World Health Organization International Network of Kangaroo Care Bibliography

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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 WHO Kangaroo Care Network.

Kangaroo Care BIBLIOGRAPHY

Developed by Dr. Susan Ludington Updated: 9/26/2004

The following is a list of professional articles. For some, 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." Published in 1993 by Bantam Books. You can buy a copy from Dr. Ludington at Frances Payne Bolton School of Nursing, 10900 Euclid Ave. room 322D, Cleveland, OH 44106-4904 or from La Leche League at 1400 N. Meacham Rd., Schaumburg, Ill. 60173 for the same cost. Several of the articles on this bib are available for \$1.00 (U.S.) each plus \$2.00 for mailing and we will be able to fulfill orders for up to five articles per request for items you are unable to retrieve from your library resources. Please circle those you want and submit payment and we will copy and send the articles to you. Thank you.

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. Kitty McCausland RN, BSN, UCLA

UPCOMING CONFERENCES:

2004 September 28 KC Conference and Certification Program in Cleveland, OH that includes skills laboratory and WHO Kangaroo Caregiver Credential. 2004 November 8-11. World Health Organization's International Network of Kangaroo Care workshop. Rio de Janeiro, Brazil. Welcome party is Nov. 7

October 2006: World Health Organization's International Network of KC meeting, hopefully in the USA.

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 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) 368-6490 Email: <u>Susan.ludington@.case.edu</u>

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).

ORIGINAL ARTICLES

(2004). Holding the very low birthweight infant: skin-to-skin techniques. Neonatal Network. Article describe the nursing considerations and techniques involved to successfully implment skin-to-skin holding for VLBW, technology dependent infants. **Implementation**.

(2002). Newscap: Kangaroo Care. <u>American J. Nursing</u>. April 2002. This is an early report of the US Survey by Engler in MCN. **Survey report**.

(2001). Third International Workshop on Kangaroo Mother Care: Indonesia November, 2000. Report and abstracts from the meeting. **Meeting** report.

(1999). Kangaroo care tops incubators. <u>Childbirth Instructor</u> <u>Magazine, 9</u>(1), 7. **Clinical Report, Warming, full-term. Delivery KC** (1997). "Kangaroo care" helps preemies. Indian Med Trib 5 (1-2),1. This is a summary of the Bier study. **Clinical report**.

Acolet D, Sleath K, & Whitelaw A. (1989). Oxygenation, heart rate, and temperature in very low birthweight infants during skin-to-skin contact with their mothers. Acta Paediatrica Scandinavica, 78, 189–193. KC for 10 minutes. Descriptive Study, PreTerm, HR, RR, SaO2, Axillary Temp

Ali Z & Lowry M. 1981. Early maternal-child contact: Effect on later behaviour. <u>Developmental Medicine and Child Neurology 23</u>, 337-345. 4 month follow-up. **RCT, FUllterm BF. Maternal Behavior**

Affonso, 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. <u>Neonatal Network 12</u> (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. **PT**, **Qualitative, maternal feelings.**

Affonso, D., Wahlberg V, & Persson, B. 1989. Exploration of mothers' reactions to the Kangaroo method of prematurity care. <u>Neonatal Network, 7,</u> 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. **PT, Descript. Maternal confidence, psychological stability.**

Anderson GC. (1989). Skin-to-skin: Kangaroo care in western Europe. <u>American Journal of Nursing</u>, <u>89</u>, 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**

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.

Anderson GC. (1991). Current knowledge about skin-to-skin (Kangaroo) care for preterm infants. <u>Journal of Perinatology</u>, <u>11</u>(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**

Anderson GC (1993). Kangaroo care. <u>Neonatal Network</u>, <u>12</u>(5), 56-57. (Letter)

Anderson GC (1993). Current knowledge about skin-to-skin contact (KC) for preterm infants. Breastfeeding Review, 2(8): 364-373.

Anderson GC. (1995). Touch and the kangaroo care method. In T. Field (Ed.), Touch in Early Development. Hillsdale: L. Earlbaum, pg. 34-51. Literature Summary of studies to date. Nice pictures.

Anderson GC. (1996). Kangaroo Care Videotape. <u>Neonatal Network</u>, <u>15</u>(4): p. 70.

Anderson GC (1998). Kangaroo care. In J.J. Fitzpatrick (Ed.)<u>Encyclopedia</u> of Nursing Research. Pp. 284-286. New York: Springer. Review the funded nursing research related to KC to date and the publications from the research. **Review**. Anderson GC. (1999). Kangaroo care of the premature infant. In E. Goldstein (Ed.) <u>Nurturing the Premature Infant: Developmental Interventions in</u> <u>the Neonatal Intensive Care Nursery</u>. NY: Oxford University Press. pp.131-160. This is a review of all studies to te 1999 date. **Review, crying**

Anderson, GC, 2005. Kangaroo care. In J.J. Fitzpatric (Ed.) <u>Encyclopedia</u> of Nursing Research. Review of funded nursing research related to KC to date and publications from the research. **Review**.

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 Gynecol Neonatal Nursing, 32 #5, 604-611. This reports the actual number of hours mothers got KC in an RCT of early KC. 47 Kcers and 44 control LBW preterm infants given KC.wrapped holding during first 48 hours after birth. KC moms did very little KC when its practice was not structured (28.5% of observations (not of time) if on Postpartum, 10.0% of observations if infant in NICU). KC moms did wrapped holding 14.8% of observations on postpartum and 2.6% of observations in NICU. (wrapped holding of Kcers = to wrapped holding of controls on postpartum unit). Observations taken q 15 min for 1st 6 hours and then as seldom as q3 hours for 24-48 hours postbirth. Kcers had 2x as much contact as controls. When KC began was not specified and this was much less than 82% of time as in Syfrett 1996 abstract. VERY LITTLE KC occurs naturally. **RCT, Preterm, Very Early KC.**

Anderson, GC, Chiu, SH, Morrison, B, Burkhammer M, Ludington-Hoe, SM. 2004. Skin-to-skin Care for Breastfeeding Difficulties Postbirth. In Field, T. (Ed.). Touch and Massage in Early Child Development, Skillman, N.J.: Johnson & Johnson Pediatric Institute. 115-136. 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: 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, 13 (27.1%) were not BF, nad 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

Anderson GC, Dombrowski MAS, Swinth JY. (2001). Kangaroo Care: Not just for stable preemies anymore. <u>Reflections in Nursing Leadership, 2nd Qtr</u>, <u>2001,32-34,45</u>. An integration of the case studies published in MCN: Early KC, Latch-on KC, Reflux KC, Twins, Triplets, Depression, Adoptive parent KC, Grandmother KC. **EARLY KC, Ventilated KC, SURROGATE KC, MULTIPLE KC, you name it, its in here.**

Anderson GC, Marks E., & Wahlberg, V. (1986). Kangaroo care for premature infants. <u>American Journal of Nursing</u>. July 1986, 807-809.[erratum appears in Am J. Nursing, 1986 Sept (86 #9), p. 1000]. A general overview of KC effects with preterm infants. **REVIEW**

Anderson, GC, Marks E., Wahlberg V (1986). AGA preemies can be Kangaroo infants too[Letter]. <u>American J. Nursing, 86(9)</u>, 1000. Short letter providing experience with AGA infants getting KC. **Letter**.

Anderson, G.C., Moore E., Hepworth J. (2001). Early skin-to-skin contact for mothers and their healthy newborn infants. (Cochrane Review). In The

<u>Cochrane Library</u>, March 16, 2001. This relates plans for a meta-analysis of Kangaroo Care. Good review of the literature and list of studies that will be included. **Meta-analysis preparation**.

Anderson GC, Moore E, Hepworth J, Bergman N. 2002. Early skin-to-skin contact for mothers and their healthy newborn infants (Cochrane Review). In <u>The</u> <u>Cochrane Library, Issue 1,</u> 2002. Oxford: Update Software. 16 RCTs were reviewed and showed significant and positive effects of KC on BF, neutral thermal range, blood glucose, crying and maternal affectionate love, touch, and contact behavior during an observed BF. **Meta-analysis procedure**.

Anderson GC, Moore E, Hepworth J, Bergman N. 2003. Early skin-to-skin contact for mothers and their healthy newborn infants. (Cochrane Review). In <u>The</u> <u>Cochrane Library, Issue 2,</u> 2003. Oxford: Update Software. 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. Mothers with early skin-to-skin contact displayed more affectionate behaviors **Meta-analysis results.Cry, Blood Glucose, RR, Temp.**

Anderson GC, Moore E, Hepworth J, Bergman N. 2003. Early skin-to-skin contact for mothers and their healthy newborn infants. Birth 30 (3), 206-207. This is a summary of the meta-analysis results. Summation report

Anisfeld, E., Lipper E. 1983. Early contact, social suppost and motherinfant bonding. <u>Pediatrics 72</u>(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 behav than controls and if in low social support group as compared to hi social support group. **Quasi**experimental, Fullterm, Delivery KC. Maternal behavior

Anner J. (1994). Kangaroo care: A father's story of caring for his premature daughter. Childbirth Instructor Magazine. Spring 1994, 12-17. FATHER

Armstrong,H.C. (1987). Breastfeeding low birthweight babies: Advances in Kenya. Journal of Human Lactation, <u>3</u>(2), 34-37. **BF, 3rd world**

Baker, A. M. (1993). <u>Maternal perceptions of the kangaroo care experience</u>. Unpublished master's thesis, The College of St. Catherine, St. Paul, Minnesota. Focused interviews with 3 mothers. KC decreased or eliminated maternal anxiety. Physical and emotional intimacy were HIGHLIGHTS of experience-they had much pleasure. KC heightened the dilemma of caring for other children, and KC 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**

Bakewell-Sachs, S. 2002. Physiologic stability of intubated VLBW infants during skin-to-skin care and incubator care. Comment by Susan Bakewell-Sachs. <u>MCN. American J. Maternal Child Nursing, 27</u>(2), 123. This is a short one paragraph reiteration of Smith's report in Advances in Neonatal Care, vol. 1, pg. 28-40 and concludes that incubator care may be less stressful for intubated infants than KC.**Ventilated KC, Preterm, Summation**

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. **FILM, BF**

Bauer, K., Pasel, K., Versmold, H. 1996. Chest skin temperature of mothers of term and preterm infants is higher than that of men and women. <u>Pediatric Research, 39</u>(#4)Part2: 195A. Reports the chest temperature of women who are not mothers, mothers of term and preterm infants, and chest temp of men. **Descriptive, not KC, chest temperature**

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 and their mothers. <u>Pediatr Res, 44(2): 247-251.</u> 27 infants given 60 min in incubator and then 60 min in KC and 60 min. back in incubator in wk 1 and 2 of life. No change in oxygen consumption, more sleep in KC, 25-27 weekers lose body heat during KC, 28-30 weekers gain heat in KC (0.3°Cin 1 hour).**Pretest-test-posttest, one group, NOT an RCT, oxygen consumption, sleep, temperature. Small vs. not so small.**

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. <u>Journal of Pediatrics</u>, <u>129</u>(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. **FATHERS, INFECTION (p. 608). Temperature, oxygen consumption, stability maintained**

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 preterms <1500 grms and AGA given first KC in first wk of life. Continuously measures rectal temp, foot skin temp and oxygen consumption for 1 hr in incubator, during 60 min of KC, and 1 hr in incubator During KC, rectal temp is 0.2C and foot temp 0.6C higher than pretest. During posttest, body temps returned to pretest. 02 consumption during KC (6.1+0.9 ml/kg/min.) was not higher than in incubator (5.8+0.8 ml/kg/min. 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-test-posttest, one group, NOT an RCT. Transfer time, rectal temp, foot temp, oxygenation, oxygen consumption, stability

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? <u>Z Geburtshilfe Neonatol, 203</u>(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 27.5wk;median wgt 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**

Bell E H., Geyer J, & Jones L. (1995). A structured intervention improves breastfeeding success for ill or preterm infants. <u>Amer. J. Maternal Child</u> <u>Nursing, 20(6): 309-314</u> KC helps maintain an adequate milk supply.IMPLEMENTATION, BF

Bell, R.P., & McGrath, J. (1996). How to implement a research-based Kangaroo Care program in the NICU. <u>Nursing Clinics of North America</u>, <u>31</u>(2), 387-403. Relates their step-by-step procedure to implementing KC so that it became routine care. **IMPLEMENTATION - Excellent Resource**.

Bergh A-M, Pattinson RC. 2003. <u>Development of a conceptual tool for the</u> implementation of Kangaroo Mother Care. Acta Paediatrica 92, 709-714. This provides a conceptual model to assist the implementation of KC. 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**

Bergman, N.J. 1998. Making newborn care work.<u>Child Health Dialogue</u>, Issue 11, 2nd quarter, p. 4. This document relates the role of KC in good care for all newborns. **Clinical Report.**

Bergman, N. ???? Kangaroo mother care: Rediscover the natural way to care for newborn baby. <u>International J of Childbirth Education 18</u> (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. **Review**, **Full Term**, **BF**.

Bergman N. 2005. Randomized controlled trial of KC with preterm infants. Acta Paediatrica accepted in April 2004 for publication in 2005. **PT, RCT**,

Bergman, N.J., & Jurisoo, L.A. (1994). The "kangaroo method" for treating low birth weight babies in a developing country. <u>Tropical Doctor</u>, <u>24</u>, April 1994, 57-60.**RCT**.

Bergman N, Malan A, Hann M, Organizing Committee. (2003). Fourth International Workshop on Kangaroo Mother Care. J. Tropical Pediatrics 49 (5), 311-312.

Bier J-A.B., 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 <3.31bs 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 thruout 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 Keed 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, KCBF, BF, milk production, milk expression, duration of BF, SaO2, oxygenation, HR, RR, Axillary Temp, #Desats, stability,

Bier J., Oliver T, Ferguson, A., & Vohr B .(2002). Human milk improves cognitive and motor development of premature infants during infancy. <u>J Human</u> Lactation 18 (4), 361-367. **BF**

Bigelow A. Littlejohn 2002? Charpak refers to this too. Looked at maternal satisfaction with KC in South Africa. No publication as yet, just a poster. Maternal Satisfaction.

Bingham RJ. (1997). Roo the day: Rudiments of Kangaroo Care. Nann Central Lines, 13(4) (November, 1997, p 10-13. A simple to read review of the history, development and benefits of KC. Available through Dr. Ludington or by contacting National Association of Neonatal Nurses, 1304 Southpoint Blvd., Suite 280, Petaluma, CA 94954-6861. **Clinical review**

Blaymore-Bier, J-A. See Bier, JB above.

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Boge, B. 1986. Anecdote from Gambia on Kangaroo Care. Comments at International Nursing Research conference, Univ. of Alberta, Edmonton, Alberta, CANADA.

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 decreased during KC. Changes may be due to heat stress. **Descriptive study.** Negative Effect. Preterm. HR RR, Brady, desats, temp, breathing pattern.

Bosque, E.M., Brady, J.P., Affonso, 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. Reports that skin temperature dropped in some infants. Control over insulation across the infant's back was questioned even though manuscript reports control. **Descriptive study, preterm Negative Effect. Decrease skin temp.Apnea**

Bowden VR, Greenberg CS, Donaldson NE. (2000). Developmental care of the newborn. Online Journal of Clinical Innovations or <u>CINAHL Information Systems</u> (Glendale, CA). 3, issue 7, 27 pages with 286 ref. Available online at <u>http://www.cinahl.com</u> or from Cinahl Information Systems, 1509 Wilson Terrace, Glendale, CA 91206. The 14 pages that appear online do not include all references. In essence, KC is part of development care for all NEWBORNS.**FULLTERM, Developmental Care**

Breitbach, KM. (2001). Kangaroo Care. In Craft & Rosenberg (Eds.) <u>Nursing</u> <u>Interventions for Infants.</u> Thousand Oaks, CA: Sage Publ.pp. 151-162. This is a chapter that talks about listing Kangaroo Care as a nursing intervention within the taxonomy of the NANDA system for nursing diagnoses in the United States. Defined it and listed 18 activities associated with Kangaroo Care. **Terminology**

Brown, L.D., Heermann, J.A. (1997). The effect of developmental care on preterm infant outcome. <u>Applied Nursing Res, 10</u>(4), 190-197. On pg. 193 they identify that they encouraged KC as soon as possible on the tiniest 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 wgt gain. **Retrospective comparison, IVH, Days of Vent,LOS, WGT, VENT KC**

Bystrova K, Widstrom AM, Mattheisen AS, Ransjo-Aarvidson AB, WElles-Nystrom B, Wassberg C, Vorontsov 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. <u>Acta Pediatrica 92</u> (3), 320-326. 176 fullterm newborn mother dyads, grp A got KC (120 mins), grp B got held in arms swaddled or clothed, grp C kept in cot in nursery swaddled or clothed. Axillary, thigh, back and foot temperatures from 30-120 min postbirth. All temps rose significantly in all TX grps. Foot temp dropped sig in nursery grp and drop was greatest in swaddled 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.**FULL TERM, Axillary, Thigh, Back, Foot Temps, RCT**.

Carfoot 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. <u>Midwifery, 19</u>(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 skinto-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. **FULLTERM, Review. BF**

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. <u>Developmental</u> <u>Psychobiology, 11</u>, 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, Iding, etc. N=16). Watched when baby took mipple 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, KCBF position, Maternal behaviors Delivery KC.**

Carlson SG. Fagerberg G., Horneman G., Hwang C-P., Larsson K, Rodholm M, Schaller J. Danielsson B., Gundewall C. (1979). Effects of various amounts of contact between mother and child on the mother's nursing behavior: A follow-up study. Infant Behavior and Development, 2, 209-214.17 Naked babies put in mothers bed for 1-2 hrs immediately after delivery, baby placed on the mother's body in nursing position or at her side with its face touching the mother's breast. After 2 hrs, baby taken away, washed and put in crib at mom's side. (mom held infant for up to 5 min after birth, then taken away, washed andput in crib). Observations began when infant took nipple and continued for two minutes after letting go of nipple. This was six week 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**

Carlsson S.G., Larsson K., Schaller, J. (1980). Early mother-child contact and nursing. <u>Reprod. Nutri. Develop, 20(3B), 881-889</u>. This article repeats the results of Carlsson et al. 1978 1979, listed above. **Fullterm**

Cash, S., & O'Quinn, JLK., (1996). Kangaroo care is for full term babies too. <u>American Journal of Nursing, 96</u>(10), 20. Short report of three fullterm kc studies published elsewhere. **FULL TERM**

Cattaneo A., Davanzo R, Bergman N, Charpak N. 1998. Kangaroo Mother Care in Low-income countries. J. Tropical Ped, 44 (oct. 1998): 279-282. **3rd World**

Cattaneo A, Davanzo R, Uxa F, Tamburlini G. 1994. Kangaroo mother method for low birthweight infants. <u>Lancet</u>, <u>344(8932)</u>:1304-1305. **3rd World**

Cattaneo A., Davanzo R, Uxa F, Tamburlini G. 1998. Recommendations for the implementation of Kangaroo Mother Care for low birthweight infants. <u>Acta</u> <u>Paediatrica, 87(4):</u> 440-445. **Guidelines, Implementation**

Cattaneo A, Davanzo R., Worku B, Surjono A., Echeveria N, Bedri A, Huksari, E., Osorno L, Gudetta B, Setyowireni D, Quintero S, & Tamburlini G. (1998) Kangaroo mother care for low birthweight infants: A randomized controlled trial in different settings. <u>Acta Paediatr 87</u>: 976-985. **Randomized Controlled Trial. RCT, Mortality**

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.

Cerezo MR, de Leon R., Gonzales BJV. 1992. Mother child early contact with "the mother kangaroo" program and natural breast feeding. <u>Rev Latino Amer</u> <u>Perinatol 12</u>, 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.**

Charpak, N. 1997. Pediatrics 100, pg. 682-688.

Charpak, N., Figueroa, Z. 1996. La Methode Kangourou. Edit: ESF, Paris, France. (French) Available through herchar5@colomsat.net.co

Charpak, N., Figueroa, Z. 1997. El Metodo Canguro. Edit: Interamericana. McGraw Hill, Bogota. (Spanish). Avai. Thru herchar5@colomsat.net.co

Charpak, N., Figueroa de Calume, Z. 1998. O Metodo Mae-Canguru. Edit: Interamericana McGraw Hill, Bogota, (Portugese). Avail thru herchar5@colomsat.net.co

Charpak N, Figueroa de Calume, Z., Hamel A., Medina C, Y., Cifuentes C, Y. 1997. El Metodo Canguro, Santafe de Bogota: McGraw Hill Interamericana S.A., ISBN:958-600-753-7. Available from McGraw Hill Interamericana S.A., Avendia de las Americas, 46-41. Santafe de Bogota, D.C., Colombia. This book explains the method as practiced in Bogota and other places in South America.

Charpak, N., Figueroa de Calume, Z., Ruiz, J.G. (1998). Kangaroo mother care. The Lancet, 351; March 21,1998, p.914-915.[letter, comment]

Charpak N, Figueroa de Calume, Z, Ruiz JG. (2000). "The Bogota declaration on kangaroo mother care." Conclusions at the second international workshop on the method. Second International Workshop of Kangaroo Mother Care. <u>Acta</u> <u>Paediatrica 89 (9)</u>: 1137-1140. **Bogota Declaration**

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. <u>Pediatrics</u>, <u>94</u>(6 Pt1), 804-810. **RCT. Mortality**

Charpak N, Ruiz-Pelaez JG, Figueroa de Calume, Z (1996). Current knowledge of kangaroo mother intervention. <u>Current Opinion in Pediatrics</u>, 8(2), 108-112.LITERATURE SUMMARY

Charpak N, Ruiz JG, Figueroa de Calume Z. (2000). Humanizing neonatal care. Acta Paediatrica, 89, 501-502.**POLICY**

Charpak, N., Ruiz-Pelaez, J.G., Figuero de Calume, Z. & Charpak, Y. (1997). Kangaroo mother versus traditional care for newborn infants <2000 grams: A randomized, controlled trial. Pediatrics, vol. 100 #4, Oct. 1997, pg.

682-689. 1084 newborns were followed in this RCT. The risk of dying was similar for both group as were growth indices. KMC is safe. **RCT. Mortality, Wgt**

Charpak N, Ruiz-Pelaez J.G., Figueroa de Calume, Z., Charpak, Y. (2001). A randomized controlled trial of kangaroo mother care: Results of follow-up at 1 year of corrected age. <u>Pediatrics, 108</u>(5), 1072-1079. No difference in KC and non-KC groups at 12 months on psychomotor performance. **RCT, 12 month psychomotor development**

Chen, C-H., Wang, T-M, Chang H-M, Chi C-S. (2000). The effect of breastand bottle-feeding on oxygen saturation and body temperature in preterm infants. J. Human Lactation, 18(1), 21-27. 25 preterm infants given either bottle or breastfeeding with KC. SaO2, HR, RR, temp noted every minute for 20 min. during feeding. SaO2 and body temp sig. higher during KC breastfeeding. 2 apnea and 20 desat episodes in bottle feeding group, none in BF group. BF with KC is more physiological and less stressful. **PT, HR, RR, temp. SaO2, Desats, apnea, KC is less stressful.**

Chiu, S-H, Anderson, G.C., Burkhammer M.D. (in press for 2005). Newborn infant temperature during skin-to-skin breastfeeding in dyads having breastfeeding difficulties. <u>Birth</u>. 48 fullterms having Breastfeeding difficulty at 12-18 hours postbrith had temporal artery temperature taken before, once during, and after each of 3 consecutive breastfeedings in KC. Temp reached and remained in neutral thermal range during KCBF. **Descriptive, temporal artery temp, KCBF, fullterm.**

Christensson, K., (1996). Fathers can effectively achieve heat conservation in healthy newborn infants. <u>Acta Paediatrica</u>, <u>85</u>, 1354-1360. Paternal KC with FULL TERM newborns from C/S deliveries. <u>44</u> infants studied and glucose levels were higher in KC than cot babies and at 24 hrs. postbirth, mean axillary temp was higher in KC group. **FULLTERM, FATHERS, temp, Blood glucose**

Christensson K, Bhat G., Amadi B, Eriksson B, Hojer B. (1998). Randomized study of skin-to-skin versus incubator care for rewarming low-risk hypothermic neonates. <u>The Lancet, 352</u> (9134):1115. By 240 minutes post birth, 90% of preterm LBW KC (MGA = 33 wks) infants had reached 36.5 but only 60% of incubator babies(MGA= 34.7 wks) had (p<.0000). **Preterm, Rewarming**

Christensson K, Bhat GJ, Eriksson B, Shilalukey-Nygoma MS, Sterky G. 1995. The effect of routine care on the health of hypothermic newborn infants. J Trop Ped, 41, 210-214. This is not really KC study. It is in related literature.

Christensson, K., Cabrera, T., Christensson, E., Uvnas-Moberg, K., & Winberg, J. (1995). Separation distress call in the human infant in the absence of maternal body contact. <u>Acta Paediatrica</u>, <u>84</u>, 468-473. Conducted in Spain. Primiparous and multiparous women of NSVD given 90 minutes of KC postdelivery (n= 15) or left in cot for 90 minutes (n= 14) or placed first in cot and then given KC later (n=15). Temperature increased (KC axillary temp at 90 minutes post birth = 36.9 and control = 36.4) and crying was significantly less in the KC group. Thermoregulation by KC persists for 2-3 days and is mediated by increased cutaneous circulation due to sympatholytic 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**, **temperature, comfort response, CCK, oxytocin, crying, sympathetic activity.**

Christensson, K., Ransjo-Arvidson, A.G., Kakoma, C., Lungu, F., Darkway, G., Chikamata, D., & Sterky, G. (1988). Midwifery care routines and prevention of heat loss in the newborn. A study in Zambia. <u>Journal of Tropical Pediatrics</u>,

34, 208-212. FULL TERM

Christensson, K., Siles, C., Moreno, L., Belaustequi, A., De La Fuente, P., Lagercrantz, H., Puyol, P., & Winberg, J. (1992). Temperature, metabolic adaptation and crying in healthy full-term newborns cared for skin-to-skin or in a cot. <u>Acta Paediatrica</u>, <u>81</u> (6-7), 488-493. Primiparous and multiparous mothers of NSVD in Spain given 90 minutes of KC postdelivery for KC group (n=25), control babies (n=25) placed in cot for 90 minutes postdelivery. Infant temperature increased(Axillary temp at 90 min postbirth was 37.1 for KC and 36.8 for control and sig less crying in the KC group (no means given). **RCT**, **FULLTERM, HR, RR, temperature, crying.**

Christidis I, Zotter H, Rosegger H, Engele H, Kurz R, Kerbl R. (2003). Infrared thermography in newborns: the first hour after birth. <u>Gynakol</u> <u>Geburtshilfliche Rundsch, 43</u> (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 with mother prevents heat loss and produce uniformly warm thermogram of infant. **Descriptive, Full Terms, temperature profile. Get full article.**

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 <u>Research (Taiwan), 10</u> (2), 129-142. Thirty-four healty preterm infants in TAIWAN were randomly assigned before first feed. KC was done during BF, controls were clothed and wrapped and 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).**RCT**, **tympanic temp, quiet sleep, inactive awake, drowsy,cry, wgt, length of stay.**

Cleary GM, Spinner SS, Gibson E., & Greenspan JS. (1997). <u>Skin-to-skin</u> parental contact with fragile preterm infants. <u>J. American Osteopathic</u> <u>Association, 97(8): 457-460</u>. Case study of 29 wk GA twin 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. **FATHERS (all data collapsed and reported as Parental KC; PROTOCOLS included), HR, Bradycardia, Apnea, PB, Desats, Residual KC>**

Clifford, PA, Barnsteiner J. (2001). Kangaroo care and the very low birthweight infant: Is it an appropriate practice for all premature babies? <u>J</u> <u>Neon Nurs, 7(1): 14-18.</u> 7 infants at CHOP (Children's Hopsital of Philadelphia) (6 vented) who started KC from 4-32 days of life showed physical safety could be maintained during KC. Physiol. variables remained WNL during KC, KC enables interactive relationship, promotes 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 brady, no HR drift, no apnea, no cold stress and temp stability was maintained. **Vent KC, bonding, HR, Brady, Apnea, temp.**

Closa Monasterolo R, Beneitez JM, Olive del MR, Martinez MJM, Papi AG. (1998). "Kangaroo Method" in the care of premature infants admitted to a neonatal intensive care unit. <u>Anales Espanoles de Pediatria, 49</u>(5): 495-498. Has English abstract: studied 445 sessions of 38 stable preterm NICU infants having 30-90 minutes of KC, 1-8 times a day. Physiology was stable, BF sessions longer because babies slept/suck - intermittent KC does not allow BF by demand, so smallest babies still need gavage supplementation. **HR, RR, SaO2, temp, BF session length. Descriptive study.** Collins, S., (1993). Baby Stephanie: A case study in compassionate care. <u>Neonatal Intensive Care</u>, March/April 1993. p. 47-49. (No volume or # for this journal). **Descriptive**, End-of-life KC

Colonna, F., Uxa, F., de Graca A.M., & de Vonderweld, U. (1990). The "kangaroo mother" method: Evaluation of an alternative model for the care of low birth weight newborns in developing countries. <u>International Journal of</u> Gynaecology and Obstetrics, 31, 335-339. **3rd World**

Conde-Agudelo A, Diaz-Rosello JL, Belizan JM. 2000a. Kangaroo mother care to reduce morbidity and mortality in low birthweight infants [Protocol for a Cochrane Review]. In: The Cochrane Library, Issue 3, 2000. Oxford: Update Software. See next citation. **Preterm, meta-analysis plan**

Conde-Agudelo A., Diaz-Rosello JL., Belizan JM. 2000b. Kangaroo mother care to reduce morbidity and mortality in low birthweight infants. Review. In: The Cochrane Library, Issue 4,2000. Oxford: Update Software. Available from <u>www.nichd.nih.gov/cochraneneonatal</u>. Analyzed 3 studies (Sloan 94; Charpak 97, Cattaneo 98) and concluded "all studies were of moderate to poor methodology. No evidence of difference on infant mortality, Decr. Severity of illness, decr resp. dis, decr maternal dissatisfaction with care, decr perception of social support in NICU, incr exclusively BF, incr. Wgt gain, incr mat competence (p.3), but says that methodological quality of trials weaken credibility of findings and that "there is still insufficient evidence to recommend its routine use in LBW infants. Well designed RCTs are needed."(pg. 3).META-ANALYSIS. INFECTION, WGt, BF.

Conde-Agudelo A., Diaz-Rossello JL, Belizan JM. 2003.Cochrane Database Systematic Reviews, #2, CD002771. This is the Feb. 11, 2003 update. They reviewed 5 new studies out through Dec. 2002. 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/conde-agudelo/conde-agudelo.htm Meta-analysis - no new results,but reviews several individual studies WGT, Infection, Temp, LOS, Cost, 12 month PsychomotorDev, Maternal competence.

Constantinou JC, Adamson-Macedo EN, Stevenson DK, Mirmiran, M, Fleisher BE. 1999. Effects of skin-to-skin holding on general movements in premature infants. <u>Clin Peds, 38(8), 467-471</u>. 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 axillary temps prekc, kc and postkc. Axillary 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. **Pretest-posttest**, **own control. Activity (gross movements), Axillary temps. Paternal KC, Residual effects**

Craig S, Tyson JE, Samson J, Lasky RE. 1982. The effect of early contact on maternal perception of infant behavior. <u>Early Human Dev. 6</u>, 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 Behav 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.**FULLTERM**

Cristo M. 2002. Get this from Rejean Tessier. I don't have it. Has to do with maternal feelings of competence and adaptation to mothering role.

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. <u>Birth and Family J. 6(4)</u>, 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**

Curry, M.A., (1982). Maternal attachment behavior and mother's selfconcept: The effect of early skin-to-skin contact. <u>Nursing Research</u>, <u>31</u>(2), 73-78. 11 Controls (wrapped infant) vs. 9 KC infants. Maternal attachmentat 36 hours and 3 months postbirth, **FULL TERM. Attachment behaviors, Self concepts**

Daga, S.G., & Shinde, S.B. (1987). Mother participation in NICU. ???

Daga, S.G., & Daga, A.S. (1989). Reduction in neonatal mortality with simple interventions. Journal of Tropical Pediatrics, 35, 191-194. Mortality

Davanzo, R. (1993). Care of the low birth weigh infants with the kangaroo mother method in developing countries. Guildelines for health workers. <u>Bureau</u> for International Cooperation in Maternal and Child Health, WHO Collaborating Center for Maternal and Child Health, Instituto per L'Infanzia, Via dell'Instrud 65/1, 34137 Triest, Italy. **Guidelines**

Davanzo, R., & Cattaneo, A. (1995). The kangaroo mother method. <u>The</u> <u>Kangaroo</u>, 4(1)July: p. 6-9. This is a review of Sloan (Lancet, 1994) and Charpak (Pediatrics 1994) articles with a commentary related to the recommending Kangaroo Care for implementation on a global basis. <u>The Kangaroo</u> is a journal published by the Bureau for International Cooperation in Maternal and Child Health and is available by writing to the address listed in Davanzo 1993.**Implementation**

De Chateau P. (1979). Effect of hospital practices on synchrony and the development of the infant-parent relationship. <u>Seminars in Perinatology</u>, <u>III</u>(1), 45-60. I think this is a report of practices, not a study or report of KC. We will check this out. **Fullterm, synchrony**

De Chateau P, Wiberg B. (1977a). Long-term effect on mother-infant behaviour of extra contact during the first post partum hour. I. First observations at 36 hours. <u>Acta Paediatrica Scand 66,</u>137-144.**FULLTERM, BF in KC, RCT**

De Chateau P, Wiberg B. (1977b) Long-term effect on mother-infant behaviour of extra contact during the first hour post partum. II. A follow-up at three months. <u>Acta Pediatrica Scand 66</u>,145-151.Fullterm primip moms given 15-20 min suckling and KC during 1st hr. after delivery vs control (infant taken to nursery)had sig. 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, BF in KC, BF at 3 months, maternal behavior, maternal perception, infant smile/crying RCT

De Chateau P, Wiberg, B. (1984). Long-term effect on mother-infant behavior of extra contact during the first hour postpartum. Part III: Follow-up at one year. <u>Scand J Soc Med, 12</u>: 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 Cesarec Marke Personality Scheme. KC moms breast fed 2.5mos. more. **Fullterm, BF in KC, Development**

de Leeuw, R., Collin, E.M., Dunnebier, E.A., & Mirmiran, M. (1991). Physiologic effects of kangaroo care in very small preterm infants. <u>Biology of</u> <u>the Neonate, 59</u>(3), 149-155. KMC has no lasting effect on sleep in infants. Clinical observation study using pretest-test-posttest (each period = 1 hour) design of 8 preterms (27-29wks GA) given one hour of KC when clinical condition allowed. **Quasi-Experiment: PreKC-KC-PostKC infants as own control,Sleep, Activity**

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

Diaz-Rosello, J.L., & Bellman, M. (1985). Report of Pan American Health Organization/World Health Organization: Early discharge/ambulatory care program for low birthweight infants (kangaroo method). Montevideo: Centro Latinoamericano de Perinatologia (Internal document 2/85),1985. 899 subjects studied from 1979-1984 in Bogota, Colombia.

Diaz-Rosello, J.L., Lozano, P.M. & Tenzer, S.M. (1990). Impaired growth of low birthweight infants in an early discharge program. In UNICEF Oficina Regional para La America Latina y el Caribe (Ed.), <u>Primer Encuentro</u> <u>Internacional Programma Madre Canguro</u>. Bogota: UNICEF, 1990, pp. 283-306. 129 subjects studied. **BF**, Wgt. Infants discharged in KC and exclusive BF do not gain enough weight in first year. Later work showed that infant's need fortification of the breastmilk.

Dombrowski MAS, Anderson GC, Santori C, Roller CG, Pagliotti F, Dowling DA. (2000). Kangaroo (skin-to-skin) care for premature twins and their adolescent parents. <u>MCN</u>, The American J. of Maternal/Child Nursing, 25(2): 92-94. 32 wk twins Kced by teen parents and showed attachment behaviors and self-confidence when interacting with infants. Ample milk supply, no engorgement. Normal development at 18 months.**Teen KC, BF, Development, FATHER.**

Dombrowski MAS, Anderson GC, Santori C, Burkhammer (2001). A case study of KC (Skin-to-skin) care with a depressed woman. <u>MCN, Am. J Maternal Child</u> <u>Nurs, 26</u> (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 1st 3 hrs of KC mom slept almost continuously. Continued KC every other day x 3 mos. and there after when she was stressed. **Early KC, Depressed KC, Stress-relieving KC.**

Doyle, L.W. (1997). Kangaroo mother care. The Lancet. Vol 350. December

13, 1997, p. 1721-1722. This is commentary on Charpak's article. Commentary.

Drosten-Brooks, F. (1993). Kangaroo care: Skin-to-skin contact in the NICU. <u>Maternal Child Nursing</u>, <u>18</u>(5), 250-253. Reports that one infant accidentally extubated during KC. Report of their use of KC in the NICU. **PROTOCOL, Vent KC, Clinical Report.**

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. <u>Neonatal Intensive Care, March/April, 1997</u>, p. 23-27. Temperature at 120 minutes postbirth was higher than swaddled and cot infant's temperature. No differences I blood glucose levels was present. **Fullterm, BF, Temperature.Blood** glucose, delivery KC

Eichel P. 2001. Kangaroo Care: Expanding our practice to critically ill neonates. <u>Newborn and Infant Nursing Reviews</u>, 1(4): 224-228. Relates steps to starting KC, beginning with the 1st KC Conference in America. Did KC with vented babies, some stress with transfer but recovered quickly, then sound sleep with fewer episodes of A/B, desat. Some needed 10-15% more FiO2 during KC. Now they feed and suction in KC. **Clinical Report.<1000gm**, **Vent KC, sleep**, **apnea**, **bradycardia**, **desaturations feed/suction in KC, Implementation**.

Ellett, M.L., Bleah D.A., Parris S. (2003) Feasibility of using kangaroo (skin-to-skin) care with colicky infants. <u>Gastroenterology Nursing, 27</u> (1), 9-15. Difficult to do experimental study over the internet. **FT, Cry**

Elliott D. 2002. Kangaroo care. MCN Am J Matern Child Nurs, 27 (6), 357.

Engler, A.E., Ludington-Hoe, S.M., Cusson, R.M, Adams, R., Bahnsen, M.A., Brumbaugh, 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. <u>MCN, Amer. J. Maternal Child Nursing 27</u>(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 ifant safety concerns and reluctance by 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. **SURVEY. Barriers**

Fardig, J.A. (1980). A comparison of skin-to-skin contact and radiant heaters in promoting neonatal thermoregulation. <u>Journal of Nurse-Midwifery</u>, <u>25</u>(1 Feldman), 19-27. 17 Kcers got KC after initial nursing care under radiant warmer, 17 got immediately KC (never under radiant warmer) & 17 controls had no skin contact at all. Measures taken every 3 minutes for 45 minutes. Rectal temps at 21 and 45 min postbirth. More controls had skin and rectal temps below NTZ at 21 and 45 min postbirth. **FULLTERM, skin temp, rectal temp.**

Feldman R, Eidelman A, Sirota L, Weller A. (2002). Comparison of skin-toskin (Kangaroo) and traditional Care: Parenting Outcomes and Preterm Infant Development. <u>Pediatrics</u>, <u>110</u>(1 Part 1), 16-26. 73 LBW infants who got KC in the NICU and 73 matched controls at other hospital. At 37 weeks GA, 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). **Development**,

Bayley Mental/Motor, Temperament, Mat Behavior, alert, Mat. depression.

Feldman R, Eidelman AI. (2003). Skin-to-skin contact accelerates autonomic and neurobehavioral maturation in preterm infants. <u>Developmental</u> <u>Medicine and Child Neurology, 45</u> (4), 274-281. 70 infants got 24.31 days of KC for a total of 29.76 hours. 19males, 6 females I each group. GA was 30.28 wks, bw = 1229.95 gm and medical risk. Vagal tone for 10 min B4 KC and 10 min at 37 wks & Kcers had more rapid maturation of vagal tone. Behavioral state measured in 10 sec epochs x 4 hrs B4 KC and at 37 wks - more rapid improvement in state organization (longer periods of quiet sleep, longer period of alert wakefulness and shorter periods of active sleep. NBAS at 37 weeks showed more mature neurodevelopmental profile (especially habituation and orientation)in Kcers. **RCT,Vagal tone,Quiet & Active sleep, Alert Inactivity, NBAS for development**

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. <u>J Child Psychiat 40</u> (6),929-939. Measured attachment in fullterm mothers, healthy 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**

Feldman R, Weller A, Sirota L, Eidelman AI. (2003). Testing a family intervention hypothesis: The contribution of mother-infant skin-to-skin contact (Kangaroo Care) to family interaction, proximity, and touch. J. Family <u>Pscyhology 17(1)</u>, 94-107. 146 three-month old preterms 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 paternal 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. **RCT, interactions, development.**

Feldman, R, Weller A, Sirota L, Eidelman A. (2002). Skin-to-skin contact (Kangaroo care) promotes self-regulation in premature infants: Sleep wake cyclicity, arousal modulation, and sustained exploration. <u>Developmental Psych,</u> <u>38(2)</u>, 194-205. 73 preterms 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+ 12.14 hrs). Tested 1-2 days B4 KC, 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. No differences. @term, KC more mature state distribution, more organized sleep-wake cyclicity, @ 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.**RCT**, **State, Development.**

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. 47 healthy mom-infant dyads (22 KC) began KC 15-20 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 (kc only, control group babies went to nursery for 2 hours). 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 develop, stress.

Field, T., Hernandez-Reif, M., Feijo, L., Freedman, J. 2005. Prenatal, perinatal, and neonatal supplemental stimulation: A survey of neonatal nurseries. J Perinatology. 82 US neonatal staff member 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%), nonnutritive sucking during tubefeedings 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, skin-to-skin.

Fischer, C.B., Sontheimer, D., & Linderkamp, O. 1998. Cardiorespiratory stability of premature boys and girls during Kangaroo Care. <u>Early Human</u> <u>Development 52</u>(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- amethod 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**.

Flament, P. (1994). Kangaroo care. <u>FNIB Info</u> #6,Dec. 1994,3-5. Clinical review.

Fohe K, Kropf, S, Avenarius S. 2000. Skin-to-skin contact improves gas exchange in premature infants. J. Perinatology, 5, 311-315. 53 preemies <1800gm pretest incubator(60 min)-test(KMC: 90 min)-posttest(60 min) acting as own controls. HR increased 5 bpm, RR decreased 5bpm, SaO2 increased by 0.4%, tcpO2 increased by 48 mmHg, RECTAL temp increased by 0.3°C during KMC. Smallest increase in HR and highest decrease in RR is <1000 gramers; SAO2 and tcpO2 increases double in <1000grm compared to >1800 gms. Infants remain clinically stable and have more efficient gas exchange. No risk of hypothermia in <1000 gramers. HR, RR, SaO2, rectal temp, FiO2, TcPO2,TcPCO2.Very low birthweight and some micropreemies, Quasi-exp.

Franck LS, Bernal H, Gale G. 2002. Infant holding policies and practices in neonatal units. <u>Neonatal Network, 21(2)</u>, 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 wgt, GA. 25-33% of respondents identified staff RN and MD has not supportive of KC. Barriers to KC are infant stress, privacy, timing of parental visit, and getting staff help.**Descriptive Survey.**

Furlan C.E., Scochi C.G., Futado, M.C. (2003). Perception of parents in experiencing the kangaroo mothers method. <u>Review Latin-American Enfermagen, 11</u> (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, descriptive study, Parental report of KC's meaning to them, attachment, development, caregiving skills.** Furman, L., Kennell J. (2000). Breastmilk and skin-to-skin Kangaroo care for premature infants. Avoiding bonding failure. <u>Acta Paediatr 89</u>(11), 1280-1283. **Regression analysis, BF, bonding/attachment**

Furman, L., Minich N., Hack, M. (2002). Correlates of lactation in mothers of very low birth weight infants. <u>Pediatrics, 109</u>(4), 695-696. Significant correlates of lactation beyond 40 wks Conceptional age included beginning milk expression before 6 hs post-delivery, expressing milk >5 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. **Regression analysis. BF**

Gale, G, Franck, L., & Lund, C. (1993). Skin-to-skin (kangaroo) holding of the intubated premature infant. Neonatal Network, 12(6), 49-57.**VENT KC**

Gale, G., & VandenBerg, K. (1998). Kangaroo Care (part of the Developmental Care column) <u>Neonatal Network, 17</u>(5): 69-71. **Review.?** Crying? Sleep?

Gallagher KJ. 2000. Continuous skin-to-skin contact in the NICU: Kangaroo or "Possum" care? J. Perinatology, 5, 318-319. Silly article saying it should be called possum care because KC did not originate in Australia. How to people get this stuff published? **Commentary**.

Gardner, S. 1979. The mother as incubator - After delivery. JOGN Nursing, May/June 1979, 174-176. had infants delivered and given dried, and given routine care, eye instillation, ID bands, and weighing and footprinting. 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. Kcer infants had less drop in temp (1.1degree C) from 2-15 minutes than control (1.5 degrees C).FULLTERM, delivery KC, rectal temp

Gazzolo D, Masetti P, Meli M. 2000. Kangaroo care improves post-extubation cardiorespiratory parameters in infants after open heart surgery. <u>Acta Paediatr,</u> <u>89</u>(6), 728-729. 5 male infants (X age=5 months) who had repeatedly failed extubation attempts earlier after cardiac surgery were observed every two minutes thruout 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 (KMC 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,

Gloppestad, K. 1994. Initial separation time between mothers and their premature infants. A comparison between two periods of time. <u>Vard I Norden 2-3</u>, <u>vol 14(2-3)</u>, 17-23. KC parents get to their infants in the NICU faster than those not planning to do KC. **Comparative survey. Visiting times.**

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

Gloppestad, K., 1996. Parents' Skin to Skin Holding of Small premature infants: Differences between fathers and mothers. <u>Vard Nord Utveckl Forsk</u>, <u>16(1): 22-27</u>. 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

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

Gloppestad, K. 1998. Lactation in mothers of preterm infants: Prevalence at different points of time. <u>Vard I Norden 4, vol. 18(4)</u>, 27-35. Mothers gave KC to preterm infants and answered open-ended questions about amount of breastmilk and BF practices at 1,3,6,8,12 months postbirth. **Preterm BF. Engl abstract only**

Gloppestad, K. (2000). Total lactation times for mothers of premature infants. <u>Vard I Norden 1, Publ. No 55, Vol. 20</u>(1): 15-21. 108 mothers of prematures were questioned about amt and duration of BF. Early KC was associated with longer lactation period. Abstract in English, rest is in Swedish.

Gray L, Watt L, Blass E. 2000. Skin-to-skin contact is analgesic in healthy newborns. <u>Pediatrics, 105(1):e14-e24</u>. 30 newborns held in KC or left in crib for heel stick. Crying and grimace reduced by 82% & 65% from control levels. HR also reduced. Moms given 15 minutes to relax and were then tested. **Fullterm, HR, pain, cry, grimace, maternal relaxation.**

Gray L , Miller LW, Philipp BL, Blass EM. 2002. Breastfeeding is analgesic in healthy newborns. Pediatr 109 (4), 590-593. RCT of 15 infants who were breastfeeding in KC position during heelstick, 15 swaddled in bassinet during heel stick, 198 minutes after previous feed. Taste, suckling and KC were the elements that reduced crying by 91% and grimacing by 84% from control infant levels and HR was substantially reduced. 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 controls cried for 28 seconds). Kc HR rose 6 pbm and control HR rose 29 bpm. **Breastfeeding in the KC position.CRYING, HR, RCT.**

Grossman K, Thane K, Grossman KE. 1981. Maternal tactual contact of the newborn after various postpartum conditions of mother-infant contact. <u>Developmental Psychology, 17</u>, 158-169. 54 mixed parity middle income West German 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 (nude 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 contract, 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?

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 primip moms given infant for 45 min of KC after leaving delivery room and then to nursery til 12 hrs old vs 10 primip 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 differences. **FT. Does not specify** randomization.Quasi-Experiment. Maternal attachment behaviors.

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 3^{rd} study reported by Sosa et al., 1976).

Hales D, Lozoff B, Sosa R, Kennel JH. 1977. Defining of the maternal sensitive period. <u>Dev Med Child Neurol 19</u> (4), 454-461. 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).

Hamelin, K., & Ramachandran, C. (1993). Kangaroo care. <u>Canadian Nurse</u> 89(6), June 1993, 15-17.**VENT KC**

Hann M., Malan A, Kronson M, Bergman N, Huskisson J. 1999. Kangaroo Mother Care.<u>South African Medical J, 89(1)</u>: Jan. 1999, 37-39 and page 3 and page 241 for comments. Reports on use of KC at Groote Schuur Hospital and reports of three studies.**24 HR KC, IMPLEMENTATION, Between Breast KC, allowed to BF in KC**

Harris H. 1994. Remedial co-bathing for breastfeeding difficulties. <u>Breastfeeding Review 2</u>(10), 465-467. This is a remarkable picture story of doing KC in a warm bath in the immediate postpartum period (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 conintues. **Descriptive, crying, temperature,BF, sleep**

Harrison, LL (2001). The use of comforting touch and massage to reduce stress for preterm infants in the neonatal intensive care unit. Newborn and Infant Nursing Reviews. 1 (4),235-241.REVIEW of STILL TOUCH, STROKING, MASSAGE, and KANGAROO CARE TOUCH.

Harrison LL & Klaus M. (1994). Commentary: A lesson from Eastern Europe. Birth, 21(1): 45-46. Commentary on Levin's article in same journal.

Hendricks-Munoz, K. (2002). Karen Hendricks-Munoz, MD, discusses Kangaroo Care at NYU Medical Center. Msnyuhealth.org. Posted July 16, 2002. available at <u>www.msnyuhealth.org/articles/kangaroo care.html</u>. 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 arecontinuing to find that KC helps babies grow stronger and leave hospital sooner -upto 20 days sooner- with no evidence of increased infection. Also quotes a study of less maternal

depression. PT, clinical report, infection, growth, LOS, Mat depression, Mat-Neonatal Thermal Synchrony.

Hill PD, Aldag JC, Chatterton RT. (1999a). Breastfeeding experience and milk weight in lactating mothers pumping for preterm infants. <u>Birth, 26</u>(4), 233-238. Average frequency of KC/wk was used as covariant in comparison of single vs double pumping on milk yield from2-5 weeks PP. No infants were breastfed during wks 2-5 PP.. KC was significantly related to 2=5 wk PP 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. **PT, BF**

Hosseini, R., Hashemi, M., & Ludington-Hoe, S.M. (1992). Preterm infants and fathers: Physiologic and behavioral effects of skin-to-skin contact. <u>Ursus</u> Medicus, 2, 47-55.**FATHERS**

Hurst NM, Meier P. 2001. Managing breastfeeding for preterm infants and their mothers. <u>Central Lines, 17</u>(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**

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 KMC during the 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.**FULL-TERM, milk volume, BF**

Hsieh Y, Huang M. 2000. Preliminary study of kangaroo care for preterm infants. Effect on parent-infant relationship. J Nursing (China), 47(3), 33-40. Qualitative study of 16 parents who gave KC who answered 8 open-ended questions about KC's meaning to them. KC decreases parental anxiety, increases self-confidence and promotes positive relationship between parent and baby.ENGL Abstr.PT, qualitative study, Maternal anxiety, maternal self-confidence, + relationship between mother and infant.

Johanson, R.B., Spencer, S.A., Rolfe, P., Jones, P., & Malla, D.S. (1992). Effect of post-delivery care on neonatal body temperature. <u>Acta Paediatrica</u>, <u>81</u>(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 flaws. Kangaroo Care may or may not have been given.**RCT**

Johnson & Johnson Pediatric Institute. (2001). Skin-to-skin: The Mother/Baby Package. A Reference Guide for the Health Care Professional. Skillman, N.J. Available from J& J 1-877-565-5465. Contains articles by Zupan, Christensson, and Ludington-Hoe. **Clinical Review for practitioners**

Johnston, C.C., Stevens, B., Pinelli, J., Gibbins, S., Filion, F., Jack, A., Steele, S., Boyer, K., & Veilleux, A. (2003). Kangaroo Care is effective in diminishing pain response in preterm neonates. 2003 <u>Arch Pediatric and</u> <u>Adolescent Medicine 157</u> (11), 1084–1988. 74 preterms 32–36 wks postconceptual age and within 10 days of birth were in cross-over (served as own controls) study of 30 minutes of KC and then heelstick in KC versus being prone in incubator and getting heelstick in incubator. Premature Infant Pain Profile scores over first 90 seconds of heel lance procedure were significantly lower by 2 points in KC. KC effectively decreases pain of heelstick. **PT, Quasi-**

Experimental, Pain

Jones, J, Kassity N, Duncan K. 2001. Complementary Care: Alternatives for the Neonatal Intensive Care Unit. <u>Newborn & Infant Nursing Reviews. 1</u>(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.BF. wgt.**

Jorgensen, K.M. (1999). Kangaroo Care: Not a useless therapy. <u>Central</u> Lines (J. of NANN), 15(3), p. 22.

Kambarami, R. (2002). Kangaroo care and multiple births. <u>Annals of</u> Tropical Paediatrics, 22(1), 107-108. **LETTER**.

Kambarami RA, Chidede O, & Kowo DT. (1998).Kangaroo care versus incubator care in the management of well preterm infants - a pilot study. <u>Annals of</u> <u>Tropical Paediatrics, 18</u>(2), 81-86. 37 KC group gained twice as much weight per day as the 37 controls, had shorter hospital stay, and better survival rate. **RCT. Weight, LOS, survival.**

Kambarami RA, Chidede O & Kowo DT (1999). Kangaroo care for well low birth weight infants at Harare Central Hospital Maternity Unit-Zimbabwe. <u>Central African J. of Medicine, 45</u>(3), 56-59. 613 mother-infant pairs, implementation report. **Implementation**.

Kambarami R, Chidede O, Pereira N. (2003). Long term outcome of preterm infants discharged home on kangaroo care in a developing country. <u>Annals Trop</u> <u>Paediatri, 23</u> (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, Bw <1500, and maternal mortality, not to dischg wgt or BW. **Descriptive, Home follow-up, Morbidity, Mortality, hospital readmit rate.**

Kambarami R, Mutambirwa J, Maramba PP. 2002. Caregivers' perceptions and experiences of 'kangaroo care' in a developing country. <u>Trop Doct 32</u> (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 tobe improved. **Qualitative, focus group, staff perception.**

Karlsson H. 1996. Skin to skin care: Heat balance. Archives of Disease in <u>Childhood</u>, <u>75</u>: F130-132. Nine healthy neonates, **FULLTERM**, were given KC on Mom's chest and rectal temps 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 unprotected 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. **Fullterm, Rectal temp, descriptive, Temperature**

Kennedy N, Gondwe L, Morley DC. (2000). Temperature monitoring with ThermoSpots in Malawi. <u>The Lancet, 355</u>, 1364. 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. **Axillary temperature, Rectal temperature, Rewarming.**

Kirsten G.F., Bergman N.J., Hann F.M. (2001). Kangaroo mother care in the nursery. <u>Pediatr Clinics North America, 48</u>(2): 443-453. A general review of KMC and its safety and effects, including BF effects. An easy to follow article that relates implementation guidelines too.**Review**, **Breastfeeding**, **implementation**, **guidelines**.

Klaus MH, Jerauld R, Fregers C,McAlpine W, Steffa M, Kennell JH. 1972. Maternal attachment: Importance of first postpartum days. <u>New England J.</u> <u>Medicine</u>, <u>28</u>, 460-463. Mothers who had been allowed extended contact with their FT infants immediate after birth showed more affectionate behavior one month later than did mothers in a control group. **Full term, Maternal affectionate Behavior, RCT**

Kledzik, T. (2005). Holding the very low birth weight infant: Skin-toskin techniques. Neonatal Network 24 (1 - Jan/Feb issue), p.???. This article offers practical solutions for common barriers to skin-to-skin holding. Skills, implementation.

Koepke, J.E., Bigelow A.E. (1997). Observations of newborn sucking behavior. Infant Behavior and Development, 20, 93-98. 6 preterm and 6 fullterms. Infants put into KC for BF after a bath. Documented their search for nipple and spontaneous sucking behaviors. Fullterm, Preterm, BF and KC/BF. Descriptive study of sucking and nippling behaviors.

Kontos, D. (1978). A study of the effects of extended mother-infant contact on maternal behavior at one and three months. <u>Birth and Family J. 5</u>(3), 133-140.**FT, RCT, maternal affectionate behavior**

Kramer M, Chalmers B, Hodnett E, Sevkovskaya Z, Dzikovich I, Shapiro S, Collet J, Vanilovich I, Mezen I, Ducruet T, et al. 2001. Promotion of breastfeeding intervention trial (PROBIT): A randomized trial in the Republic of Belarus, J. Amer Med Assoc, 285, 413-419. Multicenter trial of all ten parts of baby friendly initiative in relation to duration of BF and GI and respiratory infections. Independent effects of KC cannot be determined. RCT, Fullterm, duration of Breastfeeding, infections.

Kritzinger, A., & Louw, B. 1999. Kangaroo mother care: A strategy to facilitate mother-infant communication interaction in high-risk infants in different contexts. <u>Clinica: Applications in Clinical Practice of</u> <u>Communication Pathology. Monograph 4</u>. University of Pretoria, pg. 31-46. **PT**, **maternal talk, maternal-infant interaction**.

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 enteromammary pathway for protection of preterm infants from nosocomial infection. Very positive review of KC. Preterm, BF, enteromammary pathway

Legault M, Goulet C. (1993).Comparative study of two methods of holding premature infants: the kangaroo method versus the traditional method. <u>Canadian</u> J. Nursing Research 25(4), 67-80. **PreTerm, Swaddled holding**

Legault M, Goulet, C. (1994). Removing the premature from the incubator. From the traditional method to the kangaroo method. <u>Infirmiere Quebec 2</u>(2), 34-41.**Preterm Swaddled holding.**

Legault, M. & Goulet, C. (1995). Comparison of kangaroo and traditional methods of removing preterm infants from incubators. J. Obstetric, Gynecologic, and Neonatal Nursing 24(6), 501-506. **RCT, Preterm,swaddled holding**

Lehtonen L, Martin RJ (2004). Ontogeny of sleep and awake states in relation to breathing in preterm infants. <u>Semin Neonatol 9</u>(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.

Levin, A. (1994). The mother-infant unit at Tallinn Children's Hospital, Estonia: A truly baby-friendly unit. <u>Birth</u>, <u>21</u>(1), 39-44. **Clinical report**, **Implementation**

Lima G, Quintero-Romero S, & Cattaneo A (2000). Feasibility, acceptability, and cost of kangaroo mother care in Recife, Brazil. <u>Annals</u> <u>Tropical Paediatrics, 20(1), 22-26. 114 LBWs got 24 hr KMC up to discharge.</u> 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. 88% exclusively BF at discharge; daily wgt gain was 15 g during KMC. 87% BF at 1 month; 63% BF at 3 months; KMC cost \$20.00/day vs \$66/day conventional care. **24 HOUR KC IMPLEMENTATION, breastfeeding, weight gain,mortality, temperature**

Lincetto O, Nazir AI, Cattaneo A. 2000. Kangaroo mother care with limited resources. J Trop Pediatric, <u>46</u>(5), 293-295.

Lincetto, O., Vos, E.T., Graca, A., Macome, C., Tallarico, M., Fernandez, A. (1998). Impact of season and discharge weight on complications and growth of Kangaroo Mother Care treated low birthweight infants in Mozambique. <u>Acta</u> Paediatr 87:433-9. morbidity, weight, development.

Ludington, S.M. (1990). Energy conservation during skin-to-skin contact between preterm infants and their mothers. <u>Heart and Lung</u>, <u>19</u>(5 Pt1), 445-451. Descriptive of 11 preterm infants. Reports <u>HR</u> and behavioral state during pretest, test, and posttest periods. **PT**, **Descriptive**, **HR**, **abdominal temperature**

Ludington, SM (1997). Revolutionary NICU intervention-Kangaroo Care. Nursing Spectrum (Wash DC), 7(1), 8-9. Short, review for clinicians of benefits of KC. **REVIEW**

Ludington-Hoe,SM. 2001. Kangaroo Care for Premature Infants. In Johnson & Johnson Pediatric Institute. (2001). Skin-to-skin: The Mother/Baby Package. A Reference Guide for the Health Care Professional. Skillman, N.J. Available from J& J 1-877-565-5465. Contains articles by Zupan, Christensson, and Ludington-Hoe. Review

Ludington-Hoe, S.M., Anderson, G.C., Simpson, S., Hollingsead A., Argote, L.A., Rey, H. (1999). Birth-related fatigue in 34-36 week preterm neonates: Rapid recovery with very early kangaroo (skin-to-skin) care. JOGNN 28(1): 94-103. **PT, Descriptive, HR, RR, temperature, behavioral state**

Ludington-Hoe, S.M., Anderson, G.C., Simpson, S., & Hollingsead, A., Argote LA, Medellin G, & Rey, H. (1993). Skin-to-skin contact beginning in the delivery room for Colombian mothers and their preterm infants. Journal of Human Lactation, 9(4), 241-242. 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. Descriptive, preterm, Very Early KC, HR, RR, temperatuere, state

Ludington-Hoe, S.M., Anderson, G.C., Swinth, J., Thompson, C., & Hadeed, A.J. (1994). Kangaroo care. Neonatal Network, 13 (4), 61-62. (Letter).

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. <u>Neonatal Network, 23</u> (3), 39-48. 24 healthy preterms 33-35 weeks gestation given <u>3 hours KC in pretest-test-</u> posttest design. KC (11) vs. control (13) in open air crib. All measures 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). Mean SaO2 dropped 1.0% in KC. 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., Cong, X., Hashemi, F. (2001). Infant crying: Why is it so bad? <u>Central Lines</u>, J.of the National Association of Neonatal Nurses, <u>17</u>(4), 11-13. August/Sept. 2001. Relates the advantages of KC for prevention and minimization of crying on page 12-13. **Clinical article**.

Ludington-Hoe, S.M., Cong, X., Hashemi, F. (2002). Infant crying: Nature, physiologic consequences, and select interventions. <u>Neonatal Network 21</u>(2), 29-36. KC is cited as an efficient preventative for crying, minimizing and halting crying. **Clinical article.**

Ludington-Hoe, S.M., Ferreira, C.N. & Goldstein, M.R. (1998). Kangaroo Care with a Ventilated Preterm Infant. <u>Acta Paediatrica</u>, <u>87</u>(6), 711-713. **Preterm, Case Study, VENT.**

Ludington-Hoe, S.M., Ferreira, C., Swinth, J., Ceccardi, J.J. (2003). Safe criteria and procedure for kangaroo care with intubated preterm infants. J. Obstetric, Gynecologic, and Neonatal Nursing 32 #5, 579-588. This reviews all published procedures for KC with ventilated infants, deduces one safe procedures, explains important features of the safe procedure, and concludes with step-by-step plan for KC with an intubated infant. **Preterm, Vent, Protocol**

Ludington-Hoe, S.M., & Golant, S.K. (1993). <u>Kangaroo Care: The Best You</u> <u>Can Do For Your Preterm Infant.</u> N.Y., N.Y.: Bantam Books. Out of print, available only from Dr. Ludington, Univ. of Maryland School of Nursing, 655 W. Lombard Street, Baltimore, MD 21201 or from La Leche League International, 1400 Meacham Rd., Schaumberg, Ill. 60173. Cost is \$12.95 + \$2.00 shipping.

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, <u>11</u>(1), 19-24.**Descriptive**, **Pretest-test-posttest**, **HR**, **RR**, **temperature**, **oxygenation**, **SaO2**.

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, <u>18</u>(5), 223-232. Descriptive study of preterms who got 2 hours of PKC immediately after breastfeeding by mom. All three temps continuously rose in PKC and 5/11 subject became hyperthermic during 2 hours of PKC. Infants predominantly slept in quiet sleep during PKC, and fathers demonstrated good fathering behaviors during PKC. Several fathers got tired of KC after 1.5 hours. Tympanic temp is difficult to take during KC. Warming all the way down to the toe occurred. Behavioral thermoregulation was demonstrated by 4/11 infants. **Descriptive, Preterm**, **FATHERS, Abdominal temp, toe temp, tympanic temp, fathering behavior.**

Ludington-Hoe, S.M., & Hosseini, R.B. (2004). Skin-to-skin contact analgesia for preterm infant heel stick. Submitted to <u>Pain</u>. 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-heel stick state was significantly more time in deep sleep than when in incubator. No differences in RR, oxygen saturation between groups and periods. **Experimental** cross-over, HR, RR, SaO2, crying time, behavioral state, pain.

Ludington-Hoe, S.M., & Kasper, C.E. (1995). A physiologic method of monitoring preterm infants during Kangaroo Care. Journal of Nursing Measurement, 3(1), 13-29. This is a report of the development of Gould Physiograph recording device for continuous monitoring of infants during KC.Methodology, not really a measurement of effectiveness of KC.

Ludington-Hoe, S.M., Lewis, T., Morgan, K, Cong, X, Anderson, L, Reese, S. (2004). Breast-infant temperature synchrony with twins during shared Kangaroo Care. Submitted to <u>JOGNN</u>. Two sets of twins given shared KC. Breast temperatures responded independently of each other and in response to infant's temperature. Maternal breast temps differed. Maternal-neonatal synchrony exists. **Preterm, case study, HR, SaO2, Maternal breast temp, incubator temp, abdominal temp.**

Ludington-Hoe, S.M, Nguyen, N, Swinth, J., Satyshur, R. 2000. Kangaroo Care compared to incubators in maintaining body warmth in preterm infants. <u>Biologic Research for Nursing, 2(1)</u>, July, 60-73. 16 KC and 13 control infants in a pretest(in incubator)-test(in KC or incubator)-posttest (in incubator) design of three consecutive 3-hour interfeeding intervals were given 3 hrs of KC. Abdominal temperatures were not different between periods and groups; toe temp 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 hours of KC. **Preterm, RCT. Abd, toe and breast** temps, stability.

Ludington-Hoe, S.M., & Swinth, J. (2001). Kangaroo mother care during Phototherapy: Effect on bilirubin profile. <u>Neonatal Network,20 (5)</u>. 41-48. Randomized controlled trial of 3 groups of infants with 10 in each group: one with 1 hour of KC per day with biliblanket over back, one with biliblanket 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. Bilirubin**

Ludington-Hoe, S.M., & Swinth, J. (1996a). Developmental aspects of kangaroo care. JOGNN (Journal of Obstetric, Gynecologic and Neonatal Nursing), 25(8): 691-703. Review article of how KC affects developmental care outcomes. REVIEW.

Ludington-Hoe, S.M., & Swinth, J. (1996b). A successful long distance research collaboration. Applied Nursing Research, 9(4), 219-244. Report of how a 1000+ mile distance collaboration worked for getting clinical KC research done. **Description of a collaboration.**

Ludington-Hoe, S.M., Swinth, J.Y., & Anderson, G.C. A randomized controlled trial with preterm infants in open-air cribs: Effects of kangaroo care on behavioral state. Under review. Available from Dr. Ludington.RCT, Preterm, State

Ludington-Hoe, S.M., Thompson, C.A., Swinth, J. Hadeed, A.J., & Anderson, G.C. (1994). Kangaroo care: Research results and practice implications and guidelines. <u>Neonatal Network</u>, 13(1), 19-27. **KMC only- reports RCT crib and pilot** of incubator subjects, GUIDELINES

Martinez, G.H., Rey, S.E., & Marquiette, C.M. (1992). The mother kangaroo programme. <u>International Child Health</u>, <u>3</u>, 55-67.**Clinical Report of practice.**

Maternal & Newborn Health/Safe Motherhood Unit. 1997. Thermal Protection

of the Newborn: A Practical Guide. WHO: Geneva, pp. 30-37. This shows developing nations how to keep babies warm in KC. This is a nice follow-up to the SAREC report from Sweden. Available from Maternal and Newborn Health/Safe Motherhood Unit. Reproductive Health (Technical support), WHO, 1211 Geneva 27, Switzerland.

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. <u>Birth 28</u>, 13-19. 10 fullterms who had no maternal analgesia in labor were videotaped for hand, finger, mouth, tongue movements and sucking every 30 seconds from birth to 1st BF and placed in KC immediately after bring dried. Infants used hands to explore and stimulate breast before 1st BF with a coordinated pattern of hand and sucking movements. Hand movements stop during sucking. Periods of increased massagelike hand movements or sucking at breast were followed by increased oxytocin levels - hand movements produce oxytocin too.**Descriptive study, Fullterm, BF**

Mazur J, Mikiel-Kostyra,K. 2000. Determinants of newborn feeding in maternity hospital care. Part II. Factors associated with exclusive breastfeeding. <u>Ginekologia Polska 71</u>(7), 604-610. KC in first 2 hrs postbirth is not a factor in exclusive Bf of fullterms at discharge. **Descriptive, Fullterms, BF.**

Mazurek,T, Mikiel-Kostyra, K., Mazur, J., Wieczorek P, Radwanska B, Pachuta-Wegier L. (1999) Influence of immediate newborn care on infant adaptation to the environment. <u>Medycyna Wieku Rozwojowego, 3</u>(2), 215-224. Fullterms 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 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 gp 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, HR. RR, pH, Blood glucose, crying episodes/duration, delivery KC

McClellan 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 recovering 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 etiher 1st or 2nd PP day and then once between 28-32 days of age at home visit. Maternal perception in hospital was sign higher for KC than controls, and higher mat behavior scores in hospital and at home. **RCT, Fullterm**. Mat. Perception/behavior.

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, paternalKC, mat. Anxiety, cortisol, crying, learning to do KC

McGrath JM, & Brock, N. (2002). Efficacy and Utilization of Skin-to-Skin Care in the NICU. <u>Newborn & Infant Nursing Reviews, 2</u>(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.**Review**, **BF**, **Implementation**

McMaster P, Haina T, Vince JD. (2000). Kangaroo care in Port Moresby, Papua New Guinea. Tropical Doctor, 30(3), 136-138. **Implementation**

McMaster P, Vince JD. (2000). Outcome of neonatal care in Port Moresby, Papua New Guinea: A 19 yr report. J.Tropical Peds, 46(1), 57-61. Strict adherence to KC and BF in last year had beneficial effects in reducing length of stay and increasing weight gain in VLBW infants. **Implementation**

Medoff-Cooper, B.S., Holditch-Davis, D. 1999. Therapeutic actions and outcomes for preterm (low birth weigh infants). In Hinshaw, A.D., Feetham, S.L., Shaver, J.L.F. (Eds.). <u>Handbook of Clinical Nursing Research</u>, Thousand Oaks, CA: Sage Pub. Pp. 161-183 (KC discussion is on pages 172-177. Basically a review that refers to Anderson's 1999 review in Goldson book. **Review**

Meier PP. (2001). Breastfeeding in the special care nursery: Prematures and infants with medical problems. <u>Pediatric Clinics North American, 49</u>(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**

Meier PP 2003. Supporting lactation in mothers with very low birth weight infants. <u>Pediatric