices of SSC, to identify knowledge-practice gaps. A descriptive cross-sectional survey design was completed by 101 perinatal nurses. Descriptive statistics and ordered logistical regression were used to describe and compare nurses' responses. The participants strongly agreed that it is nurses' responsibility to advocate for SSC. Significant differences (p<0.01) were reported in provision of SSC with eligible infants between nurses within and between practice settings, education levels, year experience and age differences. Education levels significantly influenced attitudes and implementation of SSC. Perinatal nurses' responses about how difficult it is to initiate SSC changes were affected by years of nursing practice (p<0.04). Perinatal nurses strongly exhibited more synchrony in SSC practices, yet additional training regarding SSC implementation is needed. Education levels, primary practice settings and years of practice appear to influence nurses' implementation of SSC. PT, survey, implementation, little KC being done, need more education Not on charts 2/18/2017

Vittner D, McGrath J, Robinson J, Lawhon G, Casson R, Eisenfeld L, Walsh S, Young E, Cong X. (2018-Jan). Increase in Oxytocin From Skin-to-Skin Contact Enhances Development of Parent-Infant Relationship. Biol Res Nurs. 20(1):54-62. doi: 10.1177/1099800417735633 To examine changes that occur in infant and parent salivary oxytocin (OT) and salivary cortisol (SC) levels during skin-to-skin contact (SSC) and whether SSC alleviates parental stress and anxiety while also supporting mother-father-infant relationships. This randomized crossover study was conducted in the neonatal intensive care unit (NICU) with a sample of 28 stable preterm infants and their parents. Saliva samples were collected from infants, mothers, and fathers on Days 1 and 2 (1/parent) for OT and cortisol measurement pre-SSC, during a 60-min SSC session, and a 45-min post-SSC. Parental anxiety was measured at the same time points. Parent-infant interaction was examined prior to discharge on Day 3 via video for synchrony and responsiveness using Dyadic Mutuality Coding. Salivary OT levels increased significantly during SSC for mothers (p < .001), fathers (p < .002), and infants (p < .002). Infant SC levels decreased significantly (p < .001) during SSC as compared to before and after SSC. Parent anxiety scores were significantly related to parent OT and SC levels. Parents with higher OT levels exhibited more synchrony and responsiveness (p < .001) in their infant interactions. This study addresses a gap in understanding the mechanisms linking parent-infant contact to biobehavioral responses. SSC activated OT release and decreased infant SC levels. Facilitation of SSC may be an effective intervention to reduce parent and infant stress in the NICU. Findings advance the exploration of OT as a potential moderator for improving responsiveness and synchrony in parent-infant interactions. PT, Randomized cross over, infant and parent Salivary OT, stress, cortisol, interaction / synchrony responsiveness, parental behaviors. NOT ON CHARTS

Vivancos, R.B.Z., Leite, A.M., Scochi, C.G.S., & Dos Santos, C.B. (2019). The skin-to-skin contact at birth and newborn crying during vaccination against Hepatitis B . Acta Paulista de Enfermagem, 23(4), 461-465. No doi available. A quasi-experimental comparative study of 40 full term newborns in two groups (one with skin contact with mothers after birth and one group without skin contact after birth), were compared in crying time during Hepatitis B vaccination. Crying changes across all phases of the Hep B vaccine were seen in both groups, but no statistical differences appeared, thus KC did not decrease crying time statistically. Yet, the authors clearly state that “during the skin-to-skin contact period, 19 newborns (95%) remained in silence and did not manifest any audible vocalizations, though they were fully awake and active on their mother’s chests. Among the newborns from the control group, 15 (75%) presented non-measured episodes of crying while waiting for data collection in the heated crib.” Pg. 463-464. 19/20 KC infants did not cry at all. Stress induced crying was observed with the shot and KC was observed to modulate crying behavior in newborns. FT, quasi-experimental, crying, birth KC, pain, vaccination. NO CRYING! Not on charts 2/18/2011.

WABA (2007). go to website and get statement


KCBib 2018
o2 needs, less restlessness, better temp maintenance, fewer digestive probs, more milk, and 24/33Kcers (83%) BF at discharge vs 45% in control (p. 25. Has BF cycle wheel for KC. Clinical Report and review Breastfeed. PT, HR, O2 needs, restlessness, temp, digestion, milk production


Waits A, Guo CY, Chien L.Y. (2018-Feb). Evaluation of factors contributing to the decline in exclusive breastfeeding at 6 months postpartum: The 2011-2016 National Surveys in Taiwan. Birth. 2018 Feb 16. doi: 10.1111/birt.12340. [Epub ahead of print]. Since 1992, breastfeeding promotion in Taiwan considerably raised the breastfeeding rates; however, more recent surveillance showed that breastfeeding indicators stagnated or even decreased. We analyzed 6 cross-sectional national surveys of 69 159 postpartum women to examine the breastfeeding trends at 6 months postpartum during 2011-2016 in Taiwan and the contributing role of maternal and environmental factors. Data were collected through telephone interviews, using structured questionnaires with randomly selected mothers, who gave birth in those years. A multinomial logistic regression was used to analyze the data. Partial breastfeeding rates at 6 months postpartum increased from 2011 to 2016 (25.4%–45.1%, crude odds ratio [OR] = 1.14 per year of study); however, the rates of exclusive breastfeeding at 6 months postpartum declined (24.5%–14.8%, crude OR = 0.91 per year of study). During this period, increases in maternal age and educational level, employment outside the house, and prepregnancy obesity were observed. Despite a growing number of births at certified baby-friendly hospitals, fewer mothers experienced early skin-to-skin contact and rooming-in at 6 in 2011. Adjustment for breastfeeding-related factors did not appreciably change the odds ratio for year of birth. Prenatal intention to breastfeed was most strongly associated with breastfeeding at 6 months postpartum (OR > 5). Maternal and environmental factors in the study could not explain the decline in exclusive breastfeeding. The decline in exclusive breastfeeding, accompanying the increase in partial breastfeeding, suggests that more support is needed for mothers who intend to breastfeed exclusively. PT, descriptive evaluative study, BF. Little KC being done. Not on charts 3-25-2018

Wanga, C. & LaCoste, M. J. (2011). A father’s commitment to “kangaroo care”. Healthy Newborn Network. Washington, D.C.: Save the Children. This is blog that is available on the HealthynewbornNetwork.org/blog as of Nov. 8, 2011 that relates a father in Stone Town, Zanzibar came every day to hold his twin sons in kangaroo care for 2 hours each day – something that most males would not do. But he is role model for others and knows that his body warmth has helped his sons survive. PT, Clinical report of one father, 3rd world, paternal KC

Waiswa, P., Nyanzi, S., Namusoko-Kalungi, S., Peterson, S., Tomson, G., & Pariyo, G.W. (2010). ‘I never thought that this baby would survive: I thought that it would die any time’: perceptions and care for preterm babies in eastern Uganda. Tropical Medicine and International Health, 15(10), 1140-1147. DOI: 10.1111/tmj.1365-3156.2010.02603.x A descriptive study of one midwife who observed care of preterm babies in one general hospital and 15 health centers using a checklist and a field diary. No health facility practiced KMC (1143). 11 community health workers (none knew about KMC pg 1143) and 10 mothers (readily accepted idea of KMC, thoughts were fear of hurting umbilical cord, can’t work with baby on the chest all the time. KMC is tiring (night and day, night and day and you can get sick and you can start bleeding again; they feed sugar water until milk comes in and do not use colostrums for feeds), 6 fathers (all thought KMC was for women only), 3 grandmothers were interviewed and went through focus groups analyzed by content analysis. Community health workers identified many features used to identify preterm infants. Care practices in hospital and at community level are inadequate and potentially harmful. Health facilities lacked capacity in terms of protocols, health worker’s skills, basic equipment, drugs and other supplies, but community health workers accepted KMC and other newborn care practices. Essential newborn care practices are CLEAN CORD CARE. THERMAL CARE by KMC after birth and after baths (pg. 1142), EARLY AND EXCLUSIVE BF (from Marsh DR, Darmstadt GL, Moore J, Daly P, Oot D & Tinker A. (2002) Advancing newborn health and survival in developing countries: a conceptual framework. J Perinatology,22, 572-576 ). The comment in the title was about preterm infants in general and had nothing to do with palliative powers of KC. PT, 3rd world, descriptive, survival, essential care, maternal acceptance, barriers to implementation

Walden, M., & Jorgensen, K. (2010). Chapter 20: Pain assessmentand non-pharmacologic management. In C. Kenner & J. M. McGrath (Eds). Developmental Care of Newborns and Infants. A Guide for Health Professionals. 2nd Edition. Chicago, IL: National Association of Neonatal Nurses. Pp.411-425. On page 420 it relates “… heel squeeze is the most painful part of heel stick procedures (Grunau & Craig, 1987; Anand et al., 2004), and the use of topical agents does not provide effective pain management. Instead, facilitated tucking, skin-to-skin contact, and the use of sucrose pacifiers decrease the pain responses associated with the heel-stick procedure.” The next few paragraphs relate that bright lighting and/or continuous lighting levels are associated with increased physiologic and behavioral stress in preterms, and that for prolonged periods after a painful stimulus, other nonnoxious stimulat (handling, physical exam, nursing procedures) may cause heightened activity in nociceptive pathways, leading to systemic physiologic responses to stress in preterm infants. Consequently it is recommended that adequate rest periods be provided after painful procedures, and in clustered caregiving introduce the
least noxious stimulus first and most noxious last to minimize stress of caregiving. Preterms and full term newborns who experience a series of handling and immobilization manipulations before a routine heel stick exhibit significantly more physiologic responses and behavioral arousal to heel stick compared to infants who had not been handled (SO LET THEM REST IN KC BEFORE STICK!!). Nesting facilitates infant’s self-regulatory development and may minimize pain. Containment reduces pain by providing gentle stimulation across proprioceptive, thermal, and tactile sensory systems (MacKenna BR & Callender, R. 1990. Central nervous system locomotor system. In Illustrated physiology (5th Eds. Pp. 220-284.) Edinburgh, Scotland: Churchill Livingstone. PT, Pain, Review, non-harmlocigic interventions and pain assessment tools. Not on Charts 10/22/10


Resuscitative/Consoling KC/End-of-life, Preterm


Wallin L, Rutberg A, & Gunnningb L. (2005). Staff experiences in implementing guidelines for Kangaroo Mother Care – a qualitative study. International J Nursing Studies, 42(1), 61-73. A focus groups held to learn effect of change team to implement KMC guidelines in two units that had a facilitator working with the change team and in two units that did not have a facilitator working with the change team. The intervention being tested here was “facilitation” and facilitation promoted implementation activities and was appreciated by the change team. But, facilitation was no more effective than than a quality improvement focused organization in which nurse manager is involved in change. Learning about KMC and changes in practice of KMC is a social phenomenon that benefits from people’s interaction with each other. Lars told Dr. Ludington at the INK workshop in Brazil in Nov. 2004 that KMC is really only being done at delivery for fullterms in Sweden in 2004, not at delivery for preterm infants . PT, Implementation, barriers, quality improvement projet

Wallis, C L. (2000). Kangaroo Care. Neonatal Network 19(7), 68. This is a letter to the editor saying that KC is used routinely and shows pictures of twins in KC. PT, TWIN KC, routine use in U.S.


Walters, M.W., Boggs, K.M, Ludington-Hoe, S.M., Price, K.M., & Morrison, B (2007). Kangaroo Care for full term infants: a pilot study. MCN, American J of Maternal Child Nursing, 32(6), 375-381. Descriptive evaluative study. Ten infants were given KC within one minute of birth. Stable temperatures, normal blood glucose levels at 30, 60 and 90 minutes post-birth, and independent and spontaneous movement of infants from the mother’s abdomen up to the nipple, where infants spontaneously latched and had perfect scores on the MEALS breastfeeding effectiveness scale. In addition, physician’s reported that mothers were distracted by KMC from episiotomy repair. Adoption of birth KMC was easy and had negligible effect on workload Full term, Birth KC, HR, RR, temperature, glucose, hypoglycemia, breastfeeding, episiotomy pain.

Wang,S.F., & Gau,M.L.(2013). [Creating baby-friendly neonatal intensive care units], Hu Li Za Zhi. 2013 Feb;60(1):11-6. doi: 10.6224/JN.60.1.11.Most expectant parents anticipate giving birth to a healthy newborn. Admission of a neonate to a neonatal intensive care unit (NICU) is thus nearly always a significant and negative shock to parents and family members. We derived core concepts for this article from the World Health Organization/United Nations Children’s Fund (WHO/UNICEF)’s Baby Friendly Hospital Initiative: Revised, updated, and expanded for integrated care (2009). This framework document advocates expanding to NICUs guidelines that were originally developed for maternity units. This paper reviews the importance of breastfeeding to the mother-baby dyad and family integration. We suggest how to build a breastfeeding-friendly environment within the NICU using 10 steps that adhere to the NEO-BFHI’s three “Guiding Principles”. The proposed environment gives special emphasis to providing continued and unlimited kangaroo care, creating a family-centered NICU design, implementing an effective milk expression and monitoring plan, and respecting mothers’ individual needs. Suggestions are provided as a reference to government policymakers and medical centers to facilitate the creation of breastfeeding-friendly environments in NICUs. PT, BF, Baby Friendly NICU

Wang, Y. H., & Kao, H.H. (2006). The nursing experience in helping unmarried adolescence girl to care for her premature infant Hu Li Za Zhi, 53(5), 76-83 (Chinese). Case study of helping an adolescent girl take care of her preterm infant. Major problems the mother had were potential risk of parent/infant malattachment, insufficient knowledge of childcare. Nurse taught mom Kangaroo Care to

KCBib 2018
Oxytocin (OT) is a social hormone that may help researchers understand how nurse-guided kangaroo care (KC) promotes attachment. It did the job! Article concludes that an adolescent ob service is needed to provide holistic care. PT, Case study, attachment.


This is an attempted meta-analysis but they say they could not do it because standard errors were not published, just standard deviations and because only Cong’s study had effect size and a theory guiding the study. They say the magnitude of the KC response is not known. They recommend that studies report the theory guiding the study. They found 12 studies of KC to reduce pain (Akan et al., 2009; Castrila 2008; Cong 2009; de Sousa Freire 08; Ferber & Makhold 07, Gray 2000; Johnston 03, 08; Kashnina 08; Kostandy 08, Ludington-Hoe 05; Sajodi, 07). They think future studies should report baseline measures of outcomes and measures of effect sizes (pg. 8). Review, pain, methodological issue. Theory guiding study. MAGNITUDE of PAIN reduction with KC is NOT KNOWN.

Warren, R. (2008). Breastfeeding in the delivery room. *British Journal of Midwifery*, 16(2), 119-120. This is a review article about the benefits of breastfeeding and number of women initiating BF in the delivery room as mandated by the Baby Friendly Hospital Initiative. On page 119, she states “The Baby Friendly Hospital Initiative urges that support is there for the very first breastfeeding and that all mothers should have the opportunity to hold their babies with skin to skin contact for an unlimited period as soon as possible after delivery (Unicef, 2008). Although the practice of skin-to-skin contact is commonly promoted by midwives, its duration can be short-lived because of other priorities in care organization.” Then it goes on that “just a brief period of separation between mother and infant during the first hour after birth has a strong impact on the success of the first breastfeeding (Richard & Alade, 1990).” In the next paragraph on effects of pethidine, it states “Richard and Alade’s study (1990) demonstrated that for babies exposed to pethidine, breastfeeding was problematic. However, WHO (1998) recommends that a longer period of skin-to-skin contact be required to compensate. Furthermore, the contact per se between mother and baby in this sensitive period can induce a physical state that is particularly conducive to initiation of breastfeeding. Finigan and Davies’ (2004) qualitative work relays powerful accounts of women describing the ‘gaze’ and the immediate instinctive feelings generated of wanting to touch and bring their babies to the breast.” Under hospital practices, she writes “cesarean section birth ranks highly as a significant barrier for skin-to-skin contact.” And “Ashmore (2003) makes a rather amusing observation that it is not the midwife who has to have the skin contact. Prolonged skin-to-skin contact employs very little time or effort, ther are no financial implications and in a safe environment this simple practice has many potential benefits. The biggest obstacle to skin-to-skin contact appears to be that it requires a change to routines.” PT, Review, Birth KC, BF, FT, implementation, maternal behaviors, maternal feeling, separation is bad, staff time.


Extremely premature infants are at great risk for poor neurodevelopmental outcomes, in part because neurologic structures designed to mature in the womb must now do so in the extrauterine environment. Reliable biomarkers of neurodevelopment are especially critical in this population, as behavioral measures can be unreliable due to immaturity of the premature infant nervous system. Oxytocin (OT) has the potential to be a marker of neurobiological processes that offer infant neuroprotection. However, no studies have measured OT in the plasma and urine of premature infants. The purposes of this study were to describe plasma and urine OT levels of premature infants through 34 weeks corrected gestational age (CGA), determine whether plasma and urine OT are correlated, and explore associations between infant demographics and OT trajectories. Plasma and urine from 37 premature infants, born at gestational ages 25-28 6/7 weeks, were longitudinally collected at 14 days of life, then weekly until 34 weeks CGA. Plasma OT decreased with age, at a rate of 15% per week, and exhibited strong stability within infants. Urine OT was not correlated with plasma OT and did not show a significant trend over time; thus, urine may not be a reliable, noninvasive measurement in this population. Apgar score was the only infant demographic characteristic associated with plasma OT. Given the novelty of this work, replication is needed to confirm these findings, and future research should explore potential mechanisms (e.g., stress, normal maturation, and social experiences) that contribute to declining plasma OT levels in premature infants. This says that OT levels decline with stress. PT, Evalutative study, OT, stress, neuroprotection. Not on charts 9-4-2017

interventions during initial infant hospitalization, such as supporting human milk expression, promoting comforting touch, and reducing exposure to stressors, affect preterm brain development. To determine whether factors related to human milk, touch, or stressor exposure are related to plasma OT trajectories in premature infants. Plasma from 33 premature infants, born gestational ages 25 to 27 weeks (Equation is included in full-text article.) was collected at 14 days of life and then weekly until 34 weeks' corrected gestational age (CGA). Variables related to feeding volumes of human milk and formula; touch, as indexed by skin-to-skin contact (SSC) and swaddled holding; and clinical stressors were extracted from the electronic medical record. Linear mixed models tested associations between nurse-guided variables and plasma OT trajectories. In the final model, day of life was positively related not only to plasma OT levels at 27 weeks’ CGA (β= .938, P = .002) but also to a decline in plasma OT levels over time (β=.177, P = .001). Volume of enteral feeds (mL/kg/d), its interaction with CGA, and number of stressful procedures were not statistically significant (β= .011, P = .077; β= .002, P = .066; and β= .007, P = .062, respectively). Nurse-guided interventions are associated with infant plasma OT levels, suggesting nurses may impact the neurobiology of the developing premature infant. Replication with larger sample sizes and randomized controlled trial designs is needed to test effects of specific nursing interventions on infant OT. THIS IS SAYING THAT WITH REPEATED KC, OT DROPS.

Weber A, Harrison TM, Steward D, Sinnott L, Shoben A. (2017-Aug.) Oxytocin trajectories and social engagement in extremely premature infants during NICU hospitalization. Infant Behav Dev. 48(Pt B):78-87. doi: 10.1016/j.infbeh.2017.05.006. Extremely premature infants, born 28 weeks gestation or less, are at high risk for impaired socioemotional development, due in part to exposure to early stressful social experiences that alter brain development. Understanding mediators that link experience with outcomes is necessary to assess premature infant responses to social experiences that are critical to brain development. The hormone oxytocin (OT), released during supportive interactions, has potential as a biomarker of the premature infant’s responses to social experiences. The purpose of this study was to examine associations among infant plasma OT trajectories and maternal-infant social engagement behaviors during initial hospitalization. This study also examined demographic correlates of engagement behaviors in mothers and infants. Plasma from 28 extremely premature infants, born gestational ages 25-28 6/7 weeks, was collected at 14 days of life, then weekly until 34 weeks. Social engagement behaviors were measured by the Parent-Child Early Relational Assessment during a videotaped feeding when the infant was receiving one-quarter full oral feeds. Maternal-infant demographics were extracted from the medical record. Higher infant plasma OT was associated with lower infant social engagement, but no associations were found with maternal social engagement. Infant social engagement was positively related to maternal social engagement. Maternal parity was related to maternal social engagement, and infant demographics did not predict infant social engagement. The significant, yet negative, association between infant OT and engagement provides support for the measurement of OT as a neurobiological antecedent to infant social behaviors. Finally, this research suggests that during the earliest period of infant socio-behavioral development, premature infants are behaviorally reactive to the social engagement behaviors of their mothers. Not on charts 9-4-2017

Weber AM, Harrison TM, Steward DK (2012). Schore’s Regulation Theory: maternal-infant interaction in the NICU as a mechanism for reducing the effects of allostatic load on neurodevelopment in premature infants. Biological Research for Nursing, 14, 375-386. This is a review of how KC helps lower allostatic load. PT, Review, stress, mechanisms, NICU environment. GET THIS, not on chart 7-3-2016


Webber, M.A., Ashworth, M.T., Risdon, R.A., Brooke, I., Malone, M., & Sebire N.J., (2009). Sudden unexpected neonatal death in the first week of life: autopsy findings from a specialist centre. Journal of Maternal, Fetal, and Neonatal Medicine, 22(5), 398-404. The rate of SUCP may be higher than reported by others. SUCP rarely has an etiology identified by autopsy, and when there is an etiology, it is not an SUCP case. It is a life threatening event or sudden infant death case. FT, PT, SUPC, Birth KC, Life threatening events, NOT ON CHARTS 11-2014

Weddig, J., Baker, S., & Auld, G. (2011). Perspectives of hospital-based nurses on breastfeeding initiation best practices. Journal of Obstetric, Gynecologic, and Neonatal Nursing, 40(2): 166-178. DOI: 10.1111/j.1852-6909.2011.01232.x Purpose of this focus group (8 grps) qualitative study was to assess breastfeeding knowledge of 40 RNs in 8 hospitals and to learn the informal and formal hospital policies related to initiation and support of breastfeeding. Qualitative study BF, Nurse’s knowledge, Baby Friendly GET THIS AND FINISH

KCBib 2018
Preterm infants are at high risk for adverse neurodevelopmental and behavioral outcomes. Family Nurture Intervention (FNI) in the Neonatal Intensive Care Unit (NICU) is designed to counteract adverse effects of separation of mothers and their preterm infants. Here, we evaluate effects of FNI on neurobehavioral outcomes. FNI includes Kangaroo Care each time mother visits. Data were collected at 18 months corrected age from preterm infants. Infants were assigned at birth to FNI or standard care (SC). Bayley Scales of Infant Development III (Bayley-III) were assessed for 76 infants (SC, n = 31; FNI, n = 45); the Child Behavior Checklist (CBCL) for 57 infants (SC, n = 31; FNI, n = 26); and the Modified Checklist for Autism in Toddlers (M-CHAT) was obtained for 59 infants (SC, n = 33; FNI, n = 26). Family Nurture Intervention significantly improved Bayley-III cognitive (p = .039) and language (p = .008) scores for infants whose scores were greater than 85. FNI infants had fewer attention problems on the CBCL (p < .02). FNI improved total M-CHAT scores (p < .02). Seventy-six percent of SC infants failed at least one of the M-CHAT items, compared to 27% of FNI infants (p < .001). In addition, 36% of SC infants versus 9% of FNI infants failed at least one social-relatedness M-CHAT item (p < .001). Family Nurture Intervention is the first NICU intervention to show significant improvements in preterm infants across multiple domains of neurodevelopment, social-relatedness, and attention problems. These gains suggest that an intervention that facilitates emotional interactions between mothers and infants in the NICU may be key to altering developmental trajectories of preterm infants. Preterm delivery can precipitate maternal psychological morbidities. Family Nurture Intervention (FNI) Trial Group conducted a randomized controlled trial (RCT) to determine the effectiveness of a Family Nurture Intervention (FNI) in the NICU on the emotional well-being of mothers of preterm infants. However, the study's findings may have been obscured by the use of a mixed factorial design, which confounded the effects of preterm birth, requisite acute care and prolonged physical separation in the Neonatal Intensive Care Unit (NICU) with adverse physiological/psychological effects on both the infant and the mother. In particular, the experience compromises the establishment and maintenance of optimal mother-infant relationship, the subsequent development of the infant, and the mother's emotional well-being. These findings highlight the importance of investigating early interventions that are designed to overcome or reduce the effects of these environmental insults and challenges. This study is a randomized controlled trial (RCT) with blinded assessment comparing Standard Care (SC) with a novel Family Nurture Intervention (FNI). FNI targets preterm infants born 26-34 weeks postmenstrual age KCBib 2018.
The intervention incorporates elements of mother-infant interventions with known efficacy and organizes them under a new theoretical context referred to collectively as calming activities. This intervention is facilitated by specially trained Nurture Specialists in three ways: 1) In the isolette through calming interactions between mother and infant via odor exchange, firm sustained touch and vocal soothing, and eye contact; 2) Outside the isolette during holding and feeding via the Calming Cycle; and 3) through family sessions designed to engage help and support the mother. In concert with infant neurobehavioral and physiological assessments from birth through 24 months corrected age (CA), maternal assessments are made using standard tools including anxiety, depression, attachment, support systems, temperament as well as physiological stress parameters. Quality of mother-infant interaction is also assessed. Our projected enrolment is 260 families (130 per group).

The FNI is designed to increase biologically important activities and behaviors that enhance maternally-mediated sensory experiences of preterm infants, as well as infant-mediated sensory experiences of the mother. Consequently, we are enlarging the testing of preterm infant neurodevelopment beyond that of previous research to include outcomes related to mother-infant interactions and co-regulation. Our primary objective is to determine whether repeated engagement of the mother and her infant in the intervention’s calming activities will improve the infant’s developmental trajectory with respect to multiple outcomes. Our secondary objective is to assess the effectiveness of FNI in the physiological and psychological co-regulation of the mother and infant. We include aspects of neurodevelopment that have not been comprehensively measured in previous NICU interventions. ClinicalTrials.gov: NCT01439269.

Welch MG, Hofer MA, Stark R, Andrews HF, Austin J, Glickstein SB, Ludwig RJ, Myers MM; FNI Trial Group (2013-Sept.) Randomized controlled trial of Family Nurture Intervention in the NICU: assessments of length of stay, feasibility and safety. BMC Pediatr. 24(13):148. doi: 10.1186/1471-2431-13-148. While survival rates for preterm infants have increased, the risk for adverse long-term neurodevelopmental and behavioral outcomes remains very high. In response to the need for novel, evidence-based interventions that prevent such outcomes, we have assessed Family Nurture Intervention (FNI), a novel dual mother-infant intervention implemented while the infant is in the Neonatal Intensive Care Unit (NICU). Here, we report the first trial results, including the primary outcome measure, length of stay in the NICU and, the feasibility and safety of its implementation in a high acuity level IV NICU. The FNI trial is a single center, parallel-group, randomized controlled trial at Morgan Stanley Children's Hospital for mothers and their singleton or twin infants of 26-34 weeks gestation. Families were randomized to standard care (SC) or (FNI). FNI was implemented by nurture specialists trained to facilitate affective communication between mother and infant during specified calming interactions. These interactions included scent cloth exchange, sustained touch, vocal soothing and eye contact, wrapped or skin-to-skin holding, plus family-based support interactions. A total of 826 infants born between 26 and 34 weeks during the 3.5 year study period were admitted to the NICU. After infant and mother screening plus exclusion due to circumstances that prevented the family from participating, 373 infants were eligible for the study. Of these, we were unable to schedule a consent meeting with 56, and consent was withheld by 165. Consent was obtained for 150 infants from 115 families. The infants were block randomized to groups of N = 78, FNI and N = 72, SC. Sixteen (9.6%) of the randomized infants did not complete the study to home discharge, 7% of those randomized to SC and 12% of FNI infants. Mothers in the intervention group engaged in 3 to 4 facilitated one-to-two-hour sessions/week starting soon after birth and continuing until discharge. Intent to treat analyses revealed no significant difference between groups in medical complications. The mean length of stay was not significantly affected by the intervention. There was no significant effect demonstrated with this intervention amount on the primary short-term outcome, length of stay. FNI can be safely and feasibly implemented within a level IV NICU. ClinicalTrials.gov: NCT01439269. PT, RCT, stress, depression, interactions, sensory experiences, attachment.

Welch, M.G., Hofer MA, Stark R, Andrews HF, Austin J, Glickstein SB, Ludwig RJ, Meyers MM, et al. FNI Trial Group. (2014-April). Electroencephalographic activity of preterm infants is increased by Family Nurture Intervention. A randomized controlled trial in the NICU. Clinical Neurophysiology, 125(4), 675-684. doi: 10.1016/j.clinph.2013.08.021. To assess the impact of Family Nurture Intervention (FNI) on electroencephalogram (EEG) activity in preterm infants (26-34 weeks gestation). Two groups were tested in a single, level IV neonatal intensive care unit (NICU; standard care or standard care plus FNI) using a randomized controlled trial design. The intervention consists of sessions designed to achieve mutual calm and promote communication of affect between infants and their mothers throughout the NICU stay. EEG recordings were obtained from 134 infants during sleep at ~35 and ~40 weeks postmenstrual age (PMA). Regional brain activity (power) was computed for 10 frequency bands between 1 and 48 Hz in each of 125 electrodes. Near to term age, compared to standard care infants, FNI infants showed robust increases in EEG power in the frontal polar region at frequencies 10 to 48 Hz (20% to 36% with p-values <0.0004). Effects were significant in both quiet and active sleep, regardless of gender, singleton-twin status, gestational age (26-30 or 30-35 weeks) or birth weight (<1500 or >1500 g). FNI leads to increased frontal brain activity during sleep, which other investigators find predictive of better neurobehavioral outcomes. FNI may be a practicable means of improving outcomes in preterm infants. PT, RCT, intermittent KC, brain study, sleep, frontal brain activity, dev. See also Myers MM et al., July 2015, Hane et al. 2015 for more on frontal cortical functional connectivity.

Having trouble getting this document, New to Biblio study


Weller A, Feldman, R. (2003). Emotion regulation and touch in infants: The role of cholecystokinin and opioids. Peptides 24 (5), 779-788. Cholecystokinin and opioid peptides mediate early learning about maternal odor, milk and contact in rats. This paper reviews all the work showing that neuropeptide systems mediate emotion regulation in human infants, thus playing a role in the emergence of stress-reactivity and other motivational systems such as feeding. Maternal handling, proximity, and touch benefit the development of emotion regulation in the human. KC (pg 782) has been shown to improve the infant’s ability to self-regulate and to moderate the effects of separation and lack of maternal proximity and availability (even in depressed moms). In rats and humans, maternal proximity enables infant to smell maternal odor. Mat odor activates cholecystokinin and opioids (neuropeptides) that help infant learn that this is feeding time and help infant regulate his emotions, particularly stress reactivity as opioids are endogenous narcotics that calm the infant and reduce stress level. KC is mentioned as it helps infants self-regulate and moderate effects of some risk factors for separation, like preterm birth and IUGR. Thus, KC is probably quieting due to opioid secretion. Theoretical review. Stress, emotional development. Cholecystokinin, metabolism. NOT ON CHARTS 9/09/2011

Weller A, Rozin A, Goldenstein A, Chargra N, Ruis-Pelaez JG, Figueroa de Calume Z, Charpak Y, & Sack J. (2002). Longitudinal assessment of pituitary-thyroid axis and adrenal function in preterm infants raised by ‘kangaroo mother care.’ Hormone Research 57 (1-2):22-26. A randomized controlled trial of KMC vs traditional care of 87 infants <2001 grms. Gave 3 blood spot samples on filter paper at entry (1-5 postnatal days), 2 weeks later, and @ 41 weeks PCA. Infants had been discharged within 1st postnatal week. 17 alpha-hydroxyprogesterone (17- OHP), thyroid stimulating hormone (TSH) & thyroxin (T4) measured after complete KMC (24 hr/day KMC). 17OHP and TSH decreased significantly over time. KMC did not interact with the pattern of physiological change. Maturation of the pituitary-thyroid axis and adrenal function is not compromised by KMC in healthy preterm infants. Complete KMC definition, RCT, Pituitary-Thyroid-Adrenal function, 17-OH, T4, TSH, metabolism, FT, stress


Wheeler, J.L., Johnson, M., Collie L, Sutherland D, & Chapman C. (1999). Promoting breastfeeding in the neonatal intensive care unit. Breastfeeding Review, 7(2): 15-18. Forty-one infants watched during feeds for 21 days. Infants were 32-37 wks (M=34.21 wks, MBW=2225.02g). On day 1, 22.2% BF while nude on breast (called KC); days 2-9 the % of babies in KC for BF dropped to 8.7%, 0% on days 10-14; and 18.2% on day 15 and no more after that. KC was not considered “necessary” on days 10-12 because infants were BF.

Preterm, Near term, Descriptive longitudinal over 4 days. Breastfeeding


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White, R.D. (2011). Designing environments for developmental care. Clinics in Perinatology, 38: 745-749. Clinical article that states “What seems certain, in general terms, is that extended intimate contact with the mother, facilitation of sleep, and protection from toxins are important.” (pg. 745). “There is solid reasons to believe that the best environment for neurodevelopment of the newborn is provided by intimate and extended contact with the mother, often referred to as Kangaroo or skin-to-skin care, which closely resembles the in utero stimuli that are biologically anticipated by the fetal brain. Even skin to skin care with someone other than the mother or being held fully clothed provides a “living” environment that is far more developmentally appropriate than the inert, artificial environment provided by an incubator or warmer.” (pg 746) and the rest of the article talks about how to design the NICU to enhance the likelihood of skin to skin care (use single family rooms) to allow extended periods of contact. Skin to skin is the optional developmental microenvironment for the infant “ (pg. 746). NICO, Review, Toxic environment, developmental care. NOT ON charts 11/7/2012


White, A. (1990). Kangaroo baby care: Just a nice experience or an important advance for preterm infants? Pediatrics, 85(4), 604-605. Review of KC effects in various areas and summarizing that it is more than just a nice experience. Infection: says that sepsis from parental contact does not occur. Review, physicians, Infection


Whitelaw, A., Heisterkamp, G., Sleuth, K., Acolet, D., & Richards, M. (1988). Skin-to-skin contact for very low birth weight infants and their mothers. Archives of Diseases in Childhood, 63, 1377-1381. Pilot studies showed that stable infants as small as 700 g could be safely held in KC and mother and baby enjoyed the experience. Moms’ said “Now I feel he’s getting to know me,” “I feel like a mummy now.”, TWO GROUPS Randomized controlled trial: 71 infants (<1500g BW, stable breathing, no O2 support, and could not have congenital anomalies, IVH, ventricular hypertrophy, and PVL). 35 moms (BW=1135 GA=29.10wks) gave ad lib KC (swaddled holding for 1.4 hrs/day and KC mean of 36 mins/day from mean 16-61st day of life in KC group); 36(BW=1135, GA = 29.5 wks) gave swaddled holding (1.8 hrs/day from mean 1-66th day for controls). LOS of stay for KC =30 days, control = 37 days. Some twins included, but not necessarily simultaneously. At discharge mom asked about her confidence in looking after baby, being depressed, feeling detached, feeling supported in looking after baby, and if she thought baby would die. At 6 months, PMA moms asked about perceived care from baby, knowing what baby wants, if baby wants to be carried, is baby contented, mom feels annoyed with baby, baby is easier to look at than in hospital, support in looking after the baby, has baby’s behavior caught up, worried if something will still happen to baby. Parents kept 48 hour diary of sleep, feeds, holding, playing, crying to the nearest 15 mins. TcPo2 ↑ by 7mmHg in KC. No diff in visiting time, temp instability not a problem during KC, 6 kids in each group stopped study for apnea, nec, or sepsis during study but not necessarily during KC, no diff in questionnaires at discharge and 6 months, 67% of moms thought baby would die, 42% did not feel was theirs til baby was home. No diff in 6 months sleeping (kc=13.6hr/day vs. 13.9 hr/day, 4.5 hrs/day both groups). KC had 25 mins/day crying, controls had 38 mins/day of crying (SIG difference in CRYING). BF duration in KC >9.2wks vs. 5.1 wks in controls (SIG) 17/31 (55%) KC moms lactated >6wks(SIG). follow-up of infants given KC in hospital. Prolonged lactation and decreased crying at 6 months. Preterm, RCT, BF, BF duration, crying, micropreemie, maternal feelings, infant pleasure, maternal empowerment/role development, twin KC, diary, sleep, play, visiting time, apnea, nec, sepsis, negative effect (6 stopped for apnea, nec, or sepsis during study but not necessarily during KC), length of stay, twin KC, crying, Micropreemie, ELBW, VLBW, shared KC

Newborn Infant N. Disengagement Behaviors During Two Maternally Administered Interventions. Obstet Gynecol 1991;78:104-111. This study compared the frequency of premature infant engagement and disengagement behaviors during two maternally administered interventions, the multisensory auditory, tactile, visual and vestibular intervention (ATVV) and kangaroo care (KC) for 26 infants between 31 and 46 weeks PMA. The ATVV intervention elicited more disengagement (M = 24 vs. 12, p = .0003), trended toward more engagement (M = 21 vs. 15.7, p = .06) and more potent engagement (M = 24 vs. 12, p = .0003), and more engagement (M = 25 vs. 11.9, p < .0001), and less disengagement (M = 22.9 vs. 14, p = .006) behaviors than did KC. The ATVV intervention may be an intervention to promote the infant's learning how to regulate engagement and disengagement behaviors, but the most common finding is that ATVV (massage) created more disengagement behaviors than KMC. PT, descriptive comparative study, interaction, massage.

White-Traut R. (2004). Providing a nurturing environment for infants in adverse situations: Multisensory strategies for newborn care. J Midwifery Women's Health 49 (4 Suppl 1), 36-41. Review article of neurohormonal aspects of stress and social bonding. Starts with discussion about glucocorticoid receptors that reflect stress and then talks about oxytocin as a neuromodulator and how the number of oxytocin producing neurons is very low in the supraoptic nucleus and the paraventricular nucleus of the hypothalamus of the infant at birth, but the number increases remarkably with touch and non-separation from mother during the immediate postnatal period (pg. 37). Maternal separation changes biochemical processes and hinders development of oxytocin-producing neurons in the brain. Separation from mother is stressful to infants (pg. 37). On page 37 she has a whole section on KMC saying it began in Bogota to safeguard preemies by keeping them warm and providing access to breast. KMC is placement between the breasts and baby's temp is maintained and allows moms to successfully care for their infants and is used in developing countries for home care of fullterms as well as preterm infants. “Beneficial outcomes of this intervention include increased sleep, less irritability, stable physiologic parameters such as heart and respiratory rates, reduced stress during painful episodes, increased BF episodes, positive behavior at 6 months, better development at one year. The practice of KMC is clearly safe for the infant and would be an important strategy to safeguard the infants in an adverse environment” (pg. 37). Interventions aimed at reducing maternal and infant stress and improving maternal infant relationships are reviewed. Low tech interventions like massage, KMC, and multisensory environment (mother’s voice, eye-to-eye contact, rocking) are advised. PT, Clinical review, infant stress, bonding, neurohormones and bonding, home KC, full term too, Separation, Separation and home KC and fullterm not on charts 10/2012.

White-Traut, R., (2015 Mar-Apr). Nurse management of the NICU environment is critical to optimal infant development. J Obstetric, Gynecologic and Neonatal Nursing, 44(2), 169-170. This is a two page editors commentary in which she writes that acceptable amount and types of sensory input for preterm infants is still debated as is what is supportive vs what is excessive. Human contact and social interaction are optimal, especially for preterm infants (pg. 169). “Our research has shown that touch without other components of human social interaction increases stress reactivity in newly born full-term infants and yields excessive responsese in stable preterm infants (White-Traut, Nelson, Silvestri et al., 1997 and White-Traut, Schwartz, Mcalin, Kogan, 2000). Although maternal/preterm infant skin to skin care has been extensively studies, it was not surprising to read a recent report suggesting that skin to skin contact yields better outcomes when supplemented with maternal talking. These findings echo our 1994 pub and 32 years... of research with a multisensory developmental intervention, the ATVV intervention.” (pg. 169). She gives no citation for the report that she is referring to. PT, commentary, elusive reference to development, KC + maternal talking.

White-Traut R, Wink T, Minehart T, Holditch-Davis D.(2012). Frequency of Premature Infant Engagement and Disengagement Behaviors During Two Maternally Administered Interventions. Newborn Infant Nurs Rev. 2012 Sep;12(3):124-131. Although sensitive maternal behaviors improve later quality of mother-infant interaction and subsequently infant development, little is known regarding how an intervention might promote early premature infant social interactive behavior. This study compared the frequency of premature infant engagement and disengagement behaviors during two maternally administered interventions, the multisensory auditory, tactile, visual and vestibular intervention (ATVV) and kangaroo care (KC) for 26 infants between 31 and 46 weeks PMA. The ATVV intervention elicited more disengagement (M = 24 vs. 12, p = .0003), trended toward more engagement (M = 21 vs. 15.7, p = .06) and more potent engagement (M = 24 vs. 12, p = .0003), subtle disengagement (M = 25 vs. 11.9, p < .0001), and potent disengagement (M = 22.9 vs. 14, p = .006) behaviors than did KC. The ATVV intervention may be an intervention to promote the infant's learning how to regulate engagement and disengagement behaviors, but the most common finding is that ATVV (massage) created more disengagement behaviors than KMC. PT, descriptive comparative study, interaction, massage.

Instituto Materno Infantíl en Bogota, Colombia in 1978. Mortality was high among low birth weight infants when hospital care was attempted. Neonatal intensive care was virtually nonexistent, and nosocomial infection was common. The essentials of the kangaroo mother program were: (a) educating and motivating the mother as the baby’s main resource; (b) discharge home regardless of weight as early as possible to minimize nosocomial infection; (c) exclusive breast-feeding; (d) encouraging bonding and keeping the baby warm by skin-to-skin contact inside the mother’s clothes; and (e) vertical position between the mother’s breasts to minimize reflux and aspiration. PT, Review, BF, Wgt gain, Mortality, growth. See commentary on this article in same issue page 804-810. Descriptive report, PT, mortality.

Whitelaw, A., & Sleath, K. (1985). Myth of the marsupial mother: Home care of very low birth weight babies in Bogota, Colombia. Lancet 1 (8439)May 25, 1206-1208. Descriptive report of how statistics were incorrectly calculated and thus, report a higher than actual reduction in mortality. This paper did much damage as many South American countries then abandoned KMC because they did not want to be associated with “bogus” science. Descriptive report, PT, mortality.
Wiberg B, Humble K, & De Chateau P. (1989). Long-term effect on mother-infant behaviour of extra contact during the first hour postpartum. V. Follow-up at three years. Scand J Soc Med 17(2), 181-191. Primips who had 15-20 minutes of KC and sucking contact during first hour after delivery behaved differently, had longer duration of BF, expressed different opinions on child rearing practices at 36 hrs, 3, 12, mos as compared to controls. AT three years control mothers reported that time with infant right after birth was insufficient. KC infants had earlier continence during the day, earlier stubbornness than controls, higher catecholamines (epinephrine, norepinephrine) levels in urine, and moms smiled/laughed more, were more encouraging, instructing than control moms. Articulated conflicts were more common in KC group and regardless of type of conflict, more conflicts were resolved in the KC group. Study differences were more pronounced for boy-mother pairs than girl-mother pairs. Denver Dev Screen was same in both groups.

Fullterm, RCT, KCBF, Development, Early KC, Maternal behavior, Interaction, Catecholamines, Stress, cortisol

Wichaidit W, Alam MU, Halder AK, Unicom RB, Hamer DH, Ram PK. (2016-June). Availability and Quality of Emergency Obstetric and Newborn Care in Bangladesh. Am J Tropical Medicine and Hygiene. pii: 15-0350. [Epub ahead of print] Bangladesh's maternal mortality and neonatal mortality remain unacceptably high. We assessed the availability and quality of emergency obstetric care (EmOC) and emergency newborn care (EmNC) services at health facilities in Bangladesh. We randomly sampled 50 rural villages and 50 urban neighborhoods throughout Bangladesh and interviewed the director of eight and nine health facilities nearest to each sampled area. We categorized health facilities into different quality levels (high, moderate, low, and substandard) based on staffing, availability of a phone or ambulance, and signal functions (six categories for EmOC and four categories for EmNC). We interviewed the directors of 875 health facilities. Approximately 28% of health facilities did not have a skilled birth attendant on call 24 hours per day. The least commonly performed EmOC signal function was administration of anesthetics (67%). The quality of EmOC services was high in 33% and moderate in 52% of the health facilities. The least common EmNC signal function was kangaroo mother care (7%). The quality of EmNC was high in 2% and moderate in 33% of the health facilities. Approximately one-third of health facilities lack 24-hour availability of skilled birth attendants, increasing the risk of peripartum complications. Most health facilities offered moderate to high quality services for EmOC and low to substandard quality for EmNC. PT, FT, Evaluative descriptive, infant mortality, little KC being done. Not on charts 7/8/16; new to biblio study

Wickham S. (2016-Feb). The ALTE mysteries: who's to blame? Pract Midwife. 2016 Feb;19(2):35-6.In this column, Sara Wickham takes a sideways look at issues relevant to midwives, students, women and families, inviting us to sit down with a cup of tea and ponder what we think we know. A recent paper on apparent life-threatening events (ALTEs) in newborn babies brought to mind an experience from practice, the cause of which remains a mystery. As many similar events are unexplained, is it acceptable that there is a tendency in the literature to claim that skin-to-skinc contact and breastfeeding are risk factors for ALTEs? FT, ALTE, SUPC, BF, not on charts 4/3/2016 new to biblio study

Widstrom A-M, Lilja G, Aaltoimajais P, Dahllof A, Lintual M, & Nissen E. (2011). Newborn behaviour to locate the breast when skin-to-skin: a possible method for enabling early self-regulation. Acta Paediatrica 100 (1), 79-85. DOI:10.1111/j.1651-2227.2010.01983.x. Descriptive study of the behavioural sequence that begins immediately after birth and terminates with grasping the nipple, sucking, and then falling asleep. 28 Full term infants videotaped immediately after birth. When birth crying stops, babies show a short period of relaxation, then successively become alert. They go through “awakening phase”, and “active phase” with movements of limbs, rooting activity and looking at the mother’s face, a “crawling phase” with soliciting sounds, a “familiarization phase” with licking of the areola, and a “sucking phase” and last a “sleeping phase.” Five factors related to time spent to locate the breast are “l. more number of looks at the breast 10-20 minutes after birth (p<0.0001), exposure to meperidine (p=0.0006). Early start of crawling (p=0.004), increased number of ‘soliciting sounds’ (p=0.0022) and performing hand-breast-mouth movements (p=0.0104) related to shorter time. Inborn breastfeeding reflexes are depressed at birth, possibly because of depressed sensory system. When the infant is given the option to peacefully go through the nine behavioural phases (1. Birth Cry (intense crying just after birth). 2 Relaxation (infant resting/recovering. No activity of mouth, head, arms, legs or body), 3 Awakening (begins to show signs of activity. Small thrust of head, up, down to side. Small movements of limbs and shoulders). 4 Activity (moves limb, head, is more determined in movements, rooting, pushing with limbs without shifting body). 5 Crawling (‘pushing’ that results in shifting body). 6. Resting (infant rests with some activity, such as mouth activity, sucks on hands). 7 Familiarization (infant has reached areola/nipple with mouth positioned to brush and lick areola/nipple), 8. Suckling (Nipple in mouth and sucks), 9. Sleeping (baby closes his eyes) when skin-to-skin with its mother - early optimal self-regulation occurs. This article is accompanied by the video: Skin to Skin in the First Hour After Birth: Practical Advice for Staff after Vaginal and Ceseureen Birth which is a 40 minute video under the video section of this bab and it is by “The Healthy Children Project.” Full term, descriptive, breast crawl, BF, Birth KC, 9 steps. (NOT ON CHARTS AS OF 1/21/2011)


infants were randomized into routine gastric suctioning after birth or no suctioning. Prefeeding behav was watched after dried, nude infant placed on maternal abdomen. 15 minutes after placement and inactivity, infant started rooting and spontaneous sucking and these reached maximal intensity at 45 minutes. First hand to mouth activity at mean of 34 minutes (R=32-36 minutes). At mean of 55+ minutes infant spontaneously found nipple and started to suckle. This is an organized feeding behavior and it unfolds in predictable way during first hours of life. Pictures of how infants spontaneously move up to breast to feed, saying baby has crawled by itself towards the nipple. 20 or 21 infants crawled to breast and spontaneously latched, one needed help latching on, and all moved toward the breast. Gastric suctioning disrupts this natural behavior. **FULL TERM. RCT KC is part of routine care, birth KC, breast crawl, search behavior. Newborn observations of behavior This was first BREAST CRAWL REPORT.**  

Widstrom, A-M, Wahlerg V, Matthiesen A-S, Enroth P, Uvnas-Moberg K. Werner S, & Winberg J. (1990). Short term effects of early sucking and touch of the nipple on maternal behavior. *Early Human Development, 21*, 153-163. All fullterm infants placed in KC immediately after birth and stayed there for 45 min. One grp was placed at breast for KCBF (Kangaroo Care and Breastfeeding) (n=32) within 30 minutes of delivery, other grp put in KC without being put to breast and then fed on postpartum ward (n=25). Only 6/32 sucked within 30 min of delivery at breast, but all infants who had touched or licked areola/nipple stayed with mother more, moms talked to them more, and maternal gasrin levels were lower before and after breastfeeding. Gastrin levels correlated with time the infant spent in the nursery rather than in KC: gastrin was higher the more time infant was left in nursery. Gastrin levels are controlled by vagal nerve. Thus, KC affects vagal nerve activity (maternal neuroendocrine functions) and therefore, maternal digestion and metabolism may also be affected by KC in early postpartum period. No change in prolactin levels before and after BF between groups. **RCT, fullterm, KBF, BF SEARCH BEHAVIOR, maternal behavior, gastrin, prolactin, breast crawl, birth KC; maternal metabolism, endocrine hormones, vagal nerve**

Wieland C, Bauer K, Bisson S, & Versmold H. (1995). Skin-to-skin care with 38 preterm infants. *Monatsschrift für Kinderheilkunde, 143*(11), 1099-1103. 28 weeks gestation, mean Birth weight of 1110 grams, who got 30-60 minutes of KC just once on 10th day of life in pretest-pretest postest study of temperature, HR, SaO2. HR did not change from incubator to KC. RR did not change over first 30 minutes of KC session. **Quasi-Exp, PT, HR, RR, SaO2, Temp, micropreemie Not on charts yet. Get this.**

Wiger, H., Hellstrom, A-L, Berg, M. (2008). Conditions for parents’ participating in the care of their child in neonatal intensive care- a field study. *Neonatal Intensive Care 21*(3): 30-36 Aim of this observation and interview study was to learn what facilitates and what obstructs parent participation in their child’s care in the NICU. Management and staff had good ambitions to promote parent participation, but the care, including the conditions for parental participation, was driven by terms of the staff, routines focusing on medical- technical care and environment and budgetary constraints instead of the value of parent participation. This is an excellent article.  


Wikipedia (2013). Kangaroo Care. Available from [http://en.wikipedia.org/wiki/Kangaroo_care#Eligibility_criteria](http://en.wikipedia.org/wiki/Kangaroo_care#Eligibility_criteria). This is a brief (3 page) review of description, criteria (should be premature and stable), and some benefits (breastfeeding) and a picture (mother is lying too flat) and they encourage people to edit it and update it. The United States Institute for KC should be added to the site. **DELETE THIS OUT and PUT ON CHARTS 4/12/2012**


Wilson????20008

Wimmer-Puchinger B, & Nagel M. (1982). The importance of attitudes during pregnancy and early mother-child contact for breast-feeding behavior: An empirical study. In Phyll D, Stauber M (eds.) *Advances in psychosomatic obstetrics and gynaecology*. Springer Verlag, Berlin, pp. 482-487. In Austria, Intrapup mothers. KC got 15 minutes of KC at 1-2 minutes postbirth (n= unspecified, a for control unspecified, but Ne=95). Control babies were cleaned, dressed and held by mom. Third group babies cleaned, dressed, put to breast for 15 minutes immediately postpartum. Early KC groups resulted in BF for a mean of 98 days vs 36 days in control group. **RCT, Fullterm, BF, Birth KC**


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baby’s needs, initiation and maintenance of breastfeeding, energy economy and surge in maternal gastrointestinal homes. Review.full term, Birth KC, breastfeeding, co-regulation, synchrony.


Winch PD, Staudt AM, Sebastian R, Corridore M, Tumin D, Simsic J, Galantowicz M, Naguib A, Tobias JD. (2016-May). Learning From Experience: Improving Early Tracheal Extubation Success After Congenital Cardiac Surgery. Pediatr Crit Care Med. [Epub ahead of print].The many advantages of early tracheal extubation following congenital cardiac surgery in young infants and children are now widely recognized. Benefits include avoiding the morbidity associated with prolonged intubation and the consequences of sedation and positive pressure ventilation in the setting of altered cardiopulmonary physiology. Our practice of tracheal extubation of young infants in the operating room following cardiac surgery has evolved and new challenges in the arena of postoperative sedation and pain management have appeared. We conducted a review our institutional outcomes associated with early tracheal extubation following congenital cardiac surgery.Inclusion criteria included all children less than 1 year old who underwent congenital cardiac surgery between October 1, 2010, and October 24, 2013. A total of 416 patients less than 1 year old were included. Of the 416 patients, 234 underwent tracheal extubation in the operating room (56%) with 25 requiring reintubation (10.7%), either immediately or following admission to the cardiothoracic ICU. Of the 25 patients extubated in the operating room who required reintubation, 22 failed within 24 hours of cardiothoracic ICU admission; 10 failures were directly related to narcotic doses that resulted in respiratory depression. As a result of this review, we have instituted changes in our cardiothoracic ICU postoperative care plans. We have developed a neonatal delirium score, and have adopted the “Kangaroo Care” approach that was first popularized in neonatal ICUs. This provision allows for the early parental holding of infants following admission to the cardiothoracic ICU and allows for appropriately selected parents to sleep in the same beds alongside their postoperative children. PT, FT, descriptive evaluative, congenital heart disease, intubation. Not on charts 5-29. New to biblio study.


Wise J. (1998). Hypothermia improves with skin-to-skin care. British Medical Journal, 317, p. 967. This refers to Christenson & Bhat et al, Lancet 1998 article vol. 352, p. 1115 of the study in Zambia of 80 low risk, hypothermic infants who were given KC. After 4 hours, 90% were in neutral thermal zone for temperature vs. only 60% who were in an incubator in neutral thermal zone. REVIEW, Preterm, temperature, rewarming

Wood, J. (2012). ‘Kangaroo Care’ positively impacts preemies’ brain development. PsychCentral Sept. 22, 2012. Available from psychcentral.com/news/2012/08/22/kangaroocare-positively-impacts-preemies-brain-development/45006.html This is a review of the Schneider et al, 2012 RCT of Natalie Charpak’s infants who were followed up with transcranial magnetic stimulation testing at age 16 and found advanced motor capabilities at 16 in the KC group compared to the control group. She says “KC may have lasting positive benefits on brain development, according to a new study. Researchers at Universite Laval found that premature infants who benefited from this technique had better brain functioning in adolescence than premature infants placed in incubators. Earlier research showed that infants born before the 43nd week of pregnancy experienced more cognitive and behavioral problems during childhood and adolescence. Brain functions of 18 preterm infants in incubators were compared to 21 held in KC for an average of 29 days, and nine full-term infants. They used transcranial magnetic stimulation to activate brain cells in targeted areas, namely the primary motor cortex that controls muscles. By measuring muscle response to stimulation, they were able to assess brain functions such as the level of brain excitability and inhibition, cell synchronization, neural conduction speed, and coordination between the two cerebral hemispheres. They found that all brain function of the adolescent Kangaroo group were comparable to those of the full term group; premature infants placed in incubators significantly deviated from the other two groups 15 years after their birth. Thanks to Kangaroo Mother Care, infants benefitted from nervous system stimulation – the sound of the parent’s heart and the warmth of their body, during a critical period for the development of neural connections between the cerebral hemispheres. This promoted immediate and future brain development.” said Dr. Cyril Schneider, a neurophysiologist. Dr., Tessier added that “infants in incubators also receive a lot of stimulation, but often the stimulation is too intense and stressful for the brain capacity of the very premature. The Kangaroo Mother Care reproduces the natural conditions of the intrauterine environment in which the infants would have developed had they not been born premature. These beneficial effects on the brain are in evidence at least until adolescence and perhaps beyond.” PT, review, Critical period, motor development, brain connectivity PT vs FT comparisons.


KCBib 2018
World Health Organization, (1996). Care in Normal Birth: A Practical Guideline. WHO, Maternal Health and Safe Motherhood Programme, Division of Family Health, Geneva. This is a document that recommends several practices that would achieve healthy mother and child using the least number of interventions that are compatible with safety, such as monitoring labor progress with a partogram (Fieldman Curve), intermittent auscultation, provide emotional information to the mother, be a sustaining human presence, allow freedom of position and movement, respect woman’s choice of companions, include mother in decision-making during labor and use of non-pharmacological methods for pain relief. The report says that as of 1996 and when these recommendations are not followed, birth is seen a medical emergency rather than a normal physiological process with as few interventions as possible in the birth process. When the recommendations are not followed, negative birth experiences occur (pg. 2994). It also says and provides evidence supporting: we must change the belief that technology equals safety and the best practice. The recommendations are grouped according to the following: on admission, first stage, second stage, after the baby is born. In the “after the baby is born” category, the very first recommendation is “The baby is placed skin-to-skin” (p. 2996.) The third one is “I was helped to breastfeed within one hour” and another is “I was asked about my experience of birth”. FT, guidelines, BIRTH KC, BF, maternal feelings, technology not always good. See also the Sandin-Bojo articles which tested how well Sweden has met these recommendations for 15 years.

World Health Organization, (1997). Thermal protection of the newborn: a practical guide. Geneva, 1997. This is a review that is a practical guide on how to keep full term and preterm infants warm right after birth. Kangaroo is part of the “The Warm Chain” that WHO promotes because it helps promote breastfeeding and prevents hypothermia and hypoglycemia. Kangaroo Care is the 3rd procedure in the warm chain. “The Warm Chain is a set of ten interlinked procedures carried out at birth and during the following hours and days which will minimize the likelihood of hypothermia in all newborns (WHO, 1997, pg. 8). Skin-to-skin contact is the third procedure in the warm chain. “Skin-to-skin contact is an effective method of preventing heat loss in newborns, whether they be full term or preterm babies. The mother’s chest or abdomen is the ideal surface to receive the newborn... It can be kept in skin-to-skin contact with the mother while she is being attended to, during transport to the postnatal ward, and for the first hours after birth, WHO, 1997, p. 9).” See also what US Breastfeeding Committee 2013 has to say about the WARM CHAIN. FT, PT, Guidelines, temperature, Postpartum KC, transfer/transport to PP NOT ON CHARTS 6/20/2013

World Health Organization (WHO), (1998). Evidence for the 10 steps to successful breastfeeding (revised edition) WHO/CHD/98.9). Geneva, Switzerland: Author. Presents all the evidence for each step, including Step 4. Also states that when a mother and her baby are skin-to-skin, the baby is exposed to the normal bacteria on the mother’s skin, which may protect the baby from becoming sick due to harmful germs. Fullterm, breastfeeding, infection. Clinical guideline, temperature, FT, Birth KC, hypothermia, maternal-neonatal thermal synchrony (Not on charts as 6/20/2013).

World Health Organization. (2003). Kangaroo mother care: a practical guide. Geneva, Switzerland: WHO. http://apps.who.int/iris/bitstream/10665/42587/1/924159-351.pdf This is the original practical guide book on Kangaroo Mother Care produced by WHO and it is very easy to read and is targeted, it seems, to community health workers. This is the same one that is listed below as WHO Dept. of Reproductive Health and Research.


World Health Organization. (2010). Packages of Interventions for Family Planning, Safe Abortion Care, Maternal, Newborn, and Child Health. Pp. 1-17. Available from WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland. Tel: +44 22 791 3264, fax: +44 22 791-4857; email: bookorder@who.int. In the newborn care chart, under the section Interventions at Home/COMMUNITY level, the 5th one is “Care of a small baby without breathinh/irs/10665/183037/1/9/24159-351.pdf” This is the original practical guide book on Kangaroo Mother Care at birth is one of the essential care of newborn components. Guidelines, FT, PT, Essential care of newborn. See also Partnership for Maternal, newborn, and child health, 2011 pub on this bib.

Schord “ Place baby on abdomen in mother’s arms in skin-to-skin” (pg. d11). “Keep the baby warm in skin-to-skin care with mother” (pg. d19). “Monitor mother at 1, 3, and 4 hours and keep mother and infant together” (Pq.?). “Never leave mother and infant alone” (pg. ). FT, guidelines, recommendations, birth KC, temperature, monitoring, surveillance, SUPC not on charts


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Kangaroo mother care (KMC) is care of preterm infants carried skin-to-skin with the mother. Its key features include early, continuous and prolonged skin-to-skin contact between the mother and the baby, and exclusive breastfeeding (ideally) or feeding with breastmilk. Evidence for this recommendation was based on facility-based studies, mainly from low- and middle-income countries. There is insufficient evidence to make a recommendation to provide KMC to unstable neonates.

Intermittent Kangaroo mother care (KMC) versus conventional care (Strong recommendation based on moderate-quality evidence)

RECOMMENDATION 7.0
Kangaroo mother care is recommended for the routine care of newborns weighing 2000 g or less at birth, and should be initiated in health-care facilities as soon as the newborns are clinically stable. (Strong recommendation based on moderate-quality evidence). Please note that Kristoffersen et al. 2016 article misquotes this and says that WHO recommends KMC immediately after birth to prevent hypothermia.) REMARKS:

- The definition of Kangaroo mother care (KMC) is care of preterm infants carried skin-to-skin with the mother. Its key features include early, continuous and prolonged skin-to-skin contact between the mother and the baby, and exclusive breastfeeding (ideally) or feeding with breastmilk.
- Evidence for this recommendation was based on facility-based studies, mainly from low- and middle-income countries.
- There is insufficient evidence to make a recommendation to provide KMC to unstable neonates.
- Health system issues relating to KMC — such as health system requirements, human resources and their competencies, criteria for discharge and follow-up — should be included in the manual or guidance for implementation.
- Given that there is currently no evidence suggesting the need for any change in the recommendation, the existing criteria for discharge should continue to be applied.

Summary of evidence
Kangaroo mother care (KMC) versus conventional care for routine care of stable newborns (EB Table 7a)
Evidence on the effectiveness of KMC was extracted from an updated Cochrane review (13, 16). The review included 18 trials that evaluated the effects of KMC versus conventional care on neonatal mortality and morbidity outcomes. Thirteen of these trials were conducted in low- and middle-income countries (LMICs) while five were conducted in high-income countries (HICs). Five studies included babies born following multiple pregnancies (in addition to singletons) while six trials provided KMC only to babies weighing < 1500 g at birth. The review examined the effects of KMC practiced either intermittently or continuously with a view to answering specific questions: whether KMC can be started early before stabilization of the baby; for what minimum duration per day KMC should be practiced; at what level of care and what resources are needed for effective KMC; what criteria have been used for discharge of babies initiated on KMC in the facility; and what is the optimum frequency of follow-up contact after discharge.

Neonatal death: Compared with conventional care, KMC was associated with a 40% lower risk of mortality at discharge or 40–41 weeks postmenstrual age (RR 0.60, 95% CI 0.39–0.92; 8 studies, 1736 babies). A comparable result was obtained when analysis was limited to the seven trials conducted in LMICs. In these seven trials, KMC was associated with a 43% reduction in mortality at discharge or 40–41 weeks postmenstrual age, compared to conventional care (RR 0.57, 95% CI 0.37–0.89). The only study from HICs that evaluated this outcome found no protective effect for KMC compared with conventional care.

KMC, as compared with conventional care, was also associated with a 33% lower risk of all-cause mortality for infants at the latest follow-up (RR 0.67; 95% CI 0.48–0.95; 11 studies, 2167 babies). Nine studies conducted in LMICs showed that KMC resulted in a 35% reduction in the risk of mortality at the latest follow-up (RR 0.65, 95% CI 0.45–0.95; 2036 babies). In the two trials from HICs (with 131 preterm newborns), the evidence of an effect on mortality was inconclusive, with confidence intervals consistent with a possible 71% reduction as well as over five-fold higher risk of mortality at the latest follow-up (RR 1.25, 95% CI 0.29–5.42).

Severe neonatal morbidity: Compared with conventional care, KMC was associated with a 44% reduction in the risk of severe infection at the latest follow-up (RR 0.56, 95% CI 0.40–0.78; 7 studies, 1343 babies). The intervention was also associated with a 55% lower risk of nosocomial infection at the time of discharge or at 40–41 weeks postmenstrual age (RR 0.45, 95% CI 0.27–0.76; 3 studies, 913 babies). All the studies that reported on the risk of hypothermia and hyperthermia implemented intermittent rather than continuous KMC. Six studies (with 698 babies) showed that KMC was associated with a 66% lower risk of hypothermia at the time of discharge or at 40–41 weeks postmenstrual age (RR 0.34, 95% CI 0.17–0.67). There was inconclusive evidence on the risk of hyperthermia at the time of discharge or at 40–41 weeks postmenstrual age. The point estimate of data from two studies also suggested a possible reduction in the risk of readmission at the latest follow-up for babies that were provided with KMC (RR 0.60, 95% CI 0.34–1.06).

RECOMMENDATION 7.1
Newborns weighing 2000 g or less at birth should be provided as close to continuous Kangaroo mother care as possible. (Strong recommendation based on moderate-quality evidence)

RECOMMENDATION 7.2
Interruited Kangaroo mother care, rather than conventional care, is recommended for newborns weighing 2000 g or less at birth, if continuous Kangaroo mother care is not possible. (Strong recommendation based on moderate-quality evidence)

Summary of evidence
Continuous or intermittent Kangaroo mother care (KMC) versus conventional care
The Cochrane review summarized data on effectiveness by subgroups of studies that had used either continuous or intermittent KMC (13). Continuous KMC is defined as the practice of skin-to-skin care continuously throughout the day without breaking the contact between mother and baby, while intermittent KMC is the practice of skin-to-skin care alternated with the use of either a radiant warmer or an incubator care for the baby.

Continuous KMC practice versus conventional care (EB Table 7b)
Five trials evaluated the effect of continuous KMC practice on neonatal mortality or severe neonatal morbidity.

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Neonatal death: Continuous KMC was associated with a 40% lower risk of mortality at the time of discharge or at 40–41 weeks postmenstrual age compared to conventional care (RR 0.60, 95% CI 0.39–0.92; 3 studies, 1117 babies). Continuous KMC was also associated with a 33% reduction in the risk of mortality at the latest follow-up contact, compared with conventional care (RR 0.67, 95% CI 0.46–0.98; 4 studies, 1384 babies).

Severe neonatal morbidity: Only one trial (663 babies) reported the effects of continuous KMC on severe infection at the latest follow-up and the finding was inconclusive (RR 0.69, 95% CI 0.43–1.12). One study reported on the risk of nosocomial infections until the time of discharge or 40–41 weeks postmenstrual age: there was a 51% lower risk with continuous KMC compared to conventional care (RR 0.49, 95% CI 0.25–0.93). The evidence of effectiveness of continuous KMC in terms of reducing the risk of readmission was inconclusive (RR 0.60, 95% CI 0.34–1.06).

Intermittent KMC practice versus conventional care (EB Table 7c)

Thirteen of the 18 identified trials in the main review implemented intermittent KMC.

Neonatal death: From five studies involving 619 babies, there was inconclusive evidence regarding the benefit of intermittent KMC for reducing mortality up to the time of discharge or 40–41 weeks postmenstrual age, compared with conventional care (RR 0.59, 95% CI 0.19–1.81). Seven trials with 783 preterm babies also showed inconclusive evidence of reduction in the risk of mortality at the latest follow-up (RR 0.68, 95% CI 0.26–1.77).

Severe neonatal morbidity: All the studies that reported the effects of KMC on hypothermia and hyperthermia used intermittent KMC. There was a 66% lower risk of hypothermia at the time of discharge or at 40–41 weeks postmenstrual age (RR 0.34, 95% CI 0.17–0.67), but no significant reduction in the risk of hyperthermia (RR 0.79, 95% CI 0.59–1.05). Compared with conventional care, intermittent KMC was associated with a 55% lower risk of severe infection at the latest follow-up visit (RR 0.45, 95% CI 0.28–0.73; 6 studies, 680 babies) and 61% lower risk of nosocomial infections at the time of discharge or at 40–41 weeks postmenstrual age (RR 0.39, 95% CI 0.16–0.67; 2 studies, 250 infants).

RECOMMENDATION 7.3

Unstable newborns weighing 2000 g or less at birth, or stable newborns weighing less than 2000 g who cannot be given Kangaroo mother care, should be cared for in a thermo-neutral environment either under radiant warmers or in incubators. (Strong recommendation based on very low-quality evidence). Then the chapter goes on to provide the evidence for either of these devices being adequate to thermoregulate the newborn. Recommendations, guidelines. Temp, not on charts, nor recommendation chart asof 1/8/2016.

World Health Organization, actually the authors are listed as “Investigators of WHO LBW Feeding Study Group, Delhi, India. (2015-Oct.) World Health Organization Guidelines for Feeding Low Birth Weight Infants: Effects of Implementation in First Referral Level Health Facilities in India. Indian J Pediatr. 2015 Oct 12. [Epub ahead of print] To evaluate the effect of implementing World Health Organization (WHO) low birth weight (LBW) feeding guidelines in First Referral Level health facilities in India. This was a before-and-after study conducted at two First Referral Level health facilities in India. In the pre and post implementation periods of 4 mo each, the authors compared knowledge and skills of health care providers (HCPs) with regard to feeding of LBW infants using multiple choice and short answer questions and objective structured clinical examinations. The authors also enrolled in the two periods, separate cohorts of LBW infants along with their mothers at birth, and followed them till 2 wk of age or death/discharge. Quality of care received by the infants was assessed at 24-48 h and at discharge/2 wk using pre-determined parameters based on which quality scores were assigned by experienced neonatologists. Knowledge and skills of the mothers were also assessed at these time points through semi structured questionnaires and observation checklists. Guidelines were implemented using specially prepared training material through seminars, workshops, refresher courses and on-job support. Overall knowledge (62 ± 16 vs. 75 ± 15, n = 55; p < 0.01) and skill scores (298 ± 37 vs. 348 ± 52, p < 0.05) of HCPs improved. Correct knowledge increased among the mothers at the time of discharge (7.1% vs. 63.4%; p < 0.01). However, there was no improvement in maternal feeding skills at either 24-48 h or at discharge and key feeding practices remained unchanged. Though there was increased uptake of kangaroo mother care (0 vs. 21.9%; p < 0.01) and alternate methods of feeding (15.9% vs. 31.7%; p = 0.03) by discharge/14 d, there was no significant improvement in overall quality of care of LBW infants (4.8% vs. 6.7%; p = 0.55). For the Guidelines to be fairly effective, additional efforts on part of HCPs/additional staff and efforts to promote generic early feeding practices in addition to LBW focused guidelines would be required. PT. Descriptive Evaluative study, teaching/knowledge of KC and BF NICU. Guidelines/recommendations) Susie thinks the lack of increases in better feeding practices may have been due to lack of skills teaching. Not on Chart 1/12/2016 (think of Aniko’s and Wedad’s studies).

World Health Organization, Dept. of Reproductive Health and Research, (2003). Kangaroo Mother Care: A Practical Guide. Geneva, Switzerland: World Health Organization, Dept of Reproductive Health and Research. 1–48. This is a practical book for KC’s use with low birthweight and premature infants and is an outcome of the 1996 Trieste WHO Consensus Conference on Kangaroo Care. Contents cover the nature of KC, evidence supporting KC’s use with this population, requirements for safe KC (Setting, policy, staffing, mother’s willingness, equipment and supplied, and how to feed babies in KC), and practice guide (when to start, how to start, the KC position, length and duration of KC, KC at home). On page 2 it states “Almost two decades of implementation and research have made it clear that KMC is more than alternative to incubator care. It has been shown to be effective for thermal control, breastfeeding and bonding in all newborn infants irrespective of setting, weight, gestational age, and clinical condition.”: ISBN: 92 4 159035 1

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WHO/UNICEF. (1992). Baby Friendly Hospital Initiative Part II: Hospital level implementation. Geneva, Switzerland, WHO 1992. This initiative says that mothers should be helped to initiate breastfeeding within 30 minutes of birth. SEE ANNOTATED CITATION UNDER WORLD HEALTH ORGANIZATION below

World Health Organization (WHO), UNICEF, & Wellstart International. (2009). Baby-Friendly Hospital Initiative. Revised, Updated and Expanded for Integrated Care. Geneva, Switzerland. p. 1-237. Available from WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland. Email: bookorders@who.int or on the WHO website (free). This is the course for being Baby Friendly that includes the grading criteria. In Section 1, Background and Implementation many statements are made about KC. On page 33, under Step3 to Inform all pregnant women about the benefits and management of breastfeeding, it states “The antenatal discussion covers the importance of breastfeeding, the importance of immediate and sustained skin-to-skin contact, early initiation of breastfeeding,…” Out of the randomly selected pregnant women in their third trimester who have come for at least two antenatal visits: at least 70% are able to adequately describe what was discussed about two of the following topics: importance of skin-to-skin contact, breastfeeding, newborn positioning, and risks of supplements while breastfeeding in the first 6 months.”

STEP 4. Help mothers initiate breastfeeding within a half-hour of birth. This Step is now interpreted as: Place babies in skin-to-skin contact with their mothers immediately following birth for at least an hour. Encourage mothers to recognize when their babies are ready to breastfeed and offer help if needed. The Global Criteria for meeting Step Four are: Out of the randomly selected mothers with vaginal births or caesarean sections without general anaesthesia in the maternity wards: At least 80% confirm that their babies were placed in skin-to-skin contact with them immediately or within five minutes after birth and that this contact continued without separation for an hour or more, unless there were medically justifiable reasons. (Note: It is preferable that babies be left even longer than an hour, if feasible, as they may take longer than 60 minutes to breastfeed). At least 80% also confirm that they were encouraged to look for signs for when their babies were ready to breastfeed during this first period of contact and offered help, if needed. (Note: The baby should not be forced to breastfeed but, rather, supported to do so when ready. If desired, the staff can assist the mother with placing her baby onto her breast and latch when ready). If any of the randomly selected mothers have had caesarean deliveries with general anaesthesia, at least 50% should report that their babies were placed in skin-to-skin contact with them as soon as the mothers were responsive and alert, with the same procedures followed. At least 80% of the randomly selected mothers with babies in special care report that they have had a chance to hold their babies skin-to-skin or, if not, the staff could provide unjustifiable reasons why they could not. Observations of vaginal deliveries, if necessary to confirm adherence to Step 4, show that in at least 75% of the cases babies are placed with their mothers and held skin-to-skin within five minutes after birth for at least 60 minutes without separation, and that the mothers are shown how to recognize the signs that their babies are ready to breastfeed and offered help, or there are justified reasons for not following these procedures.” (pg. 34). FT, PT, guidelines, breastfeeding, birth KC

Not on charts as of 7/2009.

World Health Organization/UNICEF. (1989). Protecting, promoting, and supporting breastfeeding: the special role of maternity services. A joint World Health Organization/UNICEF statement. Geneva, Switzerland: World Health Organization. This is the original Baby Friendly Hospital Initiative, the way it was written for the world (the United States amended the statements [deleting skin-to-skin care] to make it easier to achieve in the U.S. In 1999 the International Lactation Consultants Association [ILCA] adopted the revised steps that did not include skin-to-skin contact- see ILCA 1999 reference). The original document states “…80% of mothers in the maternity ward who have had normal vaginal delivery should confirm that within half-hour of birth they were given their babies to hold with skin contact for at least 30 minutes, and offered help by staff to initiate breastfeeding. At least 50% of mothers who have had caesarean deliveries should confirm that within a half hour of being able to respond, they were given their babies to hold with skin contact.” After producing this document in 1989, Baby Friendly started to be globally initiated in 1992. Ten items were in the BFHI, and item #4 pertains to KC. Relates recommendation the mothers have skin-to-skin contact and start to breastfeed them less than 30 minutes after birth. Review, birth KC, VEKC, BF, C/S, Guidelines

World Health Organization/UNICEF. (1992). Global criteria for the Baby Friendly Hospital Initiative. Geneva & New York: WHO/UNICEF. Spells out all baby friendly criteria, specifically #4 is about KC: “…80% of mothers in the maternity ward who have had normal vaginal delivery should confirm that within half-hour of birth they were given their babies to hold with skin contact and for at least 30 minutes, and offered help by staff to initiate breastfeeding. At least 50% of mothers who have had caesarean deliveries should confirm that within a half hour of being able to respond, they were given their babies to hold with skin contact.” See also the UNICEF 1998 and

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Worku H, & Kassie A. (2005). Kangaroo mother care: a randomized controlled trial on effectiveness of early kangaroo mother care for the low birthweight infants in Addis Ababa, Ethiopia. Journal Tropical Pediatrics, 51(2), 93-97. 62 LBW (<2000 gms, Mean birth weight of 1514 gms, mean GA =32.42 wks, 56% on IV, 34% on O2 by nasal cath) in KC; 51 (1471 gm birth weight, 31.59 wks GA, 52% on IV, 37% on O2 by nasal cath) in conventional care. Started KC at 10 hours postbirth, other group enrolled at 9.8 hours post-birth. Exit from study was at 4.6 days KC, 5.4 days control; discharge within 1st 7 days of life was 91% of KC, 88% of controls, 22.5% KC and 38% of controls died during study, majority of death occurring during first 12 hours of life. Early KMC group had significantly better survival than conventional care infants in 1st 12 hours and after. More than 95% of moms said they were happy to care for their LBW babies in KC. Further study at community level is needed. PT, 3rd world, RCT. Early KC, Community KC, length of stay, mortality, maternal feelings of KC. CPAP

Yamada J, Sinston J, Lamba J, Dickson A, McGrath PJ, & Stevens B. (2008). A review of systematic reviews on pain interventions in hospitalized infants. Pain Res Manage. 13(5): 413-420. Review of 1469 systematic reviews yielded only 11 that were high-quality reviews. KC holding was a non-pharmacologic intervention that was reviewed. More research related to single, repeated, and combined pharm + non-pharm interventions is needed. REVIEW. Pain, more research needed. NEED to get the whole thing and see more what it says about KC.

Yang SC & Chang YJ. (2006). The relationship between sleep/wake rhythm development and caregiving activities. Ho Li Za Zhu 53(4), 5-10. [Article is in Chinese]. Recognizing an infant’s sleep pattern is essential for caregivers who want to provide developmental care. This review article relates development of biologic rhythms, describes infant sleep wake states, discusses factors influencing sleep states (5 major factors are noise, light, environmental temperature, physical contact [including skin to skin or KC contact] with caregivers [including medical/noxious and comforting/non-noxious types of contact], and body position (mostly prone). Close body contact with parents is recommended as an intervention to improve infant sleep quality. (Boy, did they get that right?!!). Preterm, review, developmental care, sleep quality, sleep/wake states. Not in charts yet.


Yin Y, Wang R., Lee MM, & Yuh Y. (2000). Influence of kangaroo care and traditional nursing care on premature physiologic parameters (Chinese). Nursing Research (China), 8(3), 362-374. Observations of stable preterms 5 min before leaving incubator, 5.15, and 30 min after starting KC (30 min), and 5 min after return to incubator each day x 7 days. No diff in HR (157.7vs161.4), RR (47.6 vs. 48.9/min), SaO2 (by HP monitor)(96.2 vs 95.3%), and body temp (36.9 vs.37.0). Both seemed safe. Preterm, quasi-experimental pretest-test-posttest, HR,RR,SaO2,Temp.

Yin Y, Wang R., Lee MM, & Yuh Y. (2003). Mothers’ satisfaction: KC vs. traditional nursing care for premature babies (Chinese). J Nurs (China), 50 (2), 37-47. English abstract available: Preterms <2000 g and moms non-randomly assigned to traditional or KC care. No diff in mat satisfaction before test; both groups sig. Increased satis after 7 days of 30 min/day KC, but KC group increased satisfaction more (93.2 vs. 83.2, p<=.001). Mothers are more satisfied with KC. PT, Quasi-Exp, maternal satisfaction

Yukesel B, Bal I, Balaban O, Kocak E, Seven A, Kucur SK, Bakirci M, Keskin N. (2015-Sept.) Immediate breastfeeding and skin-to-skin contact during cesarean section decreases maternal oxidative stress, a prospective randomized case-controlled study. J Mater Fetal Neonatal Med. 28:1-22. [PubMed abstract] Immediate skin-to-skin contact (ISSC) and early breastfeeding are recommended for the wellbeing of the neonate. In this study, we aimed to evaluate the effect of ISCC and early breastfeeding on maternal oxidative stress and postoperative pain. A total of 90 patients were randomized into two groups based on the timing of skin-to-skin contact and breastfeeding. Group 1 (n=45) were provided ISCC and breastfeeding in the operating room during the cesarean section (C/S). Group 2 (n=45) breastfed their babies one hour after the C/S. As markers of oxidative stress, maternal serum levels of total antioxidant status (TAS), total oxidant status (TOS), and oxidative stress indices (OSI) were evaluated. Maternal oxytocin levels and the relation between these parameters and postoperative pain were also evaluated. The postoperative TAS levels were significantly higher, whereas TOS and OSI levels were lower in Group 1 than Group 2. Negative correlations between oxytocin level and postoperative TOS and OSI were observed, as was a positive correlation between oxytocin level and postoperative TAS. The effect of ISCC and early breastfeeding on mothers was documented for the first time in this study. Our results demonstrated ISCC and early breastfeeding during C/S reduce maternal oxidative stress. FT, RTC, Birth KC, maternal pain, maternal oxidative stress, cesarean, early KC vs one hour later KC. Not on charts 10/20/2015

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Zaichkin, J. (2011). About skin-to-skin care. A one page report of the benefits (warm, normalized breathing, better breastfeeding, bonding, etc) with some instructions about have only a diaper on the infant and that infant may tolerate it better if KC does NOT follow vital signs, diapering and feeds. There is nothing about duration of KC on this guideline for parents page that appears on http://healthychildren.org/English/ages stages/baby/preemie/Pages/About-skin-to-skin-care.aspx that is also found on the American Academy of Pediatrics Bright Future pages under the heading prematures.  Posted 5/12/2011.  PT, Review, guidelines

Zaichkin, J., & Weiner, GM. (2011). Neonatal Resuscitation Program (NRP) 2011: New Science, New Strategies. Neonatal Network. 30(1), 5-13. Many changes, mostly that one has to read manual and take exam before going for training and training will be by simulation and videoing rather than lectures because they are tired of people coming totally unprepared. The chance in relation to KC is that now it is SHOULD, rather than CAN. Pg. 10 states, “If the newborn is term, breathing, and has good muscle tone, the baby SHOULD STAY with his mother for routine care. (and the next sentence is in BOLD). This includes the vigorous infants with meconium-stained amniotic fluid. Dry and place the infant skin-to-skin with his mother, and cover with a dry blanket. Provide ongoing evaluation of breathing, heart rate, and color.” PT/FT Guidelines. Not on charts yet 2.2.2011

Zakarjia-Grkovic, I., & Burmaz, T. 2010. Effectiveness of the UNICEF/WHO 20-hour course in improving health professionals’ knowledge, practices, and attitudes to breastfeeding: before/after study of 5 maternity facilities in Croatia. Croat Medical Journal, 51(5), 396-405. The was also reported in NYC at a big meeting and it says that teaching the 5 essential care of newborn components to 3rd world country community based and hospital based health professionals is well received and increases their knowledge of breastfeeding, some of their breastfeeding practices, and their attitudes toward Breastfeeding are improved. Now it has to be applied. 3rd world, breastfeeding, birth KC, implementation, knowledge, attitudes of staff. Not on charts 2/17/2011.

Zaleta S, Miller S, & Kumar P. (2016-Feb). Unexplained Neonatal Cardiorespiratory Collapse at Five Minutes of Age. Case Reports in Pediatr. Volume 2016; Aart ID:7206572. doi: 10.1155/2016/7206572. From New Zealand. We report a case in which a term neonate suffered cardiorespiratory collapse at five minutes of age following an uncomplicated delivery and Apgar score of eight at one minute. Resting on mom’s abdomen, waiting for breast crawl. No poor positioning. Following prolonged cardiopulmonary resuscitation, the infant recovered well with no neurological deficit. Although sudden and unexpected postnatal collapse has been extensively described, this case does not fulfill its definition criteria. It provides a diagnostic challenge for clinicians and to the best of our knowledge is the first report of unexplained cardiorespiratory collapse at five minutes of age. The case serves as a timely reminder that cord gas analysis is recommended in all cases of potential fetal compromise and that Apgar scores should be used with caution as a predictor of neurological sequelae.

Zambito, S., Leash, J., Baublitz, W., Eischer, C., Shenberger, M.J., Grim, R.D. (2010). Kangaroo Care: A solution to minimize mother and baby separation. Journal of Obstetric, Gynecologic and Neonatal 39 (Supple 1), S109. Separation negatively affects maternal and newborn outcomes. At a 572 bed community teaching hospital with 3000 annual births, the first study was a pretest-posttest quasi-experimental design to educate Labor and delivery nurses about birth KC, how to do it and its benefits for term infant and they measured Implementation of Birth KC shortly after birth. They changed nursing policy by including a procedure for Birth KC, developed patient education brochures, scripted patient education encounters, and had mandatory nurse education conducted by 5 nurses. Staff education was a self-learning packet that required reading two articles about Birth KC. Learning was verified by completion of three written tests (one test for each article and one test for the policy piece). Each of the five leaders had to demonstrate Birth KC procedure to their group of staff nurses. Six weeks later, each leader met with the group to answer questions and address issues. A self-report survey was administered before and after the education. 38/44 L/D nurses participated and their age, years in nursing, years in L/D, and level of education were collected. Use of Birth KC increased after education. FT, quasi-experiment, separation, implementation study, Birth KC. NOT ON CHARTS 3/30/2012.


longer performed for the initial purpose of maintaining a small baby's body temperature in the developed countries where there are now sufficient medical equipments to keep babies warm. The objectives of kangaroo care in advanced neonatal ICUs have changed to provide benefits such as bonding and attachment, physiologic stability of newborn babies, successful breastfeeding and positive effects on infant development. Kangaroo care is not new to many neonatal nurses, but not every neonatal center is routinely practicing kangaroo care in Singapore. Inadequate nurses' knowledge and lack of guidelines on kangaroo care hinder its practice. The aim of this project was to implement kangaroo care in very low birth weight babies in a systematic and structured approach. The team followed Larrabee's The Model For Evidence-Based Practice Change, used the available evidence on kangaroo care to develop guideline that was specific and suitable for the local setting. The team organized kangaroo care road shows for nurses and parents to create and enhance awareness. Evaluation of the project was done through two audits. The audit tool consisted of correct baby positioning and nursing documentation, with a sample size of 30 episodes. The ages of the babies studied were from 24 to 34 weeks of gestation with their weight ranging from 850 to 1500 g. The compliance rate for correct baby positioning during kangaroo care was 100% for both audits. The compliance rate for nursing documentation improved from 93% in the first post-implementation audit to 96.7% in the second post-implementation audit. The systematic and structured approach in kangaroo care implementation has created awareness among nurses and led to improvements in their knowledge and practices of kangaroo care. The implementation process of kangaroo care-based Nursing Unit team members to engage in critical thinking, which ultimately benefited the babies and parents. Descriptive evaluative study, Implementation, barriers, micropreemies, Not on charts 7/8/2014.

Zhao, J., Gonzalez, F. & Mu, D. (2011). Apnea of prematurity: from cause to treatment. European Journal of Pediatrics, 170(9): 1097-1105. doi: 10.1007/s00431-011-1409-6. Physiology and pathophysiology of apnea of prematurity are discussed. “Kangaroo mother care. Kangaroo mother care, also known as skin-to-skin care for premature infants, has achieved widespread acceptance for stable infant because of the calming effects on the baby's clinical status and vital signs (Guthwala et al., 2010). However, the effect of this approach for the treatment of AOP remains controversial. A randomized controlled trial showed that infant receiving KC had fewer apnea and bradycardic events than those who did not receive Kangaroo care (Cite Ludington-Hoe et al. 2004). In a different study, researchers found that apnea and bradycardic events were increased during Kangaroo care (cite Bohnhorst et al. 2004). Recently, Heimann et al., 2010 found that the effect of kangaroo care on improvement of apnea was the same as that seen with prone positioning. The use of kangaroo care for treatment of AOP still requires further study.” (pg. 1100). Apnea of prematurity (AOP) is a common problem affecting premature infants, likely secondary to a “physiologic” immaturity of respiratory control that may be exacerbated by neonatal disease. These include altered ventilatory responses to hypoxia, hypercapnia, and altered sleep states, while the roles of gasesophagael reflux and anemia remain controversial. Standard clinical management of the obstructive subtype of AOP includes prone positioning and continuous positive nasal inspiration to prevent pharyngeal collapse and alveolar atelectasis, while methylxanthine therapy is a mainstay of treatment of central apnea by stimulating the central nervous system and respiratory muscle function. Other therapies, including kangaroo care, red blood cell transfusions, and CO2 inhalation, require further study (pg. 5 of 8).

The physiology and pathophysiology behind AOP are discussed, including the laryngeal chemoreflex and sensitivity to inhibitory neurotransmitters, as are the mechanisms by which different therapies may work and the potential long-term neurodevelopmental consequences of AOP and its treatment. Clinical Review, PT, apnea, mechanism of KC work, Chengdu china. Not on charts 2/19/2011.

Zimba E, Kinney MV, Kachale F, Waltensperger KZ, Blencowe H, Colbourn T, George J, Mwansambo C, Joshua M, Chanza H, Nyasulu D, Mtirana G, Gamache N, Kazemba A, Lawn JE; Malawi Newborn Change and Future Analysis Group. Collaborators (29) Bandia S, Blencowe H, Bul A, Chanza H, Chidzankufa G, Colbourn T, Dedza C, Gamache N, George J, Gondwe EL, Guenther T, Joshua M, Kachale F, Kazemba A, Kerber K, Kinney M, Lewycka S, Ligowe R, Makwenda C, Mijobi B, Moran A, Msukwa M, Mwansambo C, Nambiar B, Nyasulu D, Phiri T, Rashidi T, Waltensperger KZ, Zimba E. (2012). Newborn survival in Malawi: a decade of change and future implications. Health Policy Plan, July 27, supplement Suppl 3:iii88-103. Malawi is one of two low-income sub-Saharan African countries on track to meet the Millennium Development Goal (MDG 4) for child survival despite high fertility and HIV and low health worker density. With neonatal deaths becoming an increasing proportion of under-five deaths, addressing newborn survival is critical for achieving MDG 4. Compared with the 1990s, progress towards MDG 4 and 5 accelerated considerably from 2000 to 2010. Malawi's neonatal mortality rate (NMR) reduced slower than annual reductions in mortality for children 1-59 months and maternal mortality (NMR reduced 3.5% annually). Yet, the NMR reduced at greater pace than the regional and global averages. A significant increase in facility births and other health system changes, including increased human resources, likely contributed to this decline. High level attention for maternal health and associated comprehensive policy change has provided a platform for a small group of technical and programme experts to link in high impact interventions for newborn survival. The initial entry point for newborn care in Malawi was mainly through facility initiatives, such as Kangaroo Mother Care. This transitioned to an integrated and comprehensive approach at community and facility level through the Community-Based Maternal and Newborn Care package, now being implemented in 17 of 28 districts. Addressing quality gaps, especially for care at birth in facilities, and including newborn interventions in child health programmes, will be critical to the future agenda of newborn survival in Malawi. Mortality, epidemiology, Birth KC, 3rd world. Not on charts 9-12-2012. 

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Midwives’ experiences with mother-infant skin-to-skin contact after a caesarean section: ‘Fighting an uphill battle.’ Midwifery, 31(1), 215-220. doi: 10.1016/j.midw.2014.08.014. The purpose was to explore midwives’ experiences and perceptions of skin-to-skin contact between mothers and their healthy full-term infants immediately and during the first day after caesarean section. Qualitative interviews with semi-structured questions. Eight midwives at three different hospitals in Stockholm participated in the study. All participants provided care for mothers and their newborn infants after caesarean birth. Transcribed material was analysed and interpreted using qualitative content analysis. The analysis yielded the theme ‘fighting an uphill battle’. Skin-to-skin contact was considered to be important, and something that midwives strove to implement as a natural element of postnatal care. However, in daily practice, midwives experienced many obstacles to such care, such as lack of knowledge among parents and other professionals about the benefits of skin-to-skin contact, the mother’s condition after the caesarean section, and other organisational difficulties (e.g. collaboration with other professionals, lack of time).

Introducing more skin-to-skin care was a challenge for the midwives, who sometimes felt both dismissed and disappointed when they tried to communicate the benefits of this type of care. Skin-to-skin contact is not prioritized because many health care practitioners are unaware of its positive effects, and their care reflects this lack of knowledge. There is a need for education among all health care practitioners involved in caesarean procedures. Another difficulty is that many parents are unaware of the benefits of skin-to-skin contact. Maternity outpatient clinics need to inform parents about the benefits of such care, so mothers will understand the importance of skin-to-skin contact. FT, Qualitative descriptive study, Cesarean section, birth KC, barriers, lack of knowledge of benefits, implementation.

Zwemer E, Claudia I, Tieder J (2017). Update on the Evaluation and Management of Brief Resolved Unexplained Events (Previously Apparent Life-Threatening Events). Reviews on Recent Clinical Trials. 12(4):233-239. doi:10.2174/1574887112666170816150104. The thirty-year-old term ‘apparent life-threatening event’ (ALTE) is difficult to apply in clinical practice and research. The American Academy of Pediatrics now defines these events as brief resolved unexplained events (BRUEs), stratifies infants based on the risk of recurrence or of a serious underlying condition, and offers evidence-based management recommendations for infants at lower-risk. To review recent ALTE literature as it relates to BRUEs. Articles were identified by searching several clinical databases. English-language articles from January 2006 to August 2016 that address ALTEs or BRUEs were included. Significant variation exists in the evaluation and management of patients diagnosed with BRUE. Research demonstrates low utility of most diagnostic testing, including prolonged cardiorespiratory monitoring, in the well-appearing infant without an obvious etiology. Risk factors for recurrent adverse events or significant underlying pathology include young age, prematurity, and presence of multiple events. There is little evidence to provide guidance for the management of higher-risk infants. BRUE is a diagnosis of exclusion to be applied when there is no apparent etiology after performing an appropriate history and physical examination. Lower-risk infants should not undergo routine diagnostic testing and should not be admitted solely for cardiorespiratory monitoring. Higher-risk infants are more likely to benefit from diagnostic testing and admission; however, routine screening testing is unnecessary, and the history and physical should guide the clinician’s approach. Prospective research is needed to understand the incidence of BRUEs, outcomes in lower and higher-risk infants, and the utility of diagnostic testing in higher-risk infants. PT, FT, ALTE, SUPC, BRUE. Not on Charts. See also, TiederJS 2016, Kondamudi et al. 2017, Arane 2017

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Varner M. (2008). Editor’s Commentary (on Smith et al., 2008 The natural cesarean: a woman-centered technique). JBIQG 115, 1042. The cesarean section rate is rising around the world and technicalization is resulting in many interventions. But interventions oppose Baby Friendly initiatives which are for healthy mothers and healthy babies but should be for cesarean moms and babies too. Beware that many intra-operative problems may arise, trials of labor should be offered too, and outcome and safety data need to be presented to justify widespread utilization of the technique. This is a controversial technique and constructive controversy is good for everyone and generally accelerates improvement in techniques and outcomes. Clinical trials are needed. Full term, birth KC, cesarean.

premature infants, and positive impact on the parenting process.” PT, review, bonding, physiologic stability, gas exchange, lactation, parenting. Not on Charts 9/7/2011.


Wieland, Ch., Bauer, K., Bisson, K. & Versmold, H. (1995). Kanguruh-pflege bei 39 Frühgeborenen. Monatschr Kinderheilkd, 143:1099-1103. 39 spontaneously breathing preterms were given first 30 minute KC session on day 10. Rectal temp increased during KC by 0.23C (p<0.01). No other measures changed. Infants <1000 gram had significant increase in rectal temp. Of 16 infants with elevated FiO2 in incubator before KC, 13 needed FiO2 to be significantly increased (from 29% to 35%). Of 167 KC sessions, 7 were stopped due to busy nursery, 5 for baby restlessness, 4 for increasing apnea/bradycardia, 3 for hypothermia, one for infusion para, and one for rapidly increasing FiO2 need. “Over 90% of preterm infants remain clinically stable and normothermic. These results justify continuing KC” (p. 1100). PT, descriptive, HR, RR, FiO2, TcPO2,TcPCO2, SaO2, Rectal temp., apnea/bradycardia, restlessness

Winberg 2005.

Foreign Languages

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The following research investigations of Kangaroo Care are reported in the 1990 UNICEF publication of the First International Conference on Mother Kangaroo Program, Bogota, 1990. The full text is available, free of cost, from UNICEF, 3 UN Plaza, N.Y., NY 10017. Also called Primer Encuentro Internacional Programa Madre Canguro.

1. Martinez, H., Rey, E., Navarett, L., & Navarett, C.M. Mother kangaroo program at the Maternal-Infant Institute in Bogota, Colombia. p. 21-44.
4. Correa, J.A., & Ramirez, H. Mother Kangaroo program at the Leon the 8th Clinic neonatal service at the Social Security Hospital in Antioquia, Colombia. p. 63-86.
5. Valencia, M.L., & Velez, J.D. Mother kangaroo program at the San Rafael Yolombo Hospital in Antioquia, Colombia. p. 87-90.
7. Restrepo, L., & Lopez, L.S. Mother kangaroo program at the General Hospital of Medellin, Colombia. p. 103-106.
8. Gaviria, M. Mother kangaroo program: Evaluation and implementation at the San Juan de Turbaco Hospital in Antioquia, Columbia., p. 107-126.
10. Lopez, J.M. Experiences with the mother kangaroo method at the Joaquin Paz Borrero Hospital in Cali, Colombia. p. 133-142.
13. Aranda, R., & Morales, L. Mother kangaroo program at the University of San Simeon in Cochabamba, Bolivia. p. 177-200.
17. Arestegui, R.U. Information about the mother kangaroo pilot program at the San Bartolome Hospital in Lima, Peru. p. 249-254.
31. Davanzo, R. Care of the low birth weight infant with the Kangaroo mother method in developing countries. p. 451-474.
32. Virgin, C. The kangaroo method brings the child back to its mother: Present and future in Denmark. p. 475-484.

Published Abstracts


Weight, length of stay, mortality


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Anderson GC, Burkhammer M, Morrison B., Ludington-Hoe, SM, Chiu, S-H. (2003) Skin-to-skin contact improves breastfeeding outcomes. Research ShowCASE abstract # 346. Case Western Reserve University, April, 4, 2003, Cleveland, OH. Report of first 35 mothers who reported BF difficulties. KC was given before anticipated BF times and throughout BF for 3 consecutive Breastfeeds on Postpartum Day 1 and then again on Postpartum Day 2 prior to discharge from hospital. AT discharge, 80% were BF exclusively, 17% partially. 30 dyads completed one week followup: 20 were exclusively BF, 4 partially, 5 not BF, 2 lost to FU. 200 dyads followed up at 1 month postdischarge, and 11/22 exclusively BF, 4/22 partially, 5 not BF; 2 lost to FU. Fullterm, descriptive, BF at discharge, 1 week and 1 month of life.

Anderson, G.C., Chiu S-H. (2002). Early kangaroo (skin-to-skin) care improves preterm infant weight at 6, 12, 18 months Paper presented at 25th Annual Conference of Midwest Nursing Research Society. Chicago, IL, March 2002. Significant improvement in weight gain due to minimal amounts of KC during hospitalization, KC: n=51; control n=49 atw birth, then 42 at 6, 43 @12x, 43 @18x (KC Group n); Control grp n= 29 @ 6 mos., 33@12 mos, 33 @ 18 mos. Also presented CORTISOLS salivary which were (KC vs Con): 8.34 vs. 7.74 (p=.0055) at 6 mos; 10.36 vs. 9.89 @ 12 mos (p=.05); 11.61 vs. 11.18 @ 18 mos (p=.NS). RCT, preterm, Wgt, Cortisol.


Anderson GC, Chiu S-H, Morrison B., Burkhammer M, Ludington S. 2003. Skin-to-skin care for breastfeeding difficulties postbirth. Paper presented at Midwest Nursing Research Society, Grand Rapids, MI, Feb. 2003. Report of first 35 mothers who reported BF difficulties. KC was given before anticipated BF times and throughout BF for 3 consecutive Breastfeeds on Postpartum Day 1 and then again on Postpartum Day 2 prior to discharge from hospital. AT discharge, 80% were BF exclusively, 17% partially. 30 dyads completed one week followup: 20 were exclusively BF, 4 partially, 5 not BF, 2 lost to FU. 200 dyads followed up at 1 month postdischarge, and 11/22 exclusively BF, 4/22 partially, 5 not BF; 2 lost to FU. Fullterm, descriptive, BF at discharge, 1 week and 1 month of life.

Anderson, G.C., Chiu S-H, Pagliotti F. (2000). Pretest-posttest randomized controlled trial: Effect of early Kangaroo (skin-to-skin) care on toe temperature in preterm infants. 23rd Midwest Nursing Research Society meeting. N=100 KC time was between 15-150 min; control holding time was 15-90 min and was swaddled holding. Toe temp recorded every 15 minutes. Mean temp was 31.5 (baseline),32.4(pretest), 33.4(test) and 33.0(posttest) for KC and 32.9 (baseline)32.6 (test),32.5 (posttest) for controls. RCT, toe temp.

Anderson GC, Chiu SH, Pagliotti F, Dowling D. (2001). Early kangaroo (skin-to-skin) care: Effect on toe temperature (Vascular perfusion) in preterm infants. Proceedings of Midwest Nursing Research Society meeting, Cleveland, OH, April 2001. Toe temp rose from 32.6 (preKC) to 34.2 (KC) and dropped to 33.9 (post KC), suggesting possibility of increased vascular perfusion of internal organs in 31 preterms. RCT, Toe Temp.


Anderson, G.C., Ludington-Hoe SM, Morrison B, Burbachemer M.D. (2002). Closing the gap in health disparities with skin-to-skin care for breastfeeding. 29th Annual meeting of the American Academy of Nursing. Oct. 31-Nov. 2, Washington, DC. An exploratory study of 50 moms who were supposed to get 1.5-2 hrs of KC before BF, but could not administer KC because of interruptions (9-19/hr) during postpartum day 1 with fullterm moms. **Fullterm**


Bauer K, Pasch K, Versmold H. (1996). Chest skin temperature of mothers of term and preterm infants is higher than that of men and women. Ped Research, 39(4) Pt. 2, p. 195A. Recorded mean chest skin temperature of 10 women with premature infants, 10 women with term infants, and 30 men. Chest skin temperature increased with postnatal age and was significantly higher than that of men. Axillary temps were same in all groups and did not change over time. Chest skin temperatures of women is 1°C higher than in men.

Bauer K, Uhrig C, Sperling P, Versmold HT. (1995). One hour of skin-to-skin care was no cold stress for VLBW infants as oxygen consumption and central-peripheral temperature gradient did not increase. Ped Res, 27(2), 196A.


Charpak, N., Figueroa, Z., Ruiz, J.G., & Charpak, Y. (1997). Kangaroo mother versus traditional care for newborn infants (<2000 grams). A randomized controlled trial. Pediatric Research, 41(4), Pt. 2, 192A. 382 KC started KC upon discharge and practiced it 24 hours/day. 364 infants in incubators in minimal care unit in hospital were compared to KCs at term, 3,6,9, 12 months. No differences in growth, developmental indices, or in length of breastfeeding beyond 3 months (at 3 mos, more KC breastfeeding than controls. Also no difference in infection.


Chiu S-H, Anderson GC. 2001. Quality of the maternal-infant relationship during the first year. Midwest Nursing Research Society Annual Meeting, Cleveland, OH, March 2-5, 2001. Maternal infant interaction at 6 months using NCAST Feeding and Teaching Scales on 53 dyads who received early, as often, and for as long as possible KC during hospitalization who were 32-36 weeks GA were tested. No differences found. **RCT**


Chwo, Mia-Ju. 2000. Early kangaroo care for 34-35 week preterm infants: Effects on temperature, weight, behavior, and acuity. Presented at Biennial Convention of the 12th Biennial International Congress of Infant Studies, Brighton, England, July 2000. 34 healthy preterm infants in TAIWAN were randomly assigned before first feed. KC was done during BF; controls were clothed and wrapped and

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held that way for one hour, three times a day during feedings. KC had higher TYMPANIC temps, more quiet sleep, more inactive awake, less drowsiness, less crying. No diff in weight loss or acuity (LOS). PT, RCT, temp, sleep, wght, length of stay.


Feldman R, Eidelman Al, Weller A, Sirotta L. (2001). Mother-infant skin-to-skin contact promotes self-regulation in premature infants: Sleep-wake cyclicality, arousal modulation, and sustained exploration. Society for Research in Child Development biennial meeting, April 2001. Following KC, infants showed more organized sleep-wake cyclicity $ at term age, spent more time in quiet sleep and in alert wakefulness. KC has + longterm effect on infant’s arousal regulation and attention as expressed by more organized sleep-wake cyclicity, more adaptive responsiveness to environmental stimuli, improved m+ attention and exploratory skills.


Hales D, Kennell J, Klaus M, Mata L., Sosa R, Urrutia J. (1975). The effect of early skin-to-skin contact on maternal behavior at twelve hours. Pediatric Research, 9, 259. 9 Guatemalan mothers gave KC for 45 minutes once episiotomy repair complete and in recovery room under heat panel and then to nursery til 12 hours old; 10 controls got to see swaddled infant 12 hours later. At 12 hours postbirth, KC moms did more fondling, kissing, en face looking, looking, and talking to baby but not more caretaking. RCT FULLTERM Maternal Behavior, attachment behaviors. Abstract only.


Hsieh, Y-H, & Huang, M-C. 2000. Preliminary study of KC for preterm infants: Effect on parent-infant relationship. Unknown presentation site. Write to author at Yu-Hui Hsieh, No. 539, Jong-Shiaw Rd, Chia-Yi City 600, Taiwan, ROC. 16 parents with KC experience completed 8 item open ended questionnaire to express experience with KC. KC decreases parents’ anxiety, increases self confidence in caring for infants, and promotes relationship. See manuscript in J. Nursing Research (china) listed under foreign languages for full report.

Kojasuta, C. (1995). Effect of early skin-to-skin contact on maternal-infant bonding in different pain management groups. Masters Thesis abstract, CWRU. 120 mothers in four groups: KC + epidural; KC+ IM/IV; control + epidural; control + IM/IV. Given KC for 10 minutes within 30 min of birth. Two hours postpartum moms interviewed about bonding. In epidural group, KC moms had higher bonding score than controls; in IM/IV group, no different in bonding. FULLTERM, bonding


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Kostandy RR, Anderson GC. 2003 Kangaroo (skin-to-skin) care in healthy fullterm neonates: Effect on pain from hepatitis B vaccine injection. Presented at the Midwest Nursing Research Society Annual meeting in St. Paul, MN March 2003. 30 neonates randomized to 30 min of KC before Hepatitis Vaccine injection or bassinette. Infants rotated to supine position in KC for shot in thigh, post injection infants rotated back to prone KC. HR, behavioral state, crying time measured preinjection, during injection, and post FULL TERM pain. This abstract won 2nd place in the Best Abstract category.

Leon-Mendoza,S de. 2000. Impact of KMC on survival of LBW neonates. Presentation at 3rd Intl KMC Congress, Jakarta, Indonesia, Nov. 22-25, 2000. All neonates <2001 gm got KMC and breastmilk feeds only. Discharged in KMC once fully BF and 3 days of wgt gain. Compared one yr of KMC to previous yr stats: Sig. More survival of infants <1000gm (0 vs 7%), <1250 gms (11 vs 16%), <1500 gms (20 vs 26%), <1750gms (45 vs 51%) but not for 1750-2000 g (68 vs 68%).


Ludington, S.M. (2004). EEG-based sleep before and during Kangaroo care. Presentation at the 12th Biennial meeting of the International Congress of Infant Studies, Brighton, England, July 2000. Data from 10 subjects shows that quiet sleep doubles, active sleep drops, delta brushes increase (sign of sympathogenesis) and indeterminate sleep does not change. Intensification of sleep is seen in KC.


Martinez, LYR. 2000. KM program in the civil hospital of Guadalajara. Presentation at 3rd Intl KMC Congress, Jakarta, Indonesia, Nov. 22-25, 2000. 325 LBW given KMC. Many morbidities still found, but KMC improved interaction and bonding, hospital stay was shorter, reduced nosocomial infections, and hospital costs. Infecions, cost.


Narayana I, Bamburoo A. 2000. Alternate methods of feeding LBW infants during the transition to BF. Presentation at 3rd Intl KMC Congress, Jakarta, Indonesia, March22-25, 2000. This is a comparison of the paladi to cup and bottle feed, and only a reference is made to KMC, saying paladi can be used with KMC.


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Punmetharith B, Anderson GC. (2001) Randomized controlled trial of early Kangaroo care: Effects on maternal feelings, infant-maternal interaction, and breastfeeding success in Thailand. Proceedings of Midwest Nursing Research Society Meeting, Cleveland, OH, April 2001. 196 fullterm newborns (97 KC, 99 control) randomly assigned to KC @ 60 min. postbirth and continued ad lib for two days or until discharge; control moms held swaddled infant ad lib. On day 2 postbirth, no sig diff in MBQ, IBS, Lactation Scale; but Bonding Observatory Check List was sig between groups. One month postbirth KC had high Attention and Connection to Infant (a subscale of Mat-Inf Bonding Questionnaire). No sig diff in BF successes. KC might have weak effect on Mat-Inf Bonding. Fullterm RCT BF, bonding, BF success.

Rate AB. 2000. Parents’ experiences of providing KC to their preterm infants. Presentation at 3rd INTNL KMC Congress, Jakarta, Indonesia Nov. 22-25, 2000. Phenomenology study of interviews of maternal and PAT KC showed 6 themes; Premature birth experience, Kangaroo care unit/living in, what KMC meant, being informed, strength and support. Done a Groote Schuur Hospital. PAT KC qual study


Rojas, M.A., Kaplan, M., Mayes, L., Sherwont, E., Quevedo, M.E., Ehrenkranz, R. (1998). Extended traditional holding ("TH") and skin-to-skin care (SSC) for newborn infants ≤ 1500 GRAMS. A randomized controlled trial. Results of an interim analysis. Ped Res 43(4), Part 2, 191A. This team at Yale University had parents hold 45 infants up to 4hrs/day, twice a day until infant was 2000 gms or discharged. TH was wrapped and held supine; SSC was wearing only diaper, prone at 45° incline. No sig diff in daily caloric intake, rate of wgt gain, or incidence of positive cultures (even tho TH had 6 cases of sepsis; KC had 3 cases of sepsis). No deaths in either group. RCT with M & SD, WGT, Calories, Sepsis, mortality.

Rojas MA, Kaplan M, Quevedo M, Sherwonit E, Foster LB, Ehrenkranz RA, & Mayes, L. 2003. Somatic growth of preterm infants during skin-to-skin care versus traditional holding: A randomized controlled trial. J Dev Behav Pediatr 24(3), 163-168. Traditional swaddled holding of 4 hrs per time, two times per day. No difference in weight nor in length, but some difference in head circumference in SSC and SSC may increase successful BF.

PT, RCT, Weight, length, head growth, BF. LOS.


Shiau, S.H. (1999). The effect of Kangaroo Care on sleep and crying of healthy fullterm newborns. Nursing Research (China), 7(3), 198. RCT measured effects of KC on days 1-2 postbirth. 44 mother infant dyads, Anderson Behavioral state Scoring System measured state recorded once every 24 hours for first 3 days postbirth. Sign decrease in crying in KCers on Days 1 and 2 and within 3 days, significant increase in infant sleep on Days 1-3 and within 3 days, Sig decrease in wakefulness in KCers on Day 3 and within 3 days. KC had positive effects and should be incorporated nto standard care of fullterm newborn. RCT, fullterm, sleep, crying, wakefulness. No on charts yet.

Shiau, SH. (1997). Randomized controlled trial of Kangaroo Care with fullterm infants: Effects on maternal anxiety, breastfeeding maturation, breast engagement, and breast feeding status. Dissertation at Case Western Reserve University (143 pages - ISBN # 978-0-591-61624-8). Or in Dissertation Abstracts International, call #ATT3034635. Mother infant dyads (29 per group) randomly assigned to KC or control (standard nursery care) KC dyads got 8 hours of KC on Days 1, 2, 3. Moms who had KC had more frequent mother-infant contact on each day. KC moms had less maternal state anxiety (F=5.0 df = 2, 108; p = 0.007), less breast engangement (F=6.40 df = 5, 270, p = .000) as measured by chest circumference and a 6 point breast engangement scale (F=2.80; df 5, 270, p= 0.016), better breastfeeding status (F = 15.00, df 2, 108; p=.44), no sig difference in breastfeeding maturation between the two groups. ( FULLTERM RCT BF, breastfeeding maturation, Late KC. Not on Charts yet.

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Shiau, S-H Hwang. 2000. The effects of kangaroo care on breastfeeding status and breastfeeding duration of fullterm newborns from Day 3 after delivery to one-year of age. Paper presented at 12th Biennial International Congress of Infant Studies in Brighton, England July, 2000. 52 RCT to early KC (start at 4 hrs postbirth, 8 hrs/day x 1,2,3rd days of life) control had no rooming in dyads in study. More KC dyads BF longer and at one year, and have better BF status using Index of Breastfeeding Status. RCT, FULLTERM, BF


Swinth J.Y., Anderson GC, Hadeed AJ. 2003. Kangaroo (skin-to-skin) care with a preterm infant before, during, and after mechanical ventilation. Neonatal Network, 22 (6), 33-38. Case study of 33 wk GA infant who required supplemental O2 at 2 hrs postbirth and with no improvement started KC at 18 hrs of age for 1.25 hours, and then two hours later for another 3.5 hrs. AT 45 hours of age infant was intubated and then got more KC before extubation at 90 hrs postbirth. KC given before, during and after ventilation and it assisted in recovery from respiratory distress, fostered maternal relaxation, and minimized maternal stress. PT, VENT KC, Resp. distress, Maternal relaxation, Maternal stress.SaO2, FiO2


Syfrett EB, Anderson GC, Behnke M, Neu J, Hilliard ME. (1996). Very early kangaroo care beginning at birth for healthy preterm infants and mothers who chose to breastfeed: Effect on outcomes. Paper presented at the workshop on the kangaroo mother methods for low birth weight infants. World Health Organization. Maternal-child health collaborating center, Trieste, Italy. This is the same as the 1993 abstracts, and no paper was published of this report.


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Louis: Mostby. On page 408 under how to keep the baby warm in the delivery room, it states “If the mother desires blanket and hat should be placed over the infant, and these linens should be replaced if they become following cesarean birth cried less and became drowsy sooner than those in the control groups (Erlandsson, Dsilna, decreased infant crying (Moore et al., 2007). A study of 29 father newborn temperature and cardiorespiratory status, promoted breastfeeding and maternal assessment

Moore, Ander contact (SSC) will benefits from r

Being, it says “Immediately following birth, the mother may be dependen and inwnardly focused on bodily concerns. Althougt th

by promoting clinical practice

 Limitations to skin

ventilator, including high

Nursing Assessment, it says” Promoting skin

Kangaroo care has been shown to improve sleep periods and parents’ perception of their caregiving ability (DiMenna,2006, Turnage-Carrier, 2010). See figure 33-12 (shows mother doing KC as father looks on and the legend says “Kangaroo (skin-to-skin) care facilitates a closeness and attachment between parents and their premature infant.” (pg.915). Under the Complimentary and Alternative Therapies in the NICU) Page 916 states “Skin-to-skin (kangaroo) care has become more prevalent in NICUs across the United States. Skin-to-skin is defined as the practice of holding infants skin-to-skin next to their parents. The infant is usually naked, except for a diaper, and placed on his or her parent’s bare chest. They are then both covered with a blanket. Benefits of skin-to-skin care as a developmental intervention include the following: improved oxygenation as evidenced by an increase in transcutaneous oxygen levels; enhanced temperature regulation; a decline in the episodes of apnea and bradycardia; increased period of quiet sleep; stabilization of vital signs; positive interaction between parent and infant, which enhances attachment and bonding; increased growth parameters; and early discharge (Ludington-Hoe, Morgan & Abouelfettoh, 2008). Limitations to skin-to-skin care may be due to staff uneasiness when moving the infant while attached to multiple IV lines, monitor leads and a ventilator, including high-frequency oscillatory ventilation. The restricted confines of the nursery may be another limiting factor as well as the lack of protocols or guidelines to safely maneuver, position, and hold the infant.” (p. 916). On page 1001 in the chapter on Postpartum Family Adaptation and Nursing Assessment, it says” Promoting skin-to-skin contact. Many hospital units remove infants from their mother following birth to allow convenient assessment and performance of procedures by hospital staff despite a preponderance of evidence that supports immediate skin-to-skin contact (SSC) between mother (or father) and the newborn. Nurses are the professional most often at the patient’s bedside: they have the power and an obligation to serve as leaders and change agents by promoting clinical practices that are supported by research evidence.” On page 1036 under Support of Maternal Psychosocial Well-Being, it says “Immediately following birth, the mother may be dependent and inwardly focused on bodily concerns. Although the mother will benefit from rest at some point early in the postpartum period, there is a preponderance of evidence that immediate skin-to-skin contact (SSC) between mother and newborn has many positive effects for both (Bystrova et al., 2009; Dabrowski, 2007, Klaus, 2009; Moore, Anderson & Bergman, 2007). SSC should be encouraged for all mother and newborns unless complications prevent it. Mother and newborn can rest comfortably together under close nursing supervision, and immediate newborn care such as APGAR scoring and assessment of vital signs can be performed in this position (Romano & Lothian, 2008). On page 1039 (Chapter 36: The Postpartum Family: Needs and Care), under the heading “Promotion of Family Wellness and Shared Parenting” reads: “A Cochrane review of 30 research studies involving 1925 mother-infant dyads found that skin-to-skin contact (SSC) immediately following birth helped to stabilize newborn temperature and cardiorespiratory status, promoted breastfeeding and maternal-infant attachment, and was associated with decreased infant crying (Moore et al., 2007). A study of 29 father-infant dyads found that the 15 infants offered SSC with their father following cesarean birth cried less and became drowsy sooner than those in the control groups (Erlandsson, Dsilna, Fagerberg et al., 2007). Therefore, the nurse should encourage immediate SSC following delivery of healthy term and late pre-term infants if stable. A warm blanket and hat should be placed over the infant, and these linens should be replaced if they become wet. “


Hale, T. W., & Hartmann, P. E. (Eds.) 2007. Hale and Hartmann’s Textbook of Human Lactation. 1st Edition, Amarillo, TX: Hale Publishing. In Prime, D.K., Geddes, D.T. and Hartmann, P.E. Chapter 9: Oxytocin: Milk ejection and maternal infant well-being, pages 141-155 under the section title Circulating Oxytocin and Parturition, it says “Oxytocin is the driving force for parturition in animals and humans. And this connection, it has been shown that women who deliver vaginally have more oxytocin pulses and a significant rise in prolactin compared to women delivered by cesarean section. Therefore, the second stage of labor may be important in coordinating these oxytocin pulses which may also be influenced by the timing of the infant’s first breastfeeding, an event that is often delayed at a cesarean birth (Nissen E, Unnas-Moberg, K, Svensson K, Stock S, Widstrom A-M, Winberg J. 1996. Different patterns of oxytocin prolactin but not cortisol release during breastfeeding in women delivered by cesarean section or by the vaginal route. Early Human Development, 45: 103-118.). It is now becoming more widely recognized that the interaction of the mother and baby soon after birth can be very important for the regulation of infant physiology and behavior such as infant crying, temperature, and respiration as well as the initiation and maintenance of breastfeeding (Winberg, 2005).” (pg. 146) In Chapter 15: Breastfeeding, birth spacing, and family planning by M Labbok, pp 305-318, has a section on KC under the section entitled “Is What is Best for the Child Also Best for Fertility Suppression? “page 308, “Immediate contact, skin-to-skin, is key to early initiation of breastfeeding, lactation, and infant homeostasis, including thermal regulation. The immediate onset of feeding postpartum is associated with survival in all mammalian species while humans have sought substitutes for the nutritional components of milk, the risks of NOT FEEDING COLOSTRUM, the first milk, richest in immune factors, remains for humans as well (Edmond, K, Zandoh, C., Quigley, M, Amenga-Etego, S, Owusu-Agyei, S, Kirkwood B., 2006. Delayed breastfeeding initiation increases risk of neonatal mortality. Pediatrics, 117(3), e380-e386.). Based on a study of 10,947 infants in sub-sahara Africa, there was a clear dose reponse in that the risk of neonatal mortality increased with longer delay in initiation of breastfeeding from one hour to day 7. Late initiation after day 1 was associated with a 2.4 fold increase in risk of mortality. The effect was similar when the model controlled for infants at high risk or experiencing a death in the first week they also found the risk of neonatal death was four fold higher in children given milk-based fluids or solids in addition to breastfeeding. They concluded that 116% of neonatal deaths could be avoided if all infants were breastfed from day one and 22% of the deaths could be avoided if BF started within the first hour. These same patterns of early contact and feeding, and frequent feeding as indicated by infant hunger cues are the patterns most likely to delay fertility return.” Pg. 308. PT, FT,Birth KC, VEKC COLOSTRUM, BF, Mortality., Not ON charts 12/18/2011

Kenner C, Lott JW (Eds.) Comprehensive neonatal nursing: A physiologic perspective has a chapter: Holditch-Davis D Blackburn ST, Vandenberg K. Newborn and infant neurobehavioral development. St. Louis, Saunders, pp 236-284, has a recommendation to use KC.


Mattson S, & Smith J.E. (2004). Core Curriculum for Maternal-Newborn Nursing: 3rd Ed. St. Louis, MO: Elsevier Saunders. On page 423 in chapter 16 by N.D. Cheffer “Adaptation to extraterrestrial life and immediate nursing care” is lists KC as a means of achieving a neutral thermal environment for the fullterm newborn, stating “Kangaroo care: direct skin-to-skin contact by placing the infant against the mother’s skin to provide thermal support.” That’s all I can see as to a reference to skin-to-skin contact or KC for fullterm infants in the entire book. FULLTERM, temperature.

Merenstein G.B., Gardner, S.L. (2002). Handbook of Neonatal Intensive Care. 5th Edition. In Chapter 12: Pain and Pain Relief on page 210 “skin-to-skin contact (Kangaroo Care) between mothers and healthy newborns during heelstick is a potent analgesic intervention that reduces cry (by 82%), grimace (by 65%), and heart rate.” And in Chapter 13, The Neonate and the Environment: Impact on Development by Gardner SL and Goldson E. There is a whole paragraph and Box 13-3 called “Benefits of Kangaroo Care/Skin-to-skin contact” that lists parental and numerous neonatal benefits of KC. Review, pain, full term, cry, HR

Potts & Mandleco (2012). Look in the Evidence Based Practice section for kangaroo care.

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Abu challenge.” It lists positive physiologic benefits (pg. 243) and positive developmental benefits on page 244. Infants who are clinically stable go directly to the mother as early as 2 hours after birth. KC allows the mother to see and hear her infant, demonstrated skin to skin holding. NICU parents perform skin-to-skin contact with their infant immediately upon entrance to the NICU.” (pg. 216-217). In Chapter 7 (J. Riordan and K. Hoover, Perinatal and Intrapartum Care), on page 222-223, it has a whole section entitled Skin-to-Skin (Kangaroo) Care. States that infants do not have hypothermia and that even twins can be held in KC without hypothermia, and KC is now recommended for all babies and it was previously just recommended for preterms. She states risks of NOT USING KC: shorter duration of exclusive breastfeeding, more maternal stress with less satisfaction with breastfeeding, greater stress of being born in the baby, demonstrated by high vasoreactivity in the periphery and more crying, less desire by mother to hold her infant (Anderson, 2004), less ability of baby to smell maternal milk scent (Marlier & Schaal, 2005), longer hospital stay in preterm babies (Rainvault, Saliba & Porter, 2007), greater pain and more crying during procedures (Johnston, 2003). In Chapter 13 (Breastfeeding the preterm infant) N.M. Hurst & Paula P. Meier authors, page of chapter 425-470 on page 436-437 the section entitled Skin-to-Skin Care deals with preterm infants, the duration of BF is higher for KC infants than incubator infants. KC moms have significantly greater milk volume between 2 and 4 weeks of life (Hurst et al., 1997). KC holding triggers production of milk antibodies to specific pathogens in the infant’s environment through mechanisms in the enteromammary pathway. Additionally, KC is positively correlated with improved maintenance of milk expression, as evidenced by continued pumping frequency (Lau et al., 2007). Mothers whose infants are in KC report noticing their infant’s rooting and mouthing movements and moving toward the nipple during KC (Hurst et al., 1997). Directly following KC, moms noted that they could feel the milk ejection, leaking, and expressing higher milk volumes; Nasal oxytocin prior to pumping does NOT increase milk production (p. 436, Fewtrell et al., 2006). Apparent effects of release of exogenous oxytocin produce positive social interactions (Unnas-Moberg, 1997; 1998). Oxytocin is released by pleasant stimuli such as warmth, touch, and odors and it can become conditioned to emotional states and images. Conditioning of this response is harder for the preterm mother and is usually conditioned by walking into NICU, using breast pumps, dealing with hospital situations, so KC ameliorates these forces on oxytocin release (Feldman, et al., 2002). There is no scientific reason to restrict the duration of skin to skin care unless the infant becomes physiologically unstable while on the mother’s chest” (g. 436). “Typically a skin to skin session is terminated on the mothers availability rather than infant criteria. The position of the infant in skin to skin care is important to maintain physiologic stability and recliners are ideal in achieving this position. The infant should be placed upright between the mother’s breast with the side of the infant’s face placed against the internal surface of one breast (and shows figure 13.3 which shows the recliner at 45-65 degree angle from the floor.) A mirror is positioned to allow the mother to see her infant’s face and is helpful during these sessions. Skin to skin sessions of two or more hours are ideal (pg. 437).” And it is not uncommon for infants to display behaviors that suggest autonomic instability when returned to the incubator following skin to skin care (Kirston, Bergman, & Hamm, 2001). Chapter 24, The Cultural Context of Breastfeeding, pages 799-816, on page 808 it says under Infant Care “Swaddling or bundling is an ancient practice...In parts of the world that do not have intensive care nurseries, premature infants who are clinically stable go directly to the mother as early as 2-3 hours after birth by being held in an upright position, skin to skin between their mothers’ breasts, they are kept warm (Anderson, Marks, Wahlberg,1986; Anderson , 1992). This practice has spread to intensive care units worldwide in many countries and is now known as Kangaroo Care.” BF, oxytocin, pleasant touch, scent, milk production, BF, BF initiation, maintenance, programming of oxytocin release

Verklen TM, Walden M (Eds.) 2004. Core Curriculum for Neonatal Intensive Care Nursing. St. Louis, MO: Elsevier. On page 68 it states “13. Provide Kangaroo Care (skin-to-skin) time if mother desires” as a nursing intervention for mothers with perinatal substance abuse. On page 243-244 it says that “therapeutic touch may include: Kangaroo Care, or skin-to-skin holding. NICU parents perform skin-to-skin contact with their infant who is resting prone and semi-upright against the mother or father’s barechest covered by a blanket. Warmth, rise and fall of the chest, tactile sensation of skin-to-skin, smell of parents, and maternal breast, and the parent’s tender, quiet, vocalizations, breathing sounds, and heartbeat comprise the sensory modalities stimulated during KC. This provides low-intensity stimulation to the earlier developing senses and is most appropriate for the nicu infant. It has controversial use with extremely premature infants during acute illness phase. Maintaining physiologic and behavioral stability during transfer from bed to parent and back remains a challenge.” It lists positive physiologic benefits (pg. 243) and positive developmental benefits on page 244. Review, PT Substance Abuse, transfer, micropreemie


Vergara E.R., Bigsby, R. (2003). Developmental and Therapeutic Interventions in the NICU. Baltimore, MD: Brookes Publ. On page 25, 199-208, 234, 235 the authors, occupational therapists, talk about KC as part of developmental care to promote sleep, KCBib 2018
breastfeeding, maternal infant contact etc. This is an interesting book for occupational and physical therapists. Book has good tips for easing the transition to home too.

Wilson-Clay, B., & Hoover, K. (2002). The Breastfeeding Atlas, 2nd Edition. Austin, TX: LactNews Press. On page 144 there is picture of Kangaroo Care with full term infant, and on page 146 she describes the picture in a whole paragraph: A mother holds her premature baby skin to skin. Skin to skin holding, known as KC or KMC, is beneficial to both mother and baby. For babies experiencing difficulties learning to latch onto the breast, skin to skin holding has been known to help. The parents enjoy this special closeness with their baby, and it helps to increase the mother’s milk supply (Hill PD, Aldag JC, Chatterton RT, 1999. Effects of pumping stily on milk production in mothers of non-nursing preterm infants. J Hum Lact 15(3), 209-216.) Babies settled into a deeper sleep, cry less, and have more rhythmic breathing, more stable heart rates, and are kept warm by their parents. Premature babies are discharged from the hospital sooner and have healthier six months after discharge compared to babies who did not receive this care (Kirstin, Bergman, and Hann, 2001).

**VIDEOS/Media/WEBINARS**

Advances in Neonatal Care. (2011). The December issue has a picture of a mother and preterm baby in KC and the mother is holding a mirror so she can see her infant and is smiling as she watches him sleep. Advances in Neonatal Care. Vol. 11 #6. Cover, On the contents page, it says “Catherine, Linda Carter of Des Moines, IA portrays a quiet moment of kangaroo care between a mother and daughter for the NANN 2010 Faces of Neonatal Nursing Photo Contest. PICTURE ON COVER


Barbier, D., & University of Louisville University Hospital Center for Women and Infants. (2010). Jumping into Kangaroo Care. A comprehensive educational toolkit with KC policies for Labor/Delivery, Postpartum, and Newborn Nursery Units. University Hospital. Available from: Denise Barbier, 34 Hill Road, Louisville, KY 40204, 502-458-2324 or by email at deniseba@ulh.org. Disc 1 is a DVD that contains “everything you need to know to implement Kangaroo Care, from prenatal visits to patient discharge. Disc 2 is a CD ROM that contains instructor guide, participant guide, sample hospital policies, research references, patient education brochures, national and international policy statements and other supportive materials. The program is designed to promote KC in the delivery room and throughout the hospital stay in order to increase the number of infants who are breastfed upon discharge. BF rates at University of Louisville Hospital rose from 45% to 64% in 7 months when new mothers were encouraged to be skin-to-skin with their healthy full term infants immediately after birth. KC is a simple and effective way to increase the number of newborns who are breastfed and, as a result, will increase the number of mothers and their infants who enjoy the significant health benefits of breastfeeding. **Disc one is BEAUTIFULLY DONE** And all safety precautions are incorporated and all ten chapters are easy to follow, shows Paternal KC, and mentions KC in recovery room after cesarean and has lovely interviews with parents. THIS IS A GREAT FILM!!!! Birth KC, BF, antenatal KC, PP KC. TOOLKIT Not on Charts in 11/2010.

Bigelow, A. (2010). Enhancing Baby’s First Relationship. A DVD that has two parts: 1) A parent’s guide for skin-to-skin contact with their infant (20 minutes), and 2) Results from a study on mother-infant skin-to-skin contact (28 minutes). The second part is the study by Dr. Bigelow about the KMC fullterm infants having better still face reactions at an earlier age than non-KMC fullterm infants. The films can be viewed at www.mystfx.ca/InfantSkinToSkinContact. FT, Developmental care, developmental outcomes. **Not on charts 4/28/2011**

Bergman, J. (2011). Hold Your Premie. For a video preview of this book go to [http://www.youtube.com/watch?V=_0w8Lhekb0](http://www.youtube.com/watch?V=_0w8Lhekb0) (only zeros used in the url). The 29-minute video can be ordered from orders@geddesproduction.com ($59.00 US) and the book can be ordered from same site ($39.00 US). Carefully watch this youtube presentation because when SML watched it April 12, 2011 she noticed that the breastfeeding baby was not in KC. The video shows KMC with premature infants who are moved into KMC by sitting transfer technique. This film shows KMC with ventilated infants and also shows KMC with full term infants. The verbal content is excellent and this video covers what parents need to know about KMC, especially with premature infants. The film includes brain development and KMC’s effect of switching brain operation from that of stress to one of safety and contentment. Cesarean KMC is shown after the mother is in recovery. This is the most comprehensive film of KMC for prematures that is available as of 2011. Please note that sitting transfers are conducted without any developmental care precautions (i.e. placing a blanket under the infant before the transfer and wrapping it around the infant for transfer to prevent flailing arms and stress responses.) There is another section about 9 minutes long about safe skin toskin techniques and it shows the unique PRONE sitting Transfer technique and this is the ONE WE SHOULD ALL BE FOLLOWING, and with this technique, Dr. Bergman has related that infants do not wake up when lifted and when checking VS after lifting and during transfe, no physiologic dec complication occurs at all because the infant is prone and prone is the SAFE SLEEPING position. This transfer technique is a good option that can be used and you will also see footage of a mother who has wrapped her infant in the shirt (Kangacarrier) and

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bending over to touch her toes. Bending over proves that the shirt is tied on sufficiently securely to keep the baby safe. If the mother refuses to touch, it is usually because the infant is too lose. The wrap should be so tight that mother can confidently bend over and touch her toes. If the infant moves, the infant is NOT secure in the wrap and has to be more tightly wrapped. This DV also relates that SUPINE IS STRESSFUL, prone is not. The DVD video is 29 minutes long and can be ordered from www.geddesproduction.com as of August 5, 2011.

Bergman, N. (2000). Kangaroo Mother Care: Restoring the Original Paradigm for Infant Care and Breastfeeding. U.S. $45.00 Available from Dr. Nils Bergman, 8 Francis Rd, Pinelands, 7405, South Africa or by email at bergman@xsinet.co.za or by calling 27-21-531-5819. (60 minutes). See Bar Yam, N.B., 2002. Kangaroo mother care: Restoring the original paradigm for infant care and breastfeeding. J. Human Lactation, 18 (3), 289 for a review of this film. PRETERM

Bergman, N. (2001). Kangaroo Mother Care: Rediscover the Natural Way to Care for your Newborn Baby. U.S. $45.00 Available from Dr. Nils Bergman, 8 Francis Rd, Pinelands, 7405, South Africa or by email at bergman@xsinet.co.za or by calling 27-21-531-5819. (26 minutes). See Sywulak, H.C.M. 2002. Kangaroo mother care: Rediscover the natural way to care for your newborn baby. J. Human Lactation, 18 (3), 289-290 for a review of this film. PRETERM

Bigelow, A. (2010). Enhancing Baby’s First Relationship. A Parent’s Guide for Skin-to-Skin Contact with Their Infants (Disc One) and Results from a Study on Mother-Infant Skin-to-Skin Contact (Disc two). This has two discs, the first is 20 minutes long and explain KC as a method of caring for newborn term infants and explains the benefits of KC. The second disc is 28 minutes long and explains the method and results of Dr. Bigelow’s Still Face test of fullterm infants who got KC at birth and throughout the birth hospitalization vs. fullterm newborn infants who did not get KC at all, and of course the KC infants were advanced in their responses to still face. For this study, see Bigelow reference in the reference list of studies and see also Neu et al., 2010 for her still face study results. Available through Dr. Ann Bigelow, St. Francis Xavier University, PO Box 5000, Antigonish, Nova Scotia, B2G 2W5, CANADA. TERM

Cudwell, K., & Turner-Maffei, C. (2012-August). Ten Steps to Successful Breastfeeding. Online course. Jones & Bartlett Publishers. ISBN-13: 978-1-4496-8990-2. This online course consists of 5 modules: Module 1 content is Advantages of Breastfeeding to Infant, Mother, and Society; Module 2 is Promotion, Protection, and Support of Breastfeeding, Organization and Initiatives; Module 3 is Physiological Processes of the Infant and Maternal Anatomy and Physiology; Module 4 is Prenatal Strategies, Postpartum Strategies, and Strategies for after leaving the hospital; Module 5 is Contraindications, Unique Challenges and Situations. Completion of the course provides 24.4 CEUs or CERPS and this is to be used for staff training. Cost of the course is $176.95 and there is a discount for purchasing it for training of all staff if you call 800-832-0034. Available from http://tensteps.jpub.com/course-contents/


Children’s Hospital St. Louis. (2010). The Empower Program: For Parents of Premature Babies less than 30 weeks gestation. The DVD is 48 minutes long, consists of three parts: Getting to Know You: Parenting your Premature Baby (20 mins), Developing a lifelong relationship between you and your baby through touch and holding (12 mins), and Supporting Your Preterm Baby as You Parent in the NICU: Infant Massage and PO Readiness (16 mins). The DVD is accompanied by a notebook for parents to complete entitled “My Journey in the NICU” and parent copies of the Empower Program DVD. Distributed by Dandle Lion Medical, 22 Shelter Rock Road, Danbury, CT 06810 or www.dandlelionmedical.com. The brochure has 3 pictures, one of Kangaroo Care and the other of TERRIBLE SEMI-KC because the mother is wearing a rather fully-covering bra and the baby has nothing across his back and no head covering.

Colson, S. (2009). Biological Nurturing™: Laid back breastfeeding and Biological Nurturing (Video 1from 2009) and Laid Back Breastfeeding for Mothers (2011 dvd). NOT KC VIDEOS. The first is a 60 minute video and the second is a 28 minute video on DVD of several chapters (so it can be a shorter film easily) that discusses and shows pictures of her biological nurturing position which is semi-reclined with the infant on the mother’s chest and how this position facilitates expression of the innate infant reflexes (basically the same as in the Neonatal Behavioral Assessment Scale developed by T.B. Brazelton) and she says the infant does NOT have to be in skin-to-skin contact. She says this position is a hormone enhancing environment conducive to the expression of the innate behaviors. The videos are now available on DVD and costs $9.95 and are available in English, Spanish, and French. Both are Available from Geddes Productions at www.geddesproduction.com. Or Geddes Productions, PO Box 41761, Los Angeles, CA 90041-0761 faxL 323-257-7209. For more information about Suzanne Colson and the certification in her procedure that she offers, go to www.biologicalnurturing.com.

Creative Therapy Consultants. Has two films about KC in the NICU. See Waitzman, Kara Ann below.

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Dandle-LION Webinar. (2011). "Creating a Culture of Consistency for Skin-to-Skin Care in the Neonatal Intensive Care Unit.” By Kara Ann Waitzman, OTR/L, CIML, Developmental Specialist at Miami Valley Hospital in Dayton, Ohio, a 60 bed single-beded room NICU that has been sporadically practicing KC for 15 years as of 2010. You can go online and watch the presentation for one hour and then take the simple test and get one continuing education unit for free (Go to www.dandlelionmedical.com. For more information, contact Cathy Bush at cathybush@dandlelionmedical.com or at cathybush@gmail.com or 415-111-dandle@aweber.com. Dandle-LION Medical, 22 Shelter Rock Lane, Danbury, CT 06810, Phone: 203-791-9000, fax: 203-792-5581. You go to the dandleLION website at 4:15-11 etc given above and then click on the name of the program, and watch it. This is a beautifully done webinar for NICU Kangaroo Care with preterm Infants. As Ms. Waitzman says, “Kangaroo Care is not icing on the cake, it is the CAKE!” S. Ludington accessed this August 18, 2011 and 1/29/2012 and it worked fine. See also Waitzman below for her two DVDs that are available in 2012.

Dougherty (2008). $105.00 interactive CD on Kangaroo Care as practiced in Canada with infants 23 weeks and up, so many of the guidelines are appropriate to infants are 28 weeks and older for infants older than 28 weeks. This takes about 30 minutes to complete, you answer questions, listen to nurses’ comments about KC, many helpful pictures of transfer technique (watch for flailing arms and uncovered infants, however), and read about mother’s responses. Beautifully done, easy to complete, comprehensive for families and staff. An engaging, succinct, never boring presentation. Available through AnglersThree at www.e-educationsolutions.com.

Gloppestad, K. (1987). From Separation to Closeness: Parent’s Experiences with Closeness. Available in English or Norwegian from Kari Gloppestad, Dept. of Pediatrics, National Hospital University of Oslo, Pilestredet 32, 0027 Oslo 1, Norway (25 minutes) $140.00 Shows parents doing KC with ventilated infants long before anyone thought this was possible. VENTILATED KC

Health-Info. Video Vital AS. (2010). Breast is Best. 7 minute trailer and a 45 minute video that shows a cesarean birth and infant is diapered and dried when given to the mom for KC in the OR. Baby and Mom are transferred to Recovery in KC. Shows father doing KC with infant too. And then it shows the infant in recovery room going through stages and spontaneously latching on. Instructions about breastfeeding are well done and have good visuals to show how to position the breast and the Montgomery tubercles that release amniotic scent. This video is shown in the blog. Available from Health-Info Video Vital AS, PO Box 5058 Majorstua, 0301 Oslo, NORWAY or from HEALTH.INFO@videovital.no FT, CS birth, transport in KC from cesarean, and Birth KC and BF in recovery


INJOY VIDEOS (2009). The Essential Primer on Prememies. Your Premature Baby. Vol 1 covers defining prematurity, preemie appearance and behavior, the NICU and its equipment and common medical problems. Vol. 2 is “interacting with and feeding your baby” and includes communication and touch. Kangaroo Care how to and benefits, feeding and taking care of you and there is a Vol. 3 on Going Home, but the ad shows a picture of KC and says “Promotes Kangaroo Care.” There is a total of 2 minutes devoted to Kangaroo Care. Injoy’s company number is 800-326-2082 and extension 2.

INJOY VIDEOS (2013). Kangaroo Care (Skin To Skin Contact) and Impact on Exclusive Breast Feeding. Webinar on KC benefits to breast feeding, exclusive breastfeeding and sudden unexpected postnatal collapse. Webinar by Susan M. Ludington. Available for free at www.injoyvideos.com and if you want contact hour for the one hour video, you can contact INJOY VIDEOS. It is available from the injoy website under Education and then go to WEBINARS and look down the list for the title above. Or call 1-800-326-2082

Kangaroo Care in Serbia (2012). A new video showing how KC is implemented in the NICU at the Institute of Neonatology of Servia can be seen at http://youtu.be/jcb1BJP8Bso. It is about 8 minutes long and shows an interesting method of practicing Kangaroo Care.


March of Dimes. (2012). The March of Dimes is changing its CLOSE TO ME program to help mothers of infants in the NICU have better experiences. If you read Cooper 2007 article, it says that 95% of mothers interviewed thought that Kangaroo Care was the best thing they could do in the NICU, so MOD is upgrading its Close To Me program to emphasize Kangaroo Care more and has produced this video. In 2013, June, Liza Cooper has developed a delightful webinar for NICU staff nurses to use on Kangaroo Care in the Neonatal Intensive Care Unit. Takes about an hour to complete and is very well done in Dr. Ludington’s opinion. It is for free unless you want a CEU. It is available on the march of dimes website (www.marchofdimes.org).

The Kangaroo Mother Care Acceleration Partnership Community of Practice hosted a webinar that made the case for the importance of follow-up for KMC/preterm babies to go beyond survival and optimize quality of life, including what kind of screening and clinical and social services are offered/recommended and at what intervals. Dr. Mazia presented on “inspirational” models and suggestions for what realistically can be done in limited-resource settings. She also shared ideas for improving compliance with follow-up such as the use of mobile technology, or innovations like decentralizing basic services in combination with referrals for periodic specialized care.

Click here to view the webinar. Dr. Goldy Mazia is a pediatrician with training in neonatology and a Master’s degree in public health, with over 25 years of clinical experience and 12 international public health, with a focus in newborn issues. She is a Newborn Health Advisor for USAID’s Maternal and Child Survival Program (MCSP) based in Washington DC, working for PATH (Program for Appropriate Technologies in Health). Dr. Mazia was a founding member and for 3 years the coordinator of the LAC Neonatal Alliance, working to address the main causes of newborn mortality in the region for the past 10 years. She is also a recognized global expert in newborn health, and particularly in the implementation and measurement of KMC. The KAP COP is a group of professionals committed to increasing coverage of effective KMC to reach 50% global coverage by 2020, as per the Every Newborn Action Plan. In addition to in-person meetings, the community of practice hosts this online community for further discussions, to share documents, create and access webinars, and more. If you would like to learn more about the KAP COP and how to join, visit the group’s page here.

MBC Special (Korea) (2011, August 19). The Miracle of the Mother’s Chest. This was a one hour film contrasting the Korean routine of parents visiting their preterm infants for only 30 minutes per day, once per day, and not being allowed to hold the infant until his temperature is stable. The special starts with the story of Kate Ogg (mother) and her baby, Jamie Ogg, who was declared dead in Australia. After “resuscitating” Baby Jamie, he was taken to the NICU in Australia and put in an incubator and it was 9 days later before they would let the mother kangaroo baby Jamie. She kangarooed his sister, Emily, at day 6 of life and they were born at 27 weeks GA. And they first experienced shared KC at 7 weeks of life. (Why so slow?) (page 9 of English Transcript of the special). Then Ms. Ogg said, “And when we did KC, it was just the most wonderful thing.” Then it goes back to comparing the Ogg baby to two infants in Korea who are not getting KC and parents are only allowed to touch through incubator doors and father says “The fact that there is nothing I can do is what hurts the most” (pg. 11 of transcript). When they start KC in Korean hospital, parents can only do it for 30 minutes (WHAT and WHERE IS THE RATIONALE for THIS?). Then it shortly shows the newborn nursery at Riverside Methodist Hospital in Columbus, OH and how there are no babies there because they are all with their mothers. And then they go to a new mother who is doing KC in postpartum and to another woman who is giving KC to her cesarean birth daughter and the father said “Oh, I love it (KC)” and the film ends going back to the Korean nursery where one one the preterm infants has a celebration of her 100 days of life and everyone. They give a shot, but not in KC, but put baby in KC after the shot for maternal comforting. The infant goes for retn from prematurity surgery and recovers swiftly and the mother attributes it to 50 days of Kangaroo Care. THE END. No birth KC, no pictures of preterms in KC in Korean hospitals other than one baby. This show was a big success, so they are filmed a sequel for October, 2011. PT, FT, Korean standards, paternal KC, Resuscitation KC.  Not on Charts 9/18/2011.

Miller School of Medicine, University of Miami, Florida. (2012). Dr. Ludington did a three day consultation at the Miller School of Medicine to help the doctors and the staff of Jackson Memorial Medical Center get on board with Kangaroo Care and one of her presentations was filmed and is available at http://pediatrics.med.miami.edu/documents/What_in_the_future_for_kangaroo_care. pdf

Morrison, B. (2007). Kangaroo Care: A Crash Course. This is a 4 hour DVD of a presentation of the terminology, benefits, and physiology of Kangaroo Care for Full Term infants and a touch of preterm KC too. Available for $150.00 from from Precious Image Creations, Inc. 6650 Sugarloaf Parkway, Suite 800, Duluth, GA 30097, info@preciousimagecreations.com, phone : 866-979-4320, FAX is 770-979-7037

Lee, Nikki. (2010). Kangaroo Care: A crash course review for ILCA. Available at www.ILCA.org. The DVD includes everything, had home movie quality and some of the citations are difficult to see, but NONE of that matters! This is a tour de Force as one is taken through research, benefits, physiology, hormones, policies, positions, practice, long term effects and implementation of KC. This is her review of the Morrison 2007 film.

Morrison, B. (2007). Kangaroo Care: An Overview. This is a 40 minute DVD of the effects of Kangaroo Care for full term infants. Nikki Lee (2010) of ILCA has reviewed this film very positively “Dr. Morrison makes the film come alive” and recommends it for health professionals and consumers. The benefits, physiology of kangaroo care are accompanied by wonderful photographs and excellent references for conveying the evidence-base behind this practice. The review is available from www.ILCA.org and the video is available for $75.00 from Precious Image Creations, Inc. 6650 Sugarloaf Parkway, Suite 800, Duluth, GA 30097, info@preciousimagecreations.com, phone : 866-979-4320, FAX is 770-979-7037. Or www.preciousimagecreations.com

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Morrison, B. (2007). Kangaroo Care: Nature’s Best for Your Baby (for Parents). Thi is a 26 minute DVD of Dr. Morrison presenting a power point talk at a hospital. She presents research evidence concerning the benefits of Kangaroo Care (fewer infections, more stable respirations and cardiac functioning, less crying, social advances and maternal empowerment and better breastfeeding, as well as higher confidence and competence. KC at birth is also emphasized. This DVD focuses almost solely on the mother but mentions other family members too. This is NOT a how-to film, but is very educational with the knowledge that may persuade mothers and families to use Kangaroo Care. Available for $45.00 from Precious Image Creations, Inc. 6650 Sugarloaf Parkway, Suite 800, Duluth, GA 30097, info@preciousimagecreations.com, phone: 866-979-4320, FAX is 770-979-7037.

Morrison, Barbara. 2013. She is doing a series of radio shows. Go to www.blogtalkradio.com/closeuptalkradio to hear her series of talks and you can ask a question when you join it live by calling 347-996-3389. She did one on June 26 and one on July 18, 2013. ‘

Morton, J.A. (2003). A Premie Needs His Mother. Available from Videotransform, Palo Alto, CA whose website is www.breastmilk.solutions.com. Cost is $125.00 and you can email the author, a Clinical Professor of Pediatrics, School of Medicine, Stanford University at jamorter@vermotel.net. Comes in two parts: Part 1: Benefits of BF which is best for prenatal viewing. This section includes how to pump your breasts. Part 2: Learning to BF-Coming Home to be viewed after birth and talks about transition from tube to breastfeeding. History and integration of KC into care is shown with paternal KC in NICU and at home, while the father is vacuuming. The challenge to return to work is also included. 60 minute video. Good review of it by Out, C.(2003). Review of “A Premie Needs His Mother” in J. Perinatology, vol. 23, p. 88-89.


Para, Susan (2011). ILCA Print and Multimedia Reviews. Ms. Lee states that this video is heavy on the research and science and has very little demonstration of how to use KC, but that doing so increases the number of infants BF and longer BF durations. Dr. Morrison stresses the first two hours post birth rather than the first hour post birth. She recommends this video for in service education, even though the stated audience is for parents. Review available from www.ILCA.org.

Presbyterian Hospital of Plano, TX (2006). A Parent’s Tender Touch: Caring for your baby in the NICU. Informative DVD for parents that presents practical ways for them to help their baby from developmental perspective. Parental involvement demonstrated through KC, importance of maternal scent, swaddled bathing, reading baby’s cues, breastfeeding, and preparing for discharge. 24.95 Checks payable to Presbyterian Hospital of Plano, phone 972-981-3788 (fax is 972-981-3787).


Shigeta, Yoshiro (2001). Kangaroo Care in Japan. NHK Japan Broadcasting Corp. 2-2-1 Jinnan, Shibuya-ku, Tokyo, 150-8001, JAPAN. Tel: 81-3-5455-3358.

Small Wonders. Small Wonders is a national program with the aims of increasing the number of breast milk feedings premature infants receive and the amount of skin to skin contact that premature infants received started by BestBeginnings of the UK. They have made 12 short clip videos that follow each pregnant woman through the NICU stay (showing KC) and at home until the infant is one year old. They developed the NUCAT assessment of health professionals KNOWLEDGE and ATTITUDES towards Breast milk feedings and Kangaroo Care and this tool is available to all from their website or you can get it from smallwonders@bestbeginning.org.uk. The website for smallwonders is http://www.bestbeginnings.org.au/smallerwonders.

Smillie, C. (2010). Baby-Led Breastfeeding…The Mother-Baby Dance. This is a 16 minute long video on DVD that shows older full term infants doing the breast crawl and latching on well. After the original 16 minute film there is an hour of additional material, like the basic benefits of Kangaroo Care and how to help mothers do Kangaroo Care and a few cases that Dr. Smillie has had in her career as a pediatrician about infants who benefitted from Kangaroo Care. Film is in English, Spanish, Italian, Chinese, Dutch, German, and Japanese. Available from Geddes Production for $40.00.

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Storkstories. (2010). THIS is THE SAME AS Health-Info VIDEOVITAL but how it should be cited is unclear. This is a 7 minute trailer of KC during Cesarean birth and it is free to all who bring it up on http://obnurse35yrs.wordpress.com/2010/0603/skin-to-skin-minutes-after-cs-in-the-or-speaking-up-and-making-it-happen/. When you go to the Health-Info information aboveyou will learn how to order the full 45 minute film.

The Healthy Children Project. (2010) “Skin to Skin in the First Hour After Birth: Practice Advice for Staff after Vaginal and Cesarean Birth”. Authors are Widstrom, A-M, Svensson K, Brimdyr K (daughter of Karin Cadwell). 40 minute film divided into three sections: Section 1 reviews the importance of skin to skin in the first hour and shows examples of newborns in the 9 stages of the first hour after birth. Section 2 offers practical advice for staff after a vaginal birth. This section follows a vaginally born baby thought the 9 stages of the first hour. Section 3 offers practical advice after a cesarean birth. This section follows a cesarean born baby through the 9 stages of the first hour. $39.99 from www.healthychildren.cc or by calling 508-888-8044. I think the BEST way to get this, though, is to go to www.healthychildren.cc which is the book store for Healthy Children Project for promotion of breastfeeding. On this site you will see Health Education Associates, Inc. presents several materials on Skin To Skin in the First Hour: A Suite of Materials. Healthy Children is a non-profit education institution to improve child heat outcomes, offer evidence-based training programs in the US and internationally about Healthy Children. Health Education Associates, Inc is the book store for Healthy Children Project and the address for Health Education Associates, Inc is 327 Quaker Meeting House Road, East Sandwich, MA 02537, toll free number is (888) 888-8077 from 9-4 Monday- Friday and Fax is (508) 888-8050 and website is www.healthychildren.cc. See ALSO HEALTH EDUCATION ASSOCIATES, Inc. next

HEALTH EDUCATION ASSOCIATES, Inc. Skin-to-skin in the First Hour After Birth: Practical Advice for Staff after Vaginal and Cesarean Birth. Authors are Widstrom A-M, Svensson K, & Brimdyr K. (2010). This is a 39 minute video intended to assist staff in providing Birth KC to the fullterm newborn in the first hour after birth. The video has 3 sections: Importance of skin to skin and examples of the baby’s 9 stages during the first hour, practical advice for staff after a vaginal birth, and practical advice for staff after a cesarean birth. Picture of vaginal and cesarean birth KC are included. Cost is $39.00. Available from Health Education Associates, Inc. 327 Quaker Meeting House Road, East Sandwich, MA 02537, 888-888-8077 from 9-4 Monday thru Friday and Fax is 508-888-8805.

This DVD has a handout (The First Hour After Birth) 2 pages back to back with 100 copies on a tear-off pad that clearly explains the nine observable newborn stages that occur when a baby is in skin to skin contact after birth. These stages happen in a specific order and innate and instinctive for the baby. On the second side, the section entitled “Benefits for Babies” relates “Regardless of how you are feeding your baby, your baby can benefit from skin-to-skin contact. Babies are warmer, calmer, can hear their mother’s heartbeat, heart and breathing rates are normalized, milk supply can be improved, other family members can hold and bond with babies through skin-to-skin holding too!” 100 sheets cost $14.00. Available from Health Education Associates, Inc. 327 Quaker Meeting House Road, East Sandwich, MA 02537, 888-888-8077 from 9-4 Monday thru Friday and Fax is 508-888-8050 and phone is 508-888-8044. Or you can order from www.healthychildren.cc.

The Healthy Children Project. (2011). The Magical Hour: Holding Your Baby Skin to Skin for the First Hour After Birth. The magical hour is a breathtaking DVD aimed as prospective parents. Parents who experience KC at birth share their thoughts and feelings about it. Authors are Brimdyr K, Widstrom A-M, Hanson, L.A. This DVD is 30 minutes long and costs $39.00 US dollars from www.healthychildren.cc and for address and fax and phone look at the citation just above. SEE ALSO HEALTH EDUCATION ASSOCIATES, INC next.

HEALTH EDUCATION ASSOCIATES, Inc. The Magical Hour: Holding Your Baby Skin-To-Skin for the First Hour After Birth. Authors are Brimdyr K, Widstrom A-M, & Hanson, L.A. (2011). This is a 30 minute DVD aimed at prospective parents. It will inspire parents and make them think seriously about KC at Birth, which is crucial to establishing BF and creating a priceless bond between mother and newborn. Parents who have experienced Birth KC share their thoughts and feelings about this magical first hour of life and what it meant to them and their child. It goes parents a realistic view of what it really means to spend that first hour in direct uninterrupted contact with the new life they have been given. Cost is $39.00. Available from Health Education Associates, Inc. 327 Quaker Meeting House Road, East Sandwich, MA 02537, 888-888-8077 from 9-4 Monday thru Friday and Fax is 508-888-8050. Or order from www.healthychildren.cc.

This DVD can be accompanied by 100 copies of a 2-page handout for parents called “How to Hold Your Baby Skin to Skin” Tear Off Pad. It is a double-sided tear-off pad which explains the benefits of holding your baby skin to skin in the hospital for healthy, term babies, the special care nursery and at home. Available from HealthEducation Assoc., Inc. 327 Quaker Meeting House Road, East Sandwich, MA 02537, 888-888-8044 from 9-4 Monday thru Friday and Fax is 508-888-8050. Or order from www.healthychildren.cc 100 Sheets cost $14.00.

The Healthy Children’s Project. (2010). Breastfeeding: Baby’s Choice, an 8 minute film of the 9 stages to breastfeeding in the first hour of life. Natural instinct to search for and find the mother’s breast is shown. $39.00 and available from www.healthychildren.cc, look KCBib 2018
for phone numbers and address in the first citation of The Healthy Children Project in this list. SEE ALSO HEALTH EDUCATION ASSOCIATES, INC NEXT.

HEALTH EDUCATION ASSOCIATES, Inc. BREASTFEEDING: BABY’S CHOICE. This 8 minute DVD demonstrates the newborn baby’s natural instinct to search for and find the mother’s breast. A baby is followed during the first hour of life and it shows a variety of explicit behavior such as looking, listening, touching, and talking while exploring life outside the womb. This DVD includes the role of the father. Cost is $39.00 and is available from Health Education Associates, Inc. 327 Quaker Meeting House Road, East Sandwich, MA 02537, 888-888-8077 from 9-4 Monday thru Friday and Fax is 508-888-8050.

This DVD can be accompanied by a sheet entitled An EASY WAY TO GET STARTED AT BREASTFEEDING; SKIN TO SKIN AND BREASTFEEDING IN THE FIRST FEW HOURS. It is a 5th grade pamphlet that describe infant self attachment and the importance of skin to skin contact in the first hours after birth. Illustrations with step by step narrative to prepare pregnant women and their labor coaches of what factors help/hinder early breastfeeding. Also lists the benefits of colostrums, discusses fat and inverted nipples and milk supply. 1-24 are $1.00 each; 25-149 are .49 cents each, and 150-499 are .45 cents each, and 500-2400 are 40 cents each. Available from Health Education Associates, Inc.

UNICEF. (2007). Breast Crawl. Initiation of Breastfeeding by Breast Crawl. A 12 minute film of a full term newborn being placed WET and HAIR WET on his mother’s chest and we watch as he crawls over toward the breast, performs pre-feeding behaviors, and then latches on spontaneously. This film is relatively good to watch, and you can see how infants in a tropical environment (INDIA) undergo Birth KC. Available on the website www.breastcrawl.com for free or you can get this film from UNICEF Maharashira, 19, Harish Enterprises, Parsee Panchayat Road, Andheri (E), Mumbai, INDIA 400069, unicef.or/india or email is mair@unicef.org and telephone is +91-22-28269727.


Waitzman, Kara Ann. (2012). Because more than 1000 people saw her dandelion webinar, Ms. Waitzman created a company called Creative Therapy Consultants and she has developed two DVDs for health professionals to use. The first DVD is called “Skin-to-Skin for Health Care Providers” and is intended for staff in the Neonatal Intensive Care Unit/Special Care Unit. The DVD reviews the benefits of KC, research evidence for the benefits, role delineation of nurses, special considerations, and step-by-step procedure for transferring the preterm and the ventilated preterm from incubator to mother using both standing and sitting transfers. The second video is for parents of infants in the NICU/Special Care Unit and it is entitled “Skin-to-skin for Parents” and relates benefits of KC, special considerations, and shows step-by-step process of standing and sitting transfer with arrows pointing to bad technique (i.e. flailing arms and failure to cover infant and contain arms). Each video is about 23 minutes long. To order go to lae@infantdriven.com. To view a samples of these two videos go to http://www.creativetherapyconsultants.com/skin-to-skin-holding

Each video costs $48.00 and if you buy the set it costs $96.00 (shipping is $6.00 additional) and there are discounts for bulk purchases. She takes visa, mastercard and AMEX. Creative Therapy, 8540 Wild Cat Road, Tipp City, OH 45371, ph: 855-CTC-NTRMC, Fax: 937-667-7426.

Warwood, Teresa. (1998). Kangaroo Care Educational Program (KCEP). This is a video orientation for health professionals. A 28-minute video covering basic information to be used in orientation of personnel in sites where Kangaroo Care is offered or planned to be offered. If one wants uniform implementation of a treatment, the best way to insure that is to include the guidelines in the orientation of all new staff and update existing staff. This video does an excellent job of reflecting the current findings and clinical issues related to KC implementation in NICUs. Available from Teresa Warwood, 2638 E. 1600 North, Layton, Utah 84040, 801-546-4253.

Widstrom, A-M, Ransojo-Arvidson, A-B, & Christensson, K. (2007). Breastfeeding – Baby’s Choice. This is an 8 minute video DVD that shows a fullterm infant being placed on the mother’s belly and then tracks the 9 stages of an infant’s behavior during the first 90 minutes of life as the infant recovers from birth, becomes active, looks at mother, exhibits pre-feeding behavior, moves toward a breast and then lungen and then latches on successfully and the sequence ends with infant and mother falling asleep due to satisfaction and oxytocin release. In North America, it is available from Health Education Associates, Inc. 327 Quaker Meeting House Road, East Sandwich, MA 02537, pohone 508-888-8044; fax is 508-888-8050, or from www.healthed.cc/info@healthed.cc

PROTOCOLS

Protocols are published in the following journal articles:
Anner, J. (1994). See this on the Lay literature list. The protocol is from UCSF and is on page 16, and 17.


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Children’s Hospital, 300 Longwood Ave., Boston, MA 02115 (617) 355-6000. Ms. Ann Coangula is the Nurse Manager and they have “Guidelines for Kangaroo Care for 7 North: Newborn Intensive Care”. It lists eligibility and exclusion criteria and requires doctor order. The protocol and documentation to follow are included.

Cleafy et al. (1997). Protocol from Thomas Jefferson University Hospital in Philadelphia, PA. **Mechanically Ventilated.**

Drosten-Brooks, F. 1993 in MCN on page 253 has elements of a protocol with any infant, not just those ventilated.

Evanson Hospital, 2650 Ridge Ave., Evanston, Ill. 60201. Protocol lists criteria, implementation, guidelines for transfer, including transfer of intubated infant, and documentation. **Mechanically ventilated.**

Gale, Franck, and Lund 1993 in Neonatal Network. **Mechanically Ventilated Protocol from Children’s Hospital of Oakland.**


St. Agnes Medical Center, Protocol for Kangaroo Care. Write to Ms. Sheri Fogarty, Neonatal Intensive Care Unit Nurse Educator, St. Agnes Medical Center, 901 45th Street, West Palm Beach, FL. 33416-4620. Includes purpose, description, procedure, parent readiness, implementation, and documentation.

Sarasota Memorial Hospital NICU, Ms. Deborah Hanson, RNC, 1700 S. Tamiami Terrace, Sarasota, FL 34239-3555

Vanderbilt University Medical Center has their KC policy/protocol available on their website

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PAMPHLETS


Childbirth Graphics. (2012). Kangaroo Care Tear Pad. Kangaroo care is a special type of infant care that mothers and fathers can provide by holding their babies skin-to-skin. Explains what kangaroo care is, its benefits for babies and parents, when to start kangaroo care, and how to provide kangaroo care. English on one side, Spanish on the other. 100 sheets per pad. Item number AT52608 page 30 of 2012 catalog, $17.50 per 100 sheets (if you buy love ore more pads the cost is $16.60 per pad. (Add $10 shipping cost for orders up to $50.00). Order from ChildbirthGraphics.com or call 855-510-6730 or fax to 888 977-7853. Childbirth Graphics PO Box 21207, Waco, TX 76702-1207


Larimer, Kristanne 1401 Washington St., #18, Canon City, CO 81212. Has wonderful pamphlet for parents, done in part by parents of formal premies, and it tells what KC is all about and how to do it with ventilator infants and all others, even those of OSCILLATING Ventilation.

Lawn, J. (2011). Kangaroo Mother Care: The Benefits for Your Full Term and Premature Baby. Washington, DC: Save the Children. Available from www.themiracleofkangaroomothercare.com. This is a 2 page pamphlet sort of thing available from the SAVE THE CHILDREN organization in Washington DC and it relates how KMC works for a premature baby (KMC will help him grow and develop faster compared to other premature babies who do not receive any KMC. But what is KMC and what’s in it that helps both full term and premature babies? Its like holding a baby in a pouch, but you position the baby on your chest near the middle of your bosoms. Holding your newborn baby in this kangaroo position makes it possible for skin to skin physical contact and breast feeding, the two essential components that make KMC work wonders for your full term or premature baby. Skin to skin physical contact and breast feeding in KMC is beneficial for your baby as it hastens your baby’s growth and development by 1) Regulating your premature baby’s bodily temperature (With KMC, your own bodily temperature helps keep your baby warm) or will also cool them down. Your temperature adjusts to what your baby needs. Thus your temperature could drop and adjust to those of your baby’s. This is known as thermal synchronicity. With this, his/her center will stabilize and his/her breathing and heart rate are more regular.2) Promoting the special bond between you and your newborn baby (feelings of safety and security are promoted through KMC, making him/her less stressed and promotes sleep. 3)Giving your baby the right nutrients from your breast milk. Your breast milk is loaded with nucleides that are crucial for your baby’s brain development while colostrums provides antibodies that help boost your baby’s immune system.” (page 2) Because you position your infant between your bosoms, he/she can smell your milk and this triggers an instinctive feeding and self-latching. Freeing your baby b reast milk give his/her the nourishments they need and this hastens weight gain to almost 30 grams per day as compared to preemies cared for in incubators. Remember, KMC is for every baby and every MOM and DAD no matter what your location in the world.

Pamphlet, PT. NOT on Charts 7.21.2011. See also pamphlets, Lawn citation.

Loma Linda University Medical Center (2011). Loma Linda, CA: Perinatal Services Network. Has several items available to help you implement BIRTH KC. Each is available for you to secure and use by contacting Perinatal Services Network of Loma Linda University Children’s Hospital, 11285 Mountain View, Suite 39, Loma Linda, CA 9235, phone: 909-558-3364; Fax: 909-558-3365 and the website is www.llu.edu/lumc/pnr OR you can see these materials, which also come in Spanish, by going to http://lomalindahealth.org/medical-center/our-services/perinatal-services-network/for-health-professionals/about-us/media-guide.html.

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Accessed 9/10/2011. These materials are not for promotion of any particular outcome other than bonding and they relate that there is a special time right after birth for mother and father to be alone with their baby for bonding. These materials do NOT provide any effects or benefits of KC to anyone. Try accessing these materials through http://bit.ly/ho8Kfs

1) A brochure called Skin-to-Skin Care. A gift only you can give your baby! This is a trifold pamphlet that explains S (Skin-to-skin care), O (open eye-to-eye), F (Fingertip Touch), and T (Time together) for parents and it has a lovely picture of a full term newborn in kangaroo care. It says talk to your baby, put it on your heart, talk to your baby, spend time with him.

2) A flyer called Ready to Love. Your baby is most comfortable skin-to-skin with you. This flyer starts with “Skin-to-Skin Care. Talk to your baby. Your newborn can hear your voice and will lift its head to look at your face when you speak. S is for skin-to-skin, O is for open eye-to-eye, F is for Fingertip touch, and T is for time together. Capture these magical moments with your newborn. Ask your visitors to delay their visit until you have shared this first hour together.”. THERE IS NO MENTION OF ANY EFFECTS OR BENEFITS OF KC, just encouraging having skin-to-skin time together right after birth.

3) A concept paper is called SOFT Concept Paper. This one page paper gives step-by-step recommendations for healthy newborns in the first two hours of life.

4) A POSTER called SOFT that shows each of those letters in a box running across the horizontal poster (no pictures, just words) and underneath each letter is what it stands for, i.e.: S Skin-to-skin with your baby, O open eye-to-eye with your baby, F fingertip touch of your baby, and T time together with your baby.

Ludington-Hoe, SM. Kangaroo Care for Your Infant. A four-fold pamphlet for parents of premature and full-term infants that explains KC, how long it should be done, what baby and mommey should wear, why it should be done, how often it should be done, how to tell if it is successful (vital signs as well as weight gain signs, for example), and how to do KC at home, safe KC (prevent falling out or over), 24/7 KC, and use of wraps to hold baby in. Free to all, may be used any way you want with attribution. Available from Susan.ludington@Case.edu. Send your mailing addresses because there are only hard copies available.

Martin Luther Hospital-Anaheim. Patient Information Sheet (in English and in Spanish) Neonatal Intensive Care Unit, 1300 W. Romney Dr., Anaheim, CA. 92801-1854.

Ohio Department of Health. “Hold Me Mom”. This is about skin-to-skin care after birth. Columbus, OH Warehouse #397.23. This is a free index-sized card to give to every new mother before birth because it instructs her to tell her health professional she wants to hold her baby skin to skin right after birth.

Promina Cobb Hospital Special Care Nursery, 3950 Austell Road, Austell, GA 30001. (404) 732-4414  Fax: (404) 732-4421. Ms. Pat Beckett, RNC, Dept. Manager of Special Care Nursery.

Robles, M. (2004) Kangaroo Care: A Pocket Guide to KC. Available from www.ummanitoba.ca/womens_health/kangaroo.htm. This is a pamphlet from the Univ. of Manitoba Dept. of OB, Gyn, Reprod. Sciences, Women’s Hospital in Manitoba, Canada. It covers, What is KC? Why KC? Where is KC practiced? Who can KC? When can KC be initiated? Policy is “stable babies who are less than 1500 grams and breathing on their own. Babies needing O2 or CPAP may also be eligible. Cardiorespiratory monitoring and oximetry may be continued during KC. Bedside nurse will be nearby to monitor the infant as necessary.” How do you do KC? And concludes with some maternal comments on KC. They did a similar pamphlet in 2000 that was excellent too.

University Hospitals of Cleveland has a one page Patient Information Sheet PI-223-Kangaroo Care (Skin-to-Skin) available from http://intranet.uhhs.com/files/patientinformationsheets/pi-223.pdf

Wesley Medical Center of Wichita, Kansas has a one page patient information sheet entitled WELCOME YOUR BABY WITH A HUG! It goes on to say, “Hold your baby skin-to-skin for one hour after birth. Benefits of skin-to-skin immediately after birth: keeps your baby warm, paces heart rate and breathing, calms the baby, increases your confidence as a parent, provides the time you need to get to know your baby, decreases the risk of infection, baby cries less, speeds up recovery time after childbirth, enhances breastfeeding success, feedings on demand increase, resulting in better weight gain and stable blood sugar, stimulates brain development. Skin-to-skin means holding your baby with only a diaper and hat on against your bare chest, covered by two receiving blankets. Information taken from Moore ER, Anderson GC, and Bergman N. Early skin-to-skin contact for mothers and their healthy newborn infants. (2007) Cochrane Database of Systematic Reviews. Issue 3, 1-63.” The sheet has a lovely picture of mother with full term newborn in her arms.

RELATED ARTICLES

Abrams R, Caton D, Calipp J, Barron D. 1970. Thermal and metabolic features of life in utero. Clinical Obstetrics and Gynecology, 13, 549-564. This article reports the warm environment of the womb and Silverman suggests that the warm temp of baby in
 KC might be advantageous: perhaps surfactant production proceeds more rapidly at the fetal-like temperatures, and less apnea when warm than cold. Apnea, surfactant, temp


Craig, A.D., Chen, K., Bandy, D., & Reiman, E.M. (2000). Thermosensory activation of insular cortex. Nature Neuroscience 3, 184-190. Warmth conveyed to the skin is a pleasant experience as this message is sent to the limbic area of the brain, seat of emotional, affiliative, love behaviors, and where hormonal responses (i.e. oxytocin) originate. Brain studies

Kennell, JH, Jerauld R, Wolfe H, Chesler D, Kreeger NC, Mc Alpine W, Steffa M, Klaus MH. 1974. Maternal behavior one year after early and extended postpartum contact. Developmental Medicine & Child Neurology, 16, 172-179. Moms given swaddled holding in 1st Postpartum hour had more attentive behavior toward infant during physical exam at one year than controls – but all other maternal behaviors were similar at one year. Ringler did FU at 2 years and found early contact moms had different (better) speech patterns (Ringler NM, Kennell JH, Jarveilla R, Navojorsky BJ, Klaus MH 1975. Mother-to-child speech at 2 years – effects of early postnatal contact. Behavioral Pediatrics 86, 141-144). FullTerm, RCT, Maternal Behav RCT

Lemay DG, Ballard OA, Hughes MA, Morrow AL, Horseman ND, Nommsen-Rivers LA. (2013). RNA sequencing of the human milk fat layer transcriptome reveals distinct gene expression profiles at three stages of lactation. PLoS One 8(7):e67551. doi: 10.1371/journal.pone.0067551. Aware of the important benefits of human milk, most U.S. women initiate breastfeeding but difficulties with milk supply lead some to quit earlier than intended. Yet, the contribution of maternal physiology to lactation difficulties remains poorly understood. Human milk fat globules, by enveloping cell contents during their secretion into milk, are a rich source of mammary cell RNA. Here, we pair this non-invasive mRNA source with RNA-sequencing to probe the milk fat layer transcriptome during three stages of lactation: colostral, transitional, and mature milk production. The resulting transcriptomes paint an exquisite portrait of human lactation. The resulting transcriptional profiles cluster not by postpartum day, but by milk Na:K ratio, indicating that women sampled during similar postpartum time frames could be at markedly different stages of gene expression. Each stage of lactation is characterized by a dynamic range (10(5)-fold) in transcript abundances not previously observed with microarray technology. We discovered that transcripts for isoferritins and cathepsins are strikingly abundant during colostrum production, highlighting the potential importance of these proteins for neonatal health. Two transcripts, encoding β-casein (CSN2) and α-lactalbumin (LALBA), make up 45% of the total pool of mRNA in mature lactation. Genes significantly expressed across all stages of lactation are associated with making, modifying, transporting, and packaging milk proteins. Stage-specific transcripts are associated with immune defense during the colostral stage, up-regulation of the machinery needed for milk protein synthesis during the transitional stage, and the production of lipids during mature lactation. We observed strong modulation of key genes involved in lactose synthesis and insulin signaling. In particular, protein tyrosine phosphatase, receptor type, F (PTPRF) may serve as a biomarker linking insulin resistance with insufficient milk supply. This study provides the methodology and reference data set to enable future targeted research on the physiological contributors of sub-optimal lactation in humans. SO, colostrum offers isoferritins and cathepsin proteins that are vital to neonatal health, and gene transcripts in the milk proteins during colostral stage as associated with immune defenses and mature lactation, production of lipids in the milk. They also found that insulin resistance is associated with INSUFFICIENT MILK SUPPLY, so for prediabetic, diabetic, obese moms, check for insulin resistance as source of cessation due to milk poor supply and especially give moms KC because KC maybe able to override the influence of insulin resistance on milk production. Descriptive study, human genomes, genome expression. BF, colostrum, BF physiology, N on Charts 4-28-2017

Liu D., Diorto J., Day JC, Francis DD, Meaney M. (2000). Maternal care, hippocampal synaptogenesis and cognitive development in rats. Nature Neuroscience 3(8): 799-806. A direct relationship between maternal behavior and hippocampal development is present: rats pups who had hi levels of licking, grooming and nursing showed increased expression of NMDA receptor subunit and brain-derived neurotrophic fact BDNF mRNA, increased cholinergic innervation of the hippocampus and enhanced spatial learning and memory.

Olausson H, Lamarre Y., Backlund H, Morin C, Wallin BG, starch G, Ekholm S, Strigo L, Worsley K, Vallbo AB, Bushnell MC. (2002). Unmyelinated tactile afferents signal touch and project to insular cortex. Nature Neuroscience 5(9), 900-904. Human hairy skin has dual tactile innervation: fast-conducting myelinated afferent fibers, and slow conducting unmyelinated (C) afferents that respond to light touch, creating the sensation of pleasant touch. These fibers activate the insular cortex (LIMBIC system), but not the somatosensory areas S1 and S2. C touch afferents is a system for limbic touch that may underlie emotional, hormonal, and affiliative responses to caress-like, skin-to-skin contact (emotional aspects of touch). Gentle, caressing skin-to-skin touch, especially on arm and in palms, is pleasant experience.


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**Co-sleeping/Co-bedding**


Mace S. 2006. Where should babies sleep? *Community Practice* 79(6), 180-183. Review article of some of the most relevant research about co-sleeping. Three main areas are reviewed: sleep position, maternal smoking and alcohol consumption, and breastfeeding. Recent concerns highlighting sofa sleeping are presented too.


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HR recorded in 15 infants in bed sharing night vs solitary night. 8 infants routinely bedshared with mother the other 7 slept alone. Fullterm infants at 11-15 weeks old. HR is lower when solitary sleeping. Infant temperature was significantly the cause (by regression analysis), and HRV was higher during solitary sleeping than bed sharing in QS and AS and REM sleep. Increased sympathetic activity in states 3,4 (drowsy and awake) and in REM sleep due to temperature. Sensory differences account for some physiologic differences between infant sleep in the two conditions. *FT, HRV, Temp, HR*


Touch SM, Epstein ML, Pohl CA, Greenspan JS. 2002. The impact of co-bedding on sleep patterns in preterm twins. Clinical Pediatrics (Phila), 41(6), 425-431. 12 hrs preCB and 12 hrs of CB cardiopulmonary recording. 22 CB infants (11 sets of twins) at 31.8wks GA studied at 33.5 wks corrected age. # of central apnea decreased (57 pre CB, 18 CB) with CB, no diff in Bradys, PB. No temp instability, no increase in O2 requirements during CB. Decrease in central apnea probably due to more frequent arousal by twin. RCT, Apnea, Brady, PB, temp, oxygen requirements.


REFERENCE TO KANGAROO CARE

Als, H, Gilkerson L. Developmentally supportive care in the neonatal intensive care unit. 1995. Zero to Three, 15(6): 1-10. This has one small paragraph on “Opportunities for skin-to-skin holding” on page 5 saying that these opportunities are regularly provided as a part of developmental care. Developmental Care.

Anand, KJS, & Scalzo, FM. (2000). Can adverse neonatal experiences alter brain development and subsequent behavior? Biol Neonate, 77, 69-82. Repetitive pain, sepsis, maternal separation in rodents and other species have been associated with multiple alterations in the adult rat brain. He proposes that NMDA receptor activity from maternal separation leads to increased apoptosis in multiple areas of the immature brain, and exposure to repetitive pain may cause excessive NMDA activation resulting in excitotoxic damage to developing neurons. On pg. 72 “Kangaroo care may provide additional physiological and neurodevelopmental benefits in critically ill neonates.” Pg 73 “Improved clinical and neuromaturational outcomes have resulted from developmentally supportive nursing care and “KC” in preterm infants” and cites Ludington and Swinth, 1996.


Aucott S., Donohue PK, Atkins E., Allen MC. 2002. Neurodevelopmental care in the NICU. Mental Retardation and Developmental Disabilities Research Reviews, 8(4), 298-308. On page 304 are 1.33 columns of KC, mostly citing the Conde-Aguedelo 2002 Cochrane Review. Says that parent disenfranchisement is biggest NICU problem, and KC corrects this on page 304. There is a whole column devoted to KC history (very brief) and outcomes of the 2002 Conde-Aguedelo meta-analysis. Review

Bakewell-Sachs, S., Blackburn, S. 2003. State of the Science: Achievements and challenges across the spectrum of care for preterm infants. J Obstet Gynecol Neonatal Nursing, 32 #5, 683-695. On page 688 it states “Many developmental strategies were implemented before undergoing adequate scientific testing. More research is needed, but the evidence base is growing for interventions such as cycled lighting, kangaroo care, nonnutritive sucking, containment, touch, and positioning, due in large part to the work of nurse researchers”.

Bowie BH, Hall RB, Faulkner J, Anderson B. 2003. Single-room infant care: future trends in special care nursery planning and design. Neonatal Network 22 (4), 27-34. On page 28 it states; “Also in the early 1990s several articles were published documenting the benefits of skin-to-skin/kangaroo care, and/or the first time in many nurseries, parents were encouraged to participate in the care of their preterm infant.” And “Privacy became limited, movable screens were used to give a sense of privacy for breastfeeding mothers and for parents providing Kangaroo Care.” They have drawing of KC in a single-room on page 31. PT, Not KC study per se.

Christensson Bhat et al. 1995


Feldman R, Eidelman AL. (1998). Intervention programs for premature infants. How do they affect development? Clinics in Perinatology, 25(3): 613-626. This review article states that “Kangaroo Care is suggested as the intervention that most logically meshes the premature infant’s need to develop state regulation while facilitating sequential sensory development and promoting mother-infant attachment.


Freda, M.C. 2003. Nursing’s Contribution to the literature on preterm labor and birth. J Obstet Gynecol Neonatal Nursing, 32(5): 659-667. On page 664 she writes “Another intervention for the preterm infant that has been studied often by nurses is skin-to-skin care or kangaroo care (KC). It is thought that this intervention decreases neonatal energy expenditure and promotes infant growth. Ludington-Hoe et al. (1999) found that beginning in the delivery room, KC could be done safely and that infants' temperatures rose rapidly to the thermoneutral range while the infants were receiving KC. They concluded that KC was conducive to recovery from birth fatigue in 34- to 36-week preterm infants. Chhao et al (2002) randomly assigned preterm infants to groups, those receiving KC and those not receiving KC, and found that infants receiving KC had higher mean tympanic temperature, more quiet sleep, and less crying than those who did not receive KC. In one survey of 537 NICUs in the United States (Engler et al., 2002), 82% of the NICUs were practicing KC. Enler found that nurses perceived some barriers to its use, such as has lack of scientific knowledge about whether KC care was appropriate for all neonates, as well as some nurses' concerns about infant safety.” Then it goes on for another whole paragraph relating Gene Anderson’s case studies, saying KC has positive parental and infant outcomes with a depressed mother, when begun within 4 hours of birth in an NICU, for twins and adolescent parents, for adoptive parents, for triplets and a mom with pre-eclampsia.


Hackman, PS. 2000. Recognizing and Understanding the Cold-Stressed Term Infant. Mother-Baby Journal, 5(4), 10-16. On page 13 there is one paragraph that says “A neutral thermal environment can be achieved by using skin-to-skin contact, a radiant warmer…” and that “the use of this technique has several advantages, including stabilizing vital signs and temperature, promoting bonding between infant and parent, and improving lactation.”

Harrison, L. (1997). Research utilization: Handling preterm infants in the NICU. Neonatal Network, 16(3); 65-69. On page 66 & 67 she discusses Kangaroo Care and its benefits. On page 68 she states more research is needed to answer the question: When is it safe to initiate KC for preterm infants? She says KC is gentle human touch, not the stressful type of touch subject to minimal handling protocols.


Kovach, A.C. (2002). A 5-year follow-up of hospital breastfeeding policies in the Philadelphia area: A comparison with the ten-steps. *Human Lactation*, 18(2), 144-153. On page 145 they list a question in their survey of 35 Philadelphia hospitals, “Are baby’s temperatures stabilized skin-to-skin with the mother rather than under radiant warmers?” and on page 150 report: “only 3 hospitals(9%) regulated a baby’s temp skin to skin and 11 (31%)reported doing this sometimes. When asked about skin to skin contact following delivery, most hospitals placed babies skin to skin with their mothers all or most of the time (10 or 29%) or sometimes (14, 40%). Some hospitals did the APGAR score while the baby was skin to skin with the mother all or some of the time (n=10,29%).”(150). KC FOR WARMING INFANTS, BIRTH KC, Fullterm

McCain G. 2003. Evidence based practice for neonatal nursing. *Neonatal Network* 22 (6), 5-6. On page 5 she states “early Skin-to-skin contact between mother and newborn has a positive effect on BF at 1 and 3 months after birth (citing Anderson et al, 2003 Cochrane review results). She says evidence supports adoption of skin-to-skin care, but nurses must first be educated about the benefits of the practice and then develop a guideline or protocol.

Meier P, Engstrom JL, Mingoletti SS, Miracle DJ, & Kiesling S. 2004. The Rush Mothers’ Milk Club: Breastfeeding interventions for mothers with very-low-birth-weight infants. *J Obstet Gynecol Neonatal Nursing* 33(2), 164-174. On page 166: “Evidencely based nonpharmacologic techniques to help preent low milk volume, such as pumping at the infant’s bedside, skin-to-skin care, and suckling at the emptied breast, are routinely employed by bedside nurses. PT, implementation evaluation, BF.


Perlman, JM. 2003. The genesis of cognitive and behavioral deficits in premature graduates of intensive care. *Minerva Pediatrics* 55 (2), 89-101. Increased survival has led to deficits into school age and adolescents. One cause of deficits is prolonged hospitalization and the stress that it causes. The stress can be minimized by positive maternal-infant interactions. Positive interactions enhance neurobehavioral development. KC is recommend as a positive parent infant interaction and related to improved neurodevelopmental outcome.

Review, development

Stevens BJ, Franck LS. 2001. Assessment and Management of Pain in Neoneates. *Pediatric Drugs* 3(7), 539-558. On page 546 it refers to KC, saying it has “improved survival, increased the incidence and duration of breastfeeding, resulted in improved respiratory and temperature control, and enhanced maternal-infant interaction.” However, only 1 study has investigated KC as a pain management strategy during acute painful stimuli…given the encouraging results of this study, further investigation of this technique as a potential source of analgesia in human neonates is most certainly warranted.”


Whithy C, de Cates, C.R., Robertson, NRC (1982). Infants weighing 1.8-2.5 kg: Should they be cared for in neonatal units or postnatal wards? *The Lancet, 1* (Feb. 6, 1982), pp 322-325. Infants without problems do well in cot care in regular postnatal wards, similar to the very early Kangaroo Care studies.

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Weller A, Feldman, R. 2003. Emotion regulation and touch in infants: the role of cholecystokinin and opioids. Peptides 24, 779-788. This is a review of the lit on effects of touch on development of emotion regulation in human and animal models. KC is specifically addressed on pg 782-783.


Kangaroo Care Stories/ Comments from Users

Barabach, Lynn RN, MSN, Nurse Manager (Sept. 8, 2014). Ms. Barabach was relating an event she had recently witnessed while attending a delivery of a fullterm infant to a healthy mother. Infant was placed in KC within one minute of birth and shortly after 1 minute APGAR was taken, the delivering physician said “Oh no, she’s hemorrhaging.” The nurse watching the baby said “I’m taking the baby to the warmer” and Lynn replied “No, don’t do that. Leave her with the mom because she’ll produce more oxytocin for the mom.” The infant was left with the Mom, the physician called for IV Pitocin and IM Methergin. But before either was given, he said “It’s stopping. Her uterus is firm. I can’t believe it.” The IM Methergine was given and mother had no problems and Postpartum Day 1 Hemoglobin and Hematocrit did not show any signs of postpartum hemorrhage. Be sure to read the SAXTON articles on the bib. FT, Birth KC, PP Hemorrhage

Costy, Gina RN, CKC. (July 21, 2014). “This past week I had an amazing skin to skin experience and I wanted to share it with you. I work at XX Medical Center NICU. I was taking care of a new admission from night shift. He was a 36 week baby who was admitted for glucose issues. Mom was diabetic and went for a c-section for placenta previa. Mom ended up hemorrhaging and coded in the OR. She was transferred to SICU and coded again not even 20 minutes after her arrival. She coded a total of 4 times. Cooling therapy was initiated with mom, she was intubated, sedated, on Nitrous Oxide, pressors, epi drip. No one was sure if mom would survive the next 24 hours. All morning Wednesday we were waiting on trying to initiate skin to skin with mom. By about 6 p.m. that evening I had taken the baby to see mom for about an hour. No response was given from mom that evening, but by 6 a.m. the next morning the nurses were able to wean some of her blood pressure medication and mom woke up asking for her baby. Later Thursday I took the baby for skin to skin with mom. At this point mom was off cooling therapy, off her sedation, off the pressors/NO and epi were all discontinued. Friday morning mom was the first case for the OR for a washout and closure of her c-section for placenta previa. Friday afternoon the infant was taken back for skin to skin with mom for about 90 minutes. When we left, mom was going to be extubated!!! Mom helped feed the baby, change him and burp him! What is being said is that mom had an amniotic emboli and I’m so glad I pushed to initiate skin to skin. It most likely saved mom’s life!! Thank you so much for the wonderful teaching. Please contact Ms. Gina Costy at beepers_06@hotmail.com for further information. FT, Maternal physiology.

Hartmann, Laurie, (2012) Deaconess Hospital, Newburgh, Indiana: We have been using wraps for kangaroo care since August 2009 and have given some to moms to take home. There have been no safety issues with the wraps we use, and they were very effective on increasing the time spent in skin-to-skin care. Moms are still wearing their babies skin-to-skin when they return for follow-up 2 weeks later. The hospital experiences more effective breastfeeding. Babies are happier and we see a decrease in crying of 80%. Babies rest much better. When babies were swaddled with a pacifier. Mothers are afraid that they are unable to care for their babies. So, we teach moms that have everything their baby needs. When mom holds her baby she gains confidence to be a mother. Moms find getting babies to latch is easy. To breastfeed we shift the baby’s bottom from upright in KC to an angled position in KC and the baby will begin to root. As the baby does the woodpecker dance, the baby will latch onto the breast naturally. We encourage moms to hold their baby 20 minutes before anticipated feeding if they are not already holding skin-to-skin. This makes breastfeeding simple. Not all moms want to undress the baby all the time for skin-to-skin, so they use the wrap with clothed baby and we find good results even with the baby clothed. (Contact Sylvia Houston, CKC, at 770-979-4320 or sylviah@preciousimagecreations.com or www.preciousimagecreations.com for more information.

Marinelli, M. (2016-March 29) Nurse Manager of Maternal Child Nursing at Grant Medical Center, OHIO Health, in Columbus, WA. In March 2016, she called Dr. Ludington to report two recent SUPCS in the Columbus area and to tell her “I never thought I would have to tell a mom to be sure her baby is breathing, but after what has happened, I know I need to do this now and we need to do start doing the RAPPT assessments. She related the following details about two cases. Case 1 was a full term female infant of NSVD with episiotomy who had 8 and 9 APGARS at 1 and 5 minutes postbirth who went onto the mother’s lower belly within one minute of birth and was repositioned into the KC position by 5 minutes post-birth. The doctor told the mother to get comfortable because he was going to do the repair of the episiotomy and the nurse helped him set up whatever he needed and he proceeded to repair the episiotomy. As soon as he finished, he told the mother to “scoot back and get comfortable, I am finished and the mother squirmed back further on the bed with the infant in KC. The doctor did a few more things that took 1-2 minutes perhaps, and then told the nurse that she could now clean the perineum. The doctor left the room and the nurse started cleaning the perineum, and then she said “I had the thought: I should check the baby” so she looked up and saw the baby was dusky. She immediately stopped cleaning the perineum, took the baby to the radiant warmer KCBib 2018
in the LD positive Pressure ventilation and called a code of the infant. The infant immediately perked up, started breathing and changing color. The baby was determined to be okay by the NICU staff who responded to the call for help, and the baby was okay and discharged home with the mother and father.

**Case #2** was a NSVD of a baby boy who went onto his mother’s lower abdomen within one minute of birth and was moved up to the KC position before the five minute Apgar. The one and five minute Apgars were “good.” The nurse remained in the room for the first 30 minutes post-birth and the infant was still somewhat in KC (between the breasts) and somewhat in a prefeeding position on the breast but not yet on the nipple. When the nurse returned for the next “q 15 minute” check, she found the baby blue, apneic, and unresponsive with his mouth and nose imbedded in breast tissue as the mother was texting. Within 45 minutes of birth, the mother had testified 127 times. The infant could not be resuscitated and died. This why texting and telephoning should not be allowed and why using a smart phone has been identified as a RISK FACTOR for SUPC (Ludington-Hoe & Morgan, 2014).

Preet, Love. 7/27/2013. “Hi Susan . Sorry to contact you out of blue. I am a RN working in a level 3 NICU in Dubai and have introduced many KC practices in my unit based on your researches. I got your email contact from one of your presentations online . I would like your help on a recent unfortunate situation that has developed in our NICU and that has left me very disturbed. As someone who constantly encourages staff and families for kangaroo care and has done lot of research on it, I am sure you can shed some light on this issue. We received 30 weeker triplets in our NICU approximately 12 days back. the first and third triplet were on CPAP and stable , the second triplet was little critical with going on and off full ventilation. Anyhow , when parents visited we encouraged participation and by the 3rd or 4th day all 3 babies were kangarooed by the mother although not on a regular basis. UVC was in situ for all three babies. Our policy says that if UVC is well secured, and there is no possibility of leakage and dislodgment, KC can be given and also depends a lot on the staff and mother's confidence levels. We had introduced many new evidence based practices about KC and our compliance in the unit was increasing as well. Then on 21st , the mother did kangaroo care for the third triplet, weight was 1.66 Kg, stable, even tolerating some time off CPAP, with UVC in situ. Baby was very active, looking towards the mother and we could see mother responding to the baby's cues. She even took a picture for the passport copy as she got the perfect one she wanted. After she left, 30 minutes later nurse was right there in the room when baby gasped and turned totally pale, all vitals rapidly deteriorated and we immediately called a code, when the doctor arrived, on auscultation there was no heart beat , we gave adrenaline, atropine, Sodium Chloride , all we could to revive but the baby was already dead. This was extremely shocking to us as the baby had no signs of sepsis, cultures were clear and chest X ray was normal. You cannot imagine the parent's shock, its beyond any description. As the doctors are trying to understand the reasons behind the death, our Nurse In Charge has communicated to all the staff that Kangaroo Care should not be done for babies with UVC and on ventilation as there could be a possibility that there is some embolus from UVC that could cause this. Agreed that the baby's death was very unfortunate but to come to this conclusion without proper facts and deprive mothers and babies from benefitting from the immense benefits of KC is WRONG!! Me and my team have brought a lot of changes in the unit to facilitate this and now this has proved to be a big set back in our unit. I would like to know is there any evidence that says KC should not be done with UVC in situ and there could be these kind of complications? Do you know of hospitals who practice KC with UVC regularly so that I can give these examples in my unit. I feel what has happened is unfairly unfair to other mothers who can’t carry their babies and I want to do everything possible to provide evidence based facts. I apologize for the lengthy mail but I feel very passionately for this and have literally poured my heart to you. I want to do all that is possible to help our mothers and babies. Thanks for reading! Kind Regards, Love Preet , RN, BSN, MSc lovepreetvirk@aol.com

Medical Reply: What a tragic occurrence. Hard to know how to respond because in our unit we are certainly cautious about Kangaroo care with umbilical lines in place, especially low lying lines. A low-lying line may be inserted only a few centimeters. The bigger risk is bleeding and malposition of the line. Would have to hear more about their investigation with respect to an embolus. It is prudent to hold off on KC with umbilical lines in place while they look at what happened to this baby as well as policies and procedures for KC with umbilical lines. Additionally, the best practice of course - for KC and other reasons - is to get the umbilical lines out as soon as practicable. We try to get PICC lines in relatively quickly so we can get those lines out. Embolism is clearly a known problem with UVC lines and needs to be watched for constantly. The onset of embolism manifestations is swift, so there is doubt that it could have been due to KC 30 minutes later, unless KC caused the lines to dislodge and then the embolism occurred. That is clearly a possibility. **NOTE:** The 2008 National Guidelines from National Association of Neonatal Nurses clearly says that umbilical lines are a contraindication to KC. SML replied also that she did not know of any unit either informally or by written published work that was routinely doing KC with babies who have UVC other than in Sweden when all babies, even those with UVCs, are doing KC 24/7. Must carefully read the two 2010 Nqvist et al articles.

Reader’s Digest. 2015. Room 421. Pg. 52-57. This is the story of a 26 weeker whose APGAR at one minute was 1 and who had several minutes of resuscitation at a hospital in Akron Oh (Aultman Hospital) after a precipitous delivery. The mother was told they could not ave the baby and she was given her daughter to hold. The nurse put the baby in skin to skin contact and the doctors told the mother -“We are going to take you to a private room so you and your family can say goodbye to your daughter. They moved her air skin to skin contact to room 417. Thirty minutes after being moved the nurse came and Mom told her the baby was occasionally gasping and the

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nurse told her that was normal when a baby is dying. The nurse was so happy the mother could comfort her baby. One hour post transfer
the NNP came and noted the baby was gasping and told the mother “it won’t be long now.” The father was with the mother in Room 417.
Three hours later the NNP checked on them and the baby was resting quietly on the mother’s chest with occasional heaving. At 6 hours
post-transfer the doctor came in and said that the baby was still alive and said “I don’t know why she hasn’t died yet.” The NNP checked on
the baby at 12 hours post transfer and the neonatologist came at 24 hours post-transfer. The baby was not being fed anything, not being
given any medications and was not on any monitors. AT 24 hours, the baby was still alive, breathing regularly and sleeping on his mothers
chest The neonatologist said, “Well, I think she really wants to live. We’ll take her to NICU to take care of her.” She was transferred to
an incubator and underwent 3 months of problems and recovery there, living primarily in an incubator instead of being cared-for on her
mother’s chest.

Walters, Mary, RN, MSN, Director of Maternity Services. May 15, 2013. Mary Walters called Susan Ludington and related the following
story: A healthy mother (G7P6) delivered a term infant (now G7P7) and then immediately deteriorated and ended up going to the adult
Intensive Care Unit. She was intubated and in a coma and her husband and friend were at her bedside at all times. On Postpartum Day 1
Mary was called by the ICU nurses to relate that the family had been told that the mother was dying and could not be saved. Mary then
immediately took the newborn to the mother, believing that the infant should have a chance to be with his mother and the mother should
have a chance to feel her baby before she died. When Mary placed the newborn in Kangaroo Care on the mother’s chest, the unconscious
other immediately lifted both arms to embrace her infant and hold him in place, but did not gain consciousness The infant went to breast
and suckled and then Mary prepared to take the infant away. As she was leaving, the ICU nurse told her that the mother’s vital signs
improved while the infant was with her, so could the infant stay longer? Mary replied that the infant had to have someone with the infant at
times when the infant was in ICU, and she would have to arrange for that so the infant could come back to the mother. The next
morning the mother was still alive, but not well, still intubated and in a coma and deteriorating. A nurse brought the infant from the
nursery to the mother, placed the infant in KC, immediately the unconscious woman embraced the infant with both arms, and the infant
stayed 8 hours and went to breast and fed spontaneously. Husband and friend were still in constant attendance and took many pictures. At
the end of 8 hours, as the nurse was leaving with the infant, the ICU nurse related “You have brought babies to sick mothers twice before
and they improved while the infants were with them. We thought the improvement was a fluke, until we saw the same thing with this
dying woman. Now we know she needs her baby to live. Please bring the baby back again.” Mary Walters made arrangements for the
infant to return for a full shift the next day and after that the mother aroused from the coma, did well, and was discharged home with her
newborn on June 1, 2013 to the amazement of all. Mother does not remember having her baby with her, does not remember instinctually
embracing her infant, and does not remember anything until she woke up from the coma. Mary Walters is writing up this case study for
publication. Mary Walters can be contacted through Susan Ludington at sm15@case.edu.

Lay Publications/ TV Shows/Radio

______. August 29, 2007. ALL MY CHILDREN, a soap opera in USA daytime television had this episode in which ZaK was
doing KC with Ian, her premature son.

______. 1998. Kangaroo Care: Research on improving the health of preterm infants. The Pulse: Univ. of Maryland School of Nursing,

information. The article has a few paragraphs of KC information.

______. (1997) Bare hugs: Skin-to-skin snuggling aids preemies. Prevention Magazine, June 1997, pg. 40-41. Quote the findings of
a study of 50 moms, 25 who held infants in KC for 10 minutes each day and 25 who swaddled infants. Better VS and higher O2 and
more stable milk supply were in the KC group. Citation not provided.

Arundel Medical Center, Anne Arundel, M.D. Mar/April/May 1999. Pg. 4

American Baby. (2010). Kangaroo Care and Beyond. American Baby, Winter 2010, p. 2. This article says that KC isn’t just for
preterm infants and that Susan Ludington is “a dynamic, engaging speaker” who urged all listeners to advocate for at least an hour of skin
toskin contact beginning within one minute of birth for all the mothers and babies in their care. Mentions that mother’s breasts heat up and
that the sleep in KC is better than sleep anywhere else.

1994, pg. 12-17. He reports that to him “Kangaroo Care was the greatest thing that could have happened.”

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Fischman, J. (1999). Taking a Cue from Kangaroos. *US News & World Report*, June 7, 1999, pg.66 This is an easy to read, one page report of KC in USA.

Funderburg, L. 2000. Saving Jason. *LIFE. Collector's Edition*, May 200, pg. 49-62. Shows pictures of KC at Children’s Hospital of Philadelphia and all the pictures show really naked KC, not with the back covered to prevent heat loss. Good article for mothers to read about KC.


Kim, Minyoung. (2011, August 19), “Kangaroo Care” Korean TV special on Kangaroo Care for Premature and Term Newborns showing a live full term birth where infant was put straight into Kangaroo Care and remained there until the nurse moved the baby to the football hold (lateral skin-to-skin contact and NOT THE WAY TO DO IT) and then kept manipulating the baby’s head to get him to latch on (No BABY-LED LATCH or Hands OFF BF or BIOLOGICAL NURTURING approach in this demonstration!!). Also showed a very low birth weight infant on a ventilated being KCed by his mother.


Kuhn & Kuhn, in January 2011 issue of *J Human Lactation* (reviewed above). This is lay pub of how KC helps BF.

Lee, E. 2009. Moment of Science: Kangaroo Care. *National Public Radio*, Oct. 12, 2009. This was about temperature, HR and breathing pattern, contentment and brain maturation and parent effects on infant as result of KC.

Madkour, R. 2010. Marsupial mothering. New Mom looks to kangaroos for parenting inspiration. Santa Barbara News Press, Wednesday, January 20, 2010. Pg. D7. Mother reports that when she took her swaddled baby out of incubator to hold, he lost body heat and then she was afraid to hold. After hearing about KC, she said she’d “found a way to be useful.” Liza Cooper, the national director of the March of Dimes Family Support Program said “Kangaroo care, to me, is the first gift you can give your baby in the NICU and its one of the greatest gifts the staff can give to parents in the NICU. Mom wrote: “Kangarooing turned out to be quite lovely. I am glad to have had (KC) as a comforting experience during an uncertain and scary time.”

Mettler, L. 2001. Kangaroo Care. Help for Preterm Infants and Hope for their Parents. *Baby Years*, Sept. 2001. This is a general article with many references to Dr. Ludington and her book and how to give KC to premature infants. Copy available from lynmaddox@mindspring.com

 Moriarty C. (2007). Love story. It takes a while for your relationship to unfold. Don’t worry if you don’t feel an instant connection. *American Baby*, Sept. 2007, p. 62-64. In this article it offers some suggestions for moms who don’t feel bonded with their newborns right away. The first one is “Try skin therapy. Holding a baby who is clad only in a diaper next to your bare breast –known as kangaroo care- can boost the bond between mothers and babies. Jennifer Pote, a mom in New Preston, Connecticut was introduced to this KCBib 2018
skin-to-skin contact soon after her son’s birth when he was rushed to another hospital for a respiratory problem. ‘It was 36 hours until I could hold him,’ says Pote. ‘I didn’t feel bonded to him right away.’ When they were reunited, the neonatal intensive care unit suggested she try kangaroo care, which helped relieve tension for both Pote and her son. … Krystyna Toczylowski of Hackensack Medical Center in Hackensack N.J. says “Full term babies also benefit from kangaroo care. Try it if your baby is having trouble nursing or sleeping or is irritable. It takes 15 minutes for baby to begin reaping benefits.” (pg. 63-64).

Morrison, B. (2013). Dr. Barbara Morrison is doing a series of radio interviews about kangaroo care, breastfeeding and the environment/raising a child rituals for infants. These are fascinating interviews and enjoyable to listen to if you do not catch one live and ask her questions. Available from:

Norton, D. (1995). Kangaroo love for prem babies. Living and Loving, September 1995. 133-135. This is the story of triplets born at 27 weeks. Parents, mother and father, gave Kangaroo Care after Nils Bergman told them about it. Mother said “The skin-to-skin contact made them feel so much more like MINE!” (pg. 134). The babies seemed to find it soothing and reassuring and inevitably went to sleep. Nurses found that body temperatures were maintained and there was no deterioration in their oxygen levels” (pg. 134). Peter (the father) complained that even the tiniest infant had a monkey-like tendency to grip his chest hairs!(pg 134).


Notable Presentations


RESEARCHERS

Gene C. Anderson, R.N., Ph.D., FAAN
Professor Emerita
Case Western Reserve University School of Nursing
Cleveland, OH gene.anderson@case.edu

2002-2003: Studying the effect of KC placement 1-1.5 hours before a feeding on improving breastfeeding outcomes in fullterm newborns in women who report breastfeeding difficulty.

2004-2006: Studying the breastfeeding behavior in fullterm newborns who spontaneously awaken for feeds or are aroused by others for feeds.

Bergman, Nils. Family physician in South Africa who did a study in Zimbabwe and now runs a maternity hospital where KC is practiced regularly for all fullterm newborns. Recently completed randomized controlled trial of KMC beginning at birth in preterm infants.

www.kangaroomothercare.com

KCBib 2018
**Best, Paige.** Fall 2001 Doctoral student at Johns Hopkins University School of Public Health. She is studying infant care practices in Bangladesh, identifying how rural mothers recognize prematurity and then how they care for them to prevent hypothermia. Second phase of study will be to teach practices to avoid hypothermia, including KC and use of tempadots (if baby is warm enough, the tempadot shows a smiley face/to ensure warmth. Will try to teach KC to them too. pbest@jhsph.edu

**Bigelow, Ann.** July 2002 got approval to study maternal infant interaction in the newborn period, 1 month, 2, and 3 months postbirth. KC grp will KC 6hrs/day for 1st month beginning KC within 1 hour of birth. Salivary cortisol at birth and 1 month and measuring developmental outcomes. Contact her at abigelow@stfx.ca

**Browne, Joy R.N. Ph.D.**
Children’s Hospital of Denver
Email: Browne.Joy@tchden.org (Browne, Joy)
They conducted research on the physiologic disorganization associated with transfer into and out of kangaroo care (Neu et al., Nursing Research, August 2000) and has wonderful article on the meaning of KMC to parenting published in 2005.

**Cattaneo, Adriano.** As of 2008, he really is moving out of KC research, but is an excellent resource
Unit for Health Services Research and International Cooperation
Instituto per l’Infanzia, Vld dell’Istria 65/1, 34137 Trieste, Italy
Phone: +39 040 3785 402. Email: cattaneo@burlo.trieste.it

**Chia, Pauline.** 3083, Australia. Studying nurses attitudes toward KC. Home address is 1 Brockhampton Drive, Singapore 5599095. Email: chiasoktin@hotmail.com

**Cleary, Gerard D.O.**
Division of Neonatology
Abington Memorial Hospital
1200 Old York Rd.
Abington, PA 19001-3788
In 1997, conducting a randomized controlled trial of KC with intubated infants and those receiving oxygen support by cannula. Looking at physiologic outcomes. See his article in J. American Osteopathic Association, vol. 97 #8, p. 457-460.

**Clifford, Patricia-See Clifford & Barnsteiner, 2001 citation.**
Children’s Hospital of Philadelphia. (215)-590-3083
They are studying 1-2 hours of KMC with ventilated infants as young as 23 weeks and as small as 550 grams testing weight. Doing chart control comparison, looking at HR, RR, SaO2, and temp. Results to date show no difference between KC and chart review infants. I spoke with her in Fall 1997 and she was getting ready to write her results of 9 infants studied as of Nov. 1997.

**Chiu, Shian-Huey, RN, Ph.D.**
Asst. Professor of Nursing
University of Akron School of Nursing
Akron, OH. Randomized controlled trial of Kangaroo care with FULLTERM infants. Effects on maternal anxiety, breastmilk maturation, breast engorgement, and breastfeeding status.

**Cong, Xiaomei, RN, Ph.D.**
Assistant Professor of Nursing
University of Connecticut in Storrs, CT
She investigates KC’s effectiveness in reducing pain. Has funded grants for this topic in 2010.


**DeMarco, Patrice**
79 Beach Rd.
Shelburne, VT 05482

KCBib 2018
In Dec. 2000 starting a study of KC on serum values (glucose etc.) in fullterm neonates.

**Dutcher, Janet F., RNC, NNP, MN**
134 Kirkcaldy Drive
Elkton, MD 21921
410-620-0948

In 1997 she conducted a survey of nurses attitudes toward KC in the United States. She wrote a wonderful paper, but it has not reached publication yet. Contact her directly.

**Ellett, Marsha L., DNS, RN – I think she has abandoned her KC and colic studies through the internet as of 2008**
Asst. Profs Nursing
Indiana University School of Nursing – Pediatric Gastroenterology
1111 Middle Drive
Indianapolis, IN 46202
317-274-0051 Fax is 317-274-4928 email is mrdelle@iupui.edu

Feb. 2001 she is conducting an internet research study of mothers who use KC to help with colic. It is called the Infant Colic Study. You can learn of this study at [http://www.iupui.edu/~nursing/research/infantcolic.html](http://www.iupui.edu/~nursing/research/infantcolic.html). Dec. 10, 2002 update: has enrolled only two subjects who completed protocol. Moms keep record of infant state for 3 days and then they KC at first sign of colic. “In both babies the amount of crying time was greatly decreased and the amount of quiet sleep was greatly increased. Parents who quit mid study report that kangarooing helped decrease crying.” She is now trying to local access to get more subjects.

**Farley, Teresa MSN, CPNP**
Developmental Pediatric services
8210 Walnut Hill Lane, suite 604
Presbyterian Hospital
Dallas Texas 75231
(214) 345-4156
Fax: 214-696-3014

In 1995 started a study of HR, RR, SaO2 and temperature during transfer into and out of KC and during KC and rest periods with ventilated preterm infants.

**Gloppestad, Kari – Retired in 2009**
Gaustadun 101
0372 Oslo, Norway

**Goubet, Nathalie, Ph.D.**
Dept. of Psychology
Gettysburg College
Ph: 717-337-6148
Fax 717-337-6172 email: ngoubet@gettysburg.edu

Beginning work Sept. 2000 for two years in the states to study olfactory learning in preterm newborns who have KC and to measure pain responses during KC.

**Hanson, Deborah** email: nphanson@hotmail.com. Began in June 1999 studying end tidal CO2, tidal volume and minute volume of KC vs. incubator condition in ventilated infants. Also has experience with KC for dying babies.

**Harris, Judy.** June 2006. She is part of a Bachelor of Science in Nursing group of students working on the evidence base for Kangaroo Care practice with 32-36 week infants, particularly interested in heart rate, respiratory rate, oxygen saturations, and temperature outcomes. Carole Kerner’s response to her inquiry revealed that Cindi Acree ([Cindi.Acree@cchmc.org](mailto:Cindi.Acree@cchmc.org)) at Cincinnati Children’s Hospital did a similar review in 1991 and found that HR, RR, SaO2 and temps were better during KC. Judy Harris can be reached at [Judy.Harris@ohiohealth.com](mailto:Judy.Harris@ohiohealth.com)

**Harrison, Tondi.** 2010 begins work on KC to help infants with congenital heart defects. She can be reached at:

**Tondi Harrison, Ph.D., R.N., CPNP**
Nurse Researcher at Nationwide Children’s Hospital in Columbus, OH.

**Henderson, Pamela Green** CNS/NNP
Neonatal Intensive Care Unit.
KCBib 2018
Doing research on KC with ventilated infants in Fall, 1998

**Holditch-Davis, Diane** (working with RoseMarie White-Traut)
University of North Carolina, Chapel Hill
March 2005 submitted RO1 grant to compare KC versus the Ruth Diane Rice massage technique as interventions for VLBW. Mothers will do KC in NICU and continue at home for 2 months or the Rice Massage Technique. 380 mothers in three groups: KC, Massage, Attention Control. Outcomes are infant health and development (length of stay, growth, occurrence of health problems, and BAYLEY II), maternal well being (depressive symptoms, posttraumatic stress symptoms, worry about child health, parenting stress), maternal-child relationship (interaction videotapes, HOME, maternal perception of child vulnerability) Cost-effectiveness of interventions will be studied too. Study to begin Jan 2006 and run for 5 years

**Johnston, C. Celeste** (Retired, 2010)
Assoc. Professor, School of Nursing
McGill University
3506 University St.
Montreal QC H2X 3PY
phone: (514) 398-4157
Fax: (514) 398-8455
email: md28@musica.mcgill.ca

**Kelin, Lisa, R.N.C., MSN.**
Clinician III, FCC
Inova Hospital for Women
3300 Gallows Rd.
Falls Church, VA 22042-3300
Home: 703-284-8943
Began a study with 58 FULL TERM INFANTS who require rewarming when more than 90 minutes old. Kangaroo Care was compared to radiant warmer for efficacy in rewarming, using axillary temps. Preliminary data on 4/10/99 show that KC is as good as radiant warmer when continued for 90 minutes to bring babies from 97.1–97.5F back to neutral thermal zone.

**Lee, Juhyun**
Doctoral Student, School of Nursing Johns Hopkins University
525 N. Wolfe Street, Baltimore, MD 21205-2110
(410) 467-4477; email is jleej@jhmi.edu
Fall 2000 she is starting study of KC’s efficacy in increasing breastfeeding in preterm population, and changes in quantity and quality of milk, and immunological markers.

**Ludington, Susan M. ,CNM, Ph.D., FAAN**
Professor and Walters Chair of Pediatric Nursing
Case Western Reserve University, FP Bolton School of Nursing
10900 Euclid Ave. Cleveland, OH 44106-4904
office: (216) 368-5130
email: Susan.Ludington@case.edu
Has studied effect of KC during phototherapy on bilirubin profiles, effect of one hour of KC with ventilated preterms on pulmonary function test outcomes, and general physiologic outcomes. Now she is funded (2002-2005) to study effect of 3 hours of KC on EEG measures of sleep and is piloting a study of effect of KC on pain responses.

**Maastrup, Ragnhild.**
The Knowledge Centre for Breastfeeding Infants with Special Needs/NICU
Rigshospitalet 5023
Blegdamsvej 9
DK-2100 Copenhagen, DENMARK
KCBib 2018
Studies very low birth weight infants in KC and has first publication in 2010 with Greinsen G.

Martin, Jackie B., DNP, RN, NNP-BC, CCNS, Carilion Clinic, NICU-14 South 1906 Belleview Avenue Roanoke, VA 24014 Email: JBMartin@carilionclinic.org Phone: 804-798-4815

Mercer, Judith Melson, RN, CNM, Ph.D. (July 2010) beginning a pilot study of late cord clamping simultaneous with KC in preterm or full term infants. She has RO1 for this study from NIH-NINR. Contact at jmercer@ds.uri.edu

Meltersteiner, Aline da Rosa, Pediatria Fisioterapia Clinica Vita D Bambini Rua Julio de Castilhos, 1051 sala 43 Caxias do Sul, BRASIL Phone: 011-country code-54-228-3854 vitadibambini@terra.com.br or alinemilt@terra.com.br

Moore, Elizabeth R.N, Ph.D. 161 Cliff top Drive Hendersonville, TN 37075 Phone: 615-824-7054 In August 1998 she submitted an NINR NRSA to examine the effects of KC with FULLTERM infants beginning immediately at birth and continuing for two hours on breastfeeding performance. BIRTH KC. Finished study in December 2004. Published in Gene Anderson in 2007 and does Cochrane reviews.

Mora, Lucila R.N., BSN, 1421 Clement Street San Francisco, CA. 94118 (415) 750-1463 email: lmora@itsa.ucsf.edu Doing some sort of Kangaroo Care research as part of her ms degree at UCSF.

Morrison, Barbara, RN, Ph.D., FNP, CNM Assistant Professor Ursuline School of Nursing 3714 Normandy Road Shaker Heights, OH 44120 BMorrison@Ursuline.edu She is the FULL TERM KC researcher, especially as KC relates to breastfeeding outcomes. (216) 491-8122.

Madalynn Neu, RN, Ph.D. / April 2002 received K award to study 3 sessions over an 8-wk period of KC holding vs. swaddled holding and measuring vagal tone and salivary cortisol levels of mothers and babies during the three sessions.

Alma Ohl, RN, NNP student 4300 Stratford Drive Center Valley, PA 18034 Home: (610)-282-4692 In Spring 1999 she will be conducting a master’s thesis study to measure maternal empowerment during Kangaroo Care. She recommends a listserve on the email that targets nursing research and reports KC studies: listserve@listserve.Kent.edu Type in SUBSCRIBE NURSERESSUSAN and send.

Ortman, Bethany  : See Schmidt, Catherine below

Jacqueline Page, BScN, MHSc, NNP and Renee-Louise Franche, Ph.D. Dept. of Psychology Ottawa General Hospital 501 Smyth Rd. KCBib 2018
Premature infant's physiologic response (50 ventilated preterms – looking at HR, RR, SaO2, and vent settings) and Maternal stress.

Infant stress measured by physiologic homeostasis.


Pratomo, Hadi, MPH, Dr.P.H. Perinasia, Perumpulan Perinatologi Indonesia
Jl. Tebet Utara IA/22
Jakarta 12820, Indonesia
Phone: (62)(21)828.1243
Fax: (62) (21) 828-1245 or 830-6130
PO Box 8163 JKSTT 12820
Dr. Pratomo and his group have just (nov. 1998) completed two studies on KC in their country.

Prochnik, Marta - Brazilian researcher following outcomes of the national program for KMC in Brazil
Rua Cap. Cesaar de Andrade 40e01
22431-010 Rio de Janeiro, Brasil
prochnik@bndes.gov.br

Rapisardi, Gherardo – does work in Italy with Dr. Pignotti. Can be reached at gherapi@dada.it

Rinehart, Peggy C. MSN, APRN, NNP-BC 3/6/2011
Instructor, Bluegrass Community and Technical College
470 Cooper Drive
Lexington, KY 40506-0235
Phone: 859-246-6250
Fax: 846-246-4697
Peggy.rinehard@kctcs.org
Ms. Rinehart is working toward her DNP degree and wants to measure maternal stress at intervals throughout the NICU course using cortisol and the Parental Stressor Scale and fingertip temperature monitoring during KMC.

Roberts, Kathryn, R.N., Ph.D.
Professor of Nursing, School of HECS, Faculty of SITE
Northern Territory University
Darwin, Northern Territory, Australia 0909
Office: (089) 46-6071
Fax: (089) 46-6595 email: kay.roberts@ntu.edu.au

Cindy Roller, R.N., MSN. Doctoral student of Gene Anderson’s at Case Western Reserve who was NRSA funded in Fall 1997 for phenomenology study of the meaning of Kangaroo Care to teenage mothers. This was in 2002.

Margie Sanford, R.N., BSN
Neonatal Intensive Care Staff Nurse
Kadlec Medical Center
333 Swift Ave.
Richland, WA 99352
email: msanford@mail.wsu.edu
Studying nursing factors affecting utilization of KC research results.

KCBib 2018
Schmidt, Catherine (And Ortman, Bethany). 20 Ashbury Court, Dahlonega, GA 30533 email: clschm1353@ngcsu.edu. Two physical therapists who evaluated long term effects of KC and found no differences in mental and motor functioning in their work at North Georgia College and State University, Dept. of Physical Therapy. Abstract appears in A.J. Physical Therapy, 2000.


Sloan, Nancy L. 2005. Doing KC at community level in Bangladesh. Contact her at Nancy.Sloan@tufts.edu Community KC. (N.B. She left Tufts in 2006 so her address has changed.

Sandra Smith, University of Utah. email: SLevSmith@msn.com. Doing a study looking at RR, SaO2, FiO2 and heart rate variability of ventilated preterm infants before, during, and after Kangaroo Care. Dissertation finished in spring 1999- expect results soon. Early indications are that KC is infant temperature rises and that SaO2 might fall. Study was finished June 1999 and is being reported on Feb. 16, 2000 in Salt Lake city.

Svoboda, Mary Libby Manager, Community Education. (We call her Libby) University Hospitals, MacDonal Women’s Hospital, Center for Women’s Health 3909 Orange Place Drive Suite 4100 Orange Village, OH 44122 Phone: 216-595-5355 Fax: 2160595-5357.

Skurow-Todd, Kami. MSN, RNC-NIC Interested in Congenital Heart Defect KIDS and KC/ Clinical Research Nurse coordinator Childrens National Heart Institute Childrens National Medical Center 111 Michigan Ave. N.W. Washington, DC, 20010 Office 202-476-3505; fax is 202-476-3811 KSkurow@childrensnational.org

Wallig, Amy NNP MS, Kathy Leef RNC MS, Susan Imam NNP MS, and Robert Locke DO Medical Center of Delaware 4755 Ogletown-Stanton Road Newark, DE 19718 Amy Wallig phone:302-733-2396 Susan Imam phone: 302-733-4837 Page Op:302-733-1900 beeper 2431 This Medical Center of Delaware is a complete NIDCAP unit with several NIDCAP certified staff RNs and they are doing a study of ventilated KMC with a 15 minute pretest, KMC, 15 minute postest of non-invasive pulmonary function testing: SaO2, HR, RR, temp, resistance, compliance, pCO2, pO2. Length of KMC unknown. Study was up and running with 4-5 ventilated preterms at any time in their nursery in Fall 1997.

Wallin, Lars RN, Ph.D Post Doctoral Fellow, Faculty of Nursing in 2004-2005 University of Alberta 5-112 Clinical Sciences Bldg. Edmonton, Alberta Canada T6G 2G3 (780) 492-8475, Fax = 780-492-6186 email: lars.wallin@ualberta.ca

See his paper published in 2005. He studies best methods to implement evidence and is conducting randomized controlled trial of facilitation toa change group versus usual method of quality improvement for implementing change.

KCBib 2018
Weber, Ashley, RN, Ph.D., 2016-2018 Postdoctorate at Case Western Reserve University Frances Payne Bolton School of Nursing, 10900 Euclid Ave, Cleveland, OH 44106-4904. Email: Ashley.Weber@Case.edu  Here work is in oxytocin during kangaroo care and stress in NICU and maternal self-management of care of her NICU baby.

Zeilinger, Terry doing data collection of age, wgt, FiO2 and SaO2 before and during KC, along with length of session and skin temp range. Martin Luther Hospital-Anaheim, 1830 W. Romney Dr., Anaheim, CA 92801-1854.

OTHER NOTABLES IN KANGAROO CARE WORK

Christensson, Kyllike NMTD Dr. Med. Sc. Karolinska Institutet, Dept. of International Health and Social Medicine, S-171 77 Stockholm, Sweden Phone +46 6 728 77 88; Fax: +46 8 31 15 90; email: Kyllike.Christenss@Phs.Ki.sc

Fundacion Canguro, Carrera 7 No.46-20, Apt. 2001, Bogota, Colombia. Telephone: +57 1 221-5572; email: herchar5@colomsat.net.co

Martin Luther Hospital-Anaheim, 1830 W. Romney Dr., Anaheim, CA 92801-1854.

WEBSITES FOR KANGAROO CARE

www.kangaroocareusa.org is the website for the United States Institute for Kangaroo Care. This website provides information on videos, pamphlets, educational materials and courses and consulting about kangaroo care/kangaroo mother care for full term land preterm infants. The organization’s non-profit status is pending and membership is $50.00 per year and the website is the site for RESOURCES for education and practice of KC/KMC/skin-to-skin contact in the USA. The Director is Susan M. Ludington-Hoe. Also, in May 2013 the International Network of Kangaroo Mother Care (INK for International Network of Kangaroo Care) will have, for the first time, a website too even though INK started in 1996 (17 years ago).

1. The United States Institute for Kangaroo Care is developing their website at www.kangaroocareusa.org and has two emails in place: info@kangaroocareusa.org or USIKC2010@gmail.com Email them for information and they check for emails at least 3 times/week. This a resource center, telling you where to get chairs, videos, and making arrangements for speakers and customized speaking needs as well as consultations and instruction on the floors and units where KMC is found.

2. The Kangaroo Foundation, called Fundacion Canguro, maintains an active website that includes many articles and updated references and it sells wraps. The website is maintained by Dr. Natalie Charpak. It can be accessed at herchar5@colomsat.net.co Or through kangaroo@javeriana.edu.co

3. Krissanne Larimer has a website for KC and the KC bib is available off this web site. The site is http://www.geocities.com/roopage and a list of Dr. Ludington’s outcomes chart is at http://www.geocities.com/roopage/kcresearch.html

4. www.pathfinder.com/NY1/living/health/kangaroo_baby_care This is New York city health site that reports where one can get Kangaroo Care in New York City and its outcomes. A very brief site.

5. KangarooCare@aol.com has some articles that you can request and the articles have been written by Nils Bergman.

6. Kangaroo@javeriana.edu.co is a major KC Network email that is maintained by the Bogota group. It has many updates and should be checked regularly. It published as version of Dr. Ludington’s KC bib. This site is maintained by Natalie Charpak and Natalie Charpak's email is herchar5@colomsat.net.co

7. Kcare@valhoggroupg.com has Dr. Ludington’s and Dr. Andersons’ bibs on it. A Jan 29, 2010 note from Pat somewhere in the world says that this website is being used for dating now and it should be shut down. The new KMC group can be found in #7.

8. http://health.groups.yahoo.com/group/Kangaroo-Mother-Care is the website that has replaced #6 above as of Jan. 2010

9. http://fpb.cse.edu/KangarooCare/biblio.shtml is the website that contains updated annotated bibliography of all publications about KC in the world that are known by Susan Ludington.

KCBib 2018
10. http://preemienews.com is a website that in July 2000 had an article on KC that reports the opinion of several doctors and developmental specialists on KC and all opinions are positive.

11. 1998 BBC. “Kangaroo Care Counters the Cold.” This is a summary of Christensson’s 1998 article in the LANCET. http://news.bbc.co.uk/hi/english/newswid_184000/184480.stm


13. 2003 Bergman, Nils. Kangaroo Mother Care website, listing his tour dates, the KMC Shop with videos, postcards, Kangacarrier Shirts for sale, and reference list from USIKC. Go to www.kangarooomothercare.com. He also has the website www.skintoskincontact.com

14. March of Dimes in 2005 started a prematurity campaign and developed a website that has much about the good of Kangaroo Care in it. Go to: www.marchofdimes.com/prematurity to see what they have.

15. NICU web page http://vuneo.org-KangarooCare

16. India has a big initiative on Kangaroo Care and has its own website, http://www.kmcindia.com, and it has content, overview of KC effects, and the goals to educate everyone in the country about KMC to improve its usage. Added 8/24/2007

17. @MothersUtopia@Laura_Keegan. OR through www.obnurse35yrs.wordpress.com/tag/skin-to-skin/ This is a website that is promoting Kangaroo Care right after birth with every cesarean section. Mothers tell their stories here and it recommends that they go to see the HEALTH-INFO video which has a trailer that was posted on facebook. Accessed 9/11/2011.

18. http://www.breastcrawl.org is the website to see a video of a fullterm newborn being placed between breasts and choosing which nipple to move towards and latch onto. The video is from India and the infant remains wet the whole time several health professionals stand around and no cover on the baby’s back, no drying off, no head cap, not a good example of thermoregulation, but the baby does move toward the nipple and latch on. Added 8/14/2007


20. http://www.jjpi.com. This is the Johnson & Johnson Pediatric Institute website and in 2002, Johnson & Johnson produced a book for pediatricians and health professionals to disseminate for free that was called, “Skin-to-Skin: The Mother-Baby Package.”

21. Kangaroo Care LINKEDIN Professional Group for KC discussions. Contact the moderator Yamile Jackson yamile@nurturedbydesign.com. Yamile is a Ph.D. Industrial Engineer who is a Certified Kangaroo Caregiver (2010).

22. www.themiracleofkangaroomothercare.com. This website relates information on accessing the Roos T, and Roos N online book entitled The Miracle of Kangaroo Mother Care. Rare Inspirational Stories of Infant Survival for Every Parent and Every Baby. See Roos citation in first section. This website also gives access to the “Kangaroo Mother Care: The Benefits for Your Full Term and Premature Baby.” 2-page pamphlet/information sheet that is listed in the main section of the bibliography under Lawn, J. (2011) and also under the Pamphlet section as Lawn, J. (2011).

23. DeBarbCNM.com This is a website that advertises the three CDs of Dr. Barbara Morrison giving talks about Kangaroo Care with full term infants that can be purchased. Her 2007 talk, Kangaroo Care: Nature’s Best for your Baby, which is 20 minutes long, is available for $25.00.

24. www.healthydc. This is the website for getting pamphlets about KC with full term infants that can be purchased. Her 2007 talk, Kangaroo Care: Nature’s Best for your Baby, which is 20 minutes long, is available for $25.00.

25. International Network of Kangaroo Mother Care (INK) has a website that started in summer 2013. Each month the blog changes reporting what is happening in countries with KMC being practiced.


KCBib 2018
29. The International Network of Kangaroo Mother Care (INK for International Network of Kangarooing) has its very own website as of Oct. 4, 2013. Go to www.INKmc.net for the home page.
30. www.support4nicuparents.org has many articles from National Perinatal Association guidelines that speak to Kangaroo Care extensively.
31. United State Institute for Kangaroo Care’s website is www.kangaroocareusa.org and it features videos to watch, lectures that can be ordered to be given, position papers, and the full Kangaroo Care Bibliography.
32. www.skin2skin.org. This is the website of The Children Project, Inc. 327 Quaker Meeting House Road, East Sandwich, MA 02537 phone: 508-888-8044; fax: 508-888-8050. info@healthychildren.cc. This website has 6 headings and the HOME page shows pictures and tells reader why SSC is important ad vital, listing benefits to baby and to mother (limited list of benefits, however), under 9 STAGES page, it has pictures of the babies in each of Widstrom’s nine stages of getting to the breast. These nine pictures are available for sell under the RESOURCES page. The RESEARCH page relates the latest research about KMC in Gulu, Uganda and has several videos to watch. This section also tells you about the two publications of studies by Brimdyr “The Association between common labor drugs and sucking when skin to skin during the first hour after birth” in Birth: Issues in Perinatal Care, 2015 (on the bib above), and Kajsa Brimdyr’s (Ph.D. Lactation consultant) and Karen Cadwell’s “An Implementation Algorithm to Improve skin to skin practice in the first hour after birth” (also on bib above). The research team of Healthy Children Project is comprised of K Brimdyr, Ann-Marie Widstrom, Kristin Svensson RN, Midwife, MD, and Karin Cadwell, RN, Ph.D., IBCLC, FAAN. Their RESOURCE page includes videos of the film skin to skin in the first hour after birth, the Magic Hour (same content, but for parents), and Happy Birthday (which shows skin to skin contact), and concludes with sales advertisements for TEAR OFF PADS ENTITLED “HOW TO HOLD YOUR BABY SKIN-TO-SKIN,” “THE FIRST HOUR AFTER BIRTH,” AND “A BABY’S 9 INSTINCTUAL STAGES.” And how you can order them. The REFERENCE page includes some of the articles on the KC bib and a few government websites. The CONTACT pages gives the address, phone, fax and email address of The Healthy Children Project in Massachusetts.

**HOSPITALS with Seasoned, Active Programs of KC** (This list is very old and reflects those that first adopted KC. Many places have active KC in 2013)

**WASHINGTON**
Kadlec Medical Center, 333 Swift Ave., Richland WA 99352
RN: Mrs. Joan Swinth MD: Anthony J. Hadeed

**KENNESYLVANIA**
Thomas Jefferson University
NICU: (215)-955-8346

**MARYLAND**
Anne Arundel Medical Center
Franklin Square Medical Center
RN: Ms. Wood

**GEORGIA**
Memorial University Medical Center – has had KC in NICU since 1995.
Savannah, GA
Contact Christa McLaurin, RNC-NIC at cmclau2@aol.com

**NIPPLE LEAKAGE CONTROL METHODS**
- Prolac Inc. has created BLIS (breast milk leakage inhibitor system) which is a soft plastic shield that keeps the nipple dry and limits bacterial growth.

Self Stick breastpads are useful. Two brands are available: 

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- Lansinoh disposable nursing pads, 60 pads to a box. Manufactured by Pigeon Industries (Thailand) Co., LTD. Distributed by Lansinoh Laboratories, Inc. 599-B Oak Ridge Turnpike, Oak Ridge, TN 37830 (800-292-4794) or www.lansinoh.com or www.puronyx.com or www.soothies.com

KANGAROO JEWELRY:
Sterling Silver Kangaroo necklaces, earrings and bracelets are available from Anu Chitrakar, 3012 Wedgewood Way, Louisville, KY 40220, phone 502-459-6198.

WRAPS/CARRYING DEVICES and CHAIRS:

Carrying Devices-

Nils Bergman has a carrying device that includes a blouse that is available from his website (See under websites, 2000, Nils Bergman).

Dandle Lion Medical has a wrap out beginning July 2013. They call it the KangaRoo Kuddler. Made for preemies out of cotton (you need blanket to use with this), made for sitting sessions of KC only (not long enough to tuck in to prevent falls) and one size fits all. Item D 13110 is the item number and it is for single patient use. Dandle Lion Medical, 22 Shelter Rock Lane, Danbury CT 08610 (203)-791-9001 or www.dandlelionmedical.com

Jensen, Daniela She has developed a wrap and shirt all in one for KC in the hospital and at home. Contact djensen62@gmail.com for more information. Wrap/shirt is available in 2012.

Joey JacketTM. A jacket and wrap all in one to facilitate Kc with premature infants who have many lines still attached to them. Contact Sarah Alice Wyndham RN, at bamboo62@gmail.com. (new in 2012)

Kam Care Design. This company makes wraps for carrying the infant in KMC and these wraps are used throughout Sweden. The owner is Karin Holmgren, and the address of the company is Lagerhyddsvagen 2, Hus 38, S-752 37 Uppsala, Sweden. Phone is +46(0)76 834 2332 or +60(0)7611 00 63 and email is info@kamcaredesign.se and url is www.kamcaredesign.se

Kangaroo Foundation wraps. The Kangaroo Foundation, called Fundacion Canguro, maintains an active website that includes many articles and updated references and it sells wraps. The website is maintained by Dr. Natalie Charpak. It can be accessed at herchar5@colomsat.net.co Or through kangaroo@javeriana.edu.co or try Fundacioncanguro.co

Kangaroo Foundation producter, is a lovely little pouch for preemies from Scandinavia. Address is 4570 Hjortshog, 260 34 Morarp County:?? Telefon: 042/23 50 22 (kvallstid), postgiro: 456 98 80-0

Nurtured by Design, Inc. (formerly Zakeez, Inc.) This company makes a hand that you can leave to caress the infant in the NICU when Mom is not there called The Zaky. It also makes a KC tube top wrap called The Kangaroo Zak that is sterilized and comes in Size 1 (small, medium, large) or Size 2 (XL, 2XL, 3XL). Both products cost $49.95 each and they offer discount for hospitals, certified Kangaroo Care Givers, and NICU families. These were designed by a Ph.D. (Yamile) who had a premature infant and learned to make these items to use with her own baby. Contact Nurtured by Design, INC, PO Box 3276, Sugar Land, TX 77487. Phone is 800-618-9259, fax is 800-316-9259, from overseas call +1-281-240-9259. Email orders at orders@nurturedbydesign.com and website is www.nurturedbydesign.com

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Nurtured by Me, Ellen Shatzkin, 53 Beverly Rd. White Plains, NY 10605, (914) 328-2226 or (914) 686-3203. This is an elaborate blouse and pouch. $65.00

NUROO Pocket Carrier designed by Hope Parish who sold it to Brown Medical in Rhode Island. In 2012 she created a long blouse with a wide colorful patterned band that mom wears outside on top of the blouse to hold the infant’s bottom snugly in place and it is for full term babies, called NUROO, that accommodates both preterm and fullterm infants and mothers can wear it under regular clothing. It is for sale in Babies R Us as of February, 2013 long with Nu Roo swaddlers that were developed after Brown Medical bought the Nu Roo line. See product and purchase at nurowababy.com/product/short-sleeve-pocket-black or call 404-241-6477 Contact Hope Parish at eem3@me.com (new in 2012) NuRoo Pocket baby carrier - skin to skin carrier for newborn baby …$59.99 - In stock. Designed for hands free skin-to-skin contact, we engineered the short sleeve Pocket using our signature fabric and added ventilation. … Made using our Signature Fabric, the NuRoo Pocket allows you to spend more time skin-to-skin. Designed to go on like a shirt.

Precious Image Creations, Inc. This company makes many different carrying devices for hospital use. They make a Baby Girdle (#8050) that is to be placed under the mother just prior to birth and it is a very simple to use wrap for Birth Kangaroo Care. For Postpartum use they have a blouse and wrap all in one so infant is held snugly and mother can breastfeed and do Kangaroo Care without any exposure. In 2010 she has a new wrap for KC at birth and a wrap for holding the infant in KC while pumping from both breasts. Contact www preciosimagecreations.com for prices and full line of products. These are used in many hospitals across the USA for full term infants predominantly and she has a new line for preterm infants and a special line for DELIVERY ROOM kangaroo care.

Dr. Elise Van Rooyen makes a simple carrying device that is used in all northern province hospitals of South African. It is machine washable, wraps easily, comes with good instructions, and is available for $10.00 from S. Ludington, Bolton School of Nursing, 10900 Euclide Ave., Cleveland, OH 44106-4904. email her at susan.ludington@case.edu to order.

Snug-a-Roo. Quilted carrier for preemies (turn down center flap for KC). Has 2 pages of instructions (806) 795-8775.

Vija Designs. 110 Bld Industriel, Boucherville (QC), Canada J4B 2X2. Phone is 438-289-1243 region MTL., toll free phone: 1-855-850-9279. Info@vijadesign.com, www.vija-design.com. Vivianne Brault makes a halter top kangaroo top, a skin to skin bandeau, and a men’s skin to skin care t-shirt and a women’s skin to skin care t-shirt.

UCHI Neonatal Kangaroo Care wrap. Wilhelm, Mariela. (2013). She has developed a wrap of cloth that is used 4 ways and holds heavy term newborns. She has a CD rom with a film and pamphlets in English, Spanish, French explaining the steps to use the wrap. Contact UCHI Ltd. 26 Overton Place. St. Albert, TSN 6W9, Alberta,Canada, http://www.uchimama.net, email is uchih66@gmail.com, phone is Mariela Wilhelm, R.N. (780)-970-1006

CESAREAN SECTION DRAPES FOR KANGAROO CARE. Clever Medical’s Skin-to-skin cesarean section surgical drape: This is a surgical drape for use during cesarean sections drape for skin-to-skin contact immediately after delivery of the baby on the cesarean table. Three labor and delivery nurses who were aware of the positive benefits of skin-to-skin contact starting at birth to infants and to mothers realized that the cesarean section surgical drapes slowed the onset of skin-to-skin contact. The three of them worked for 3 years to develop a drape with a pass-through window so the infant goes directly from surgical field through the window and onto the mother’s chest without contamination of the surgical field. The three nurses formed a company, called it Clever Medical, and applied for a patent which is still pending. You can see a video of a cesarean delivery and the baby going through the skin-to-skin drape by going to the home page of Clever Medical which is www.clevermedicalab.com. There are directions there, too, on how to get the Drape for your use. To get the drape call the toll free number 844-220-6440 or email customerservice@clevermedicalab.com

CHAIRS FOR KANGAROO CARE-
La Napoule or La Fuma Lounge Chair (it goes by both names) or Zero-Gravity lounger. Folds to 7” for easy storage, and mothers can sit in these all day without episiotomy discomfort. All movement control is from legs, not arms and moms love this chair and can stay in it for 24 hours without fatigue, discomfort, or episiotomy pain. This is the one they use in Europe and it works well, folds up into extremely little space and is easy to move about. Comes in white, black or dark green. This can often be bought in Patio and Pool or Boat shops. Or you can order it from

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1) Hammacher-Schlemmer, item # 27821D in the SKYMALL catalog is a DESIGNER MESH or PADDED SUNBRELLA ZERO-GRAVITY RECLINER for $99.00. Call 1-800-sky-mall (1-800-759-6255). Or go to www.SkyMall.com. This price as of 10/10/2010.

2) Plow & Hearth, item #2087A (The Original La Fuma) for $179.95 in the SKYMALL catalog, 1-800-759-6255 or www.SkyMall.com. Plow and hearth has an extra wide (2 inches) and longer (3 inches) one as well and it is called the extra large chair. They also have one with extra padding on top of the mesh. Extra large chair is $209.95 (item #2490). These are all on page 63 of the February 2005 catalog. Comes in Green, blue, or black.

3) Frontgate is also selling the Zero Gravity chair in yellow, white, or beige. Item # 14225A $179.00 each (or two for $169.00 each) on page 20 of February 2005 SkyMall catalog. Call 1-800-759-6255 or www.skymall.com. Plow and hearth has an extra wide (2 inches) and longer (3 inches) one as well and it is called the extra large chair. They also have one with extra padding on top of the mesh. Extra large chair is $209.95 (item #2490). These are all on page 63 of the February 2005 catalog. Comes in Green, blue, or black.

4) Bed Bath and Beyond sells the Zero Gravity Chair for $49.99 in the spring and summer months. The brand they sell is the Sarasota Breeze.

5) Ollies Discount started selling the Sarasota Breeze Zero Gravity Chair in May 2011 for $39.99 each in May 2015, calling it the multi position relaxer with adjustable headrest.

4/11/2008 & 6/8/2017 I just saw the La Fuma/La Napoule chair at COSTCO yesterday for $88.00. The chair they have there is called the Fabric Lounger and is available from CWC, PO BOX 34535, Seattle WASHINGTON, 98124-1535, ask for item # ITM ART 30612. Many places like Bed BATH and Beyond, and patio shops sell the chair as a ZERO GRAVITY LOUNGER. Be sure it is well made and not a cheap rip off of the La Fuma chair which lasts years.

- The Kangaroo Care Chair- comes with 10 year warranty. Looks like regular padded chair. Get it from www.ioahealthcarefurniture.com or write to Mr. Fabio Delmestri, Executive Vice President, IoA Healthcare, 829 Blair Street, Thomasville, NC 27360. Phone 336-475-7106 or Fax 336-476-3016.

FOUNDATIONS
Fundacion Canguro
Calle 56A #50-36
Blokue A13, Apto 416
Pablo VI Azal, Bogota, COLOMBIA
Tel-fax: 57-1-221-0731
Tel: 57-1-608-3017
Home page is http://kangaroo.javeriana.edu.co OR Jan 2012: www.fundacioncanguro.co/es/profesionales.html
You can email Natalie Charpak at herchar5@colomsat.net.co or ncharpak@programacanguro.org

The KC mailing list is a forum to seek and exchange information on KMC. To subscribe to the KMC email list of notices about Kangaroo Care, just go to the website and sign up in the upper left corner.

Literature Thoughts:


KC improves feeding because the upright position also improves gastric emptying. Villanueva-Meyer, J., Swischuk, L,E, Cesani F., Alisa-Bri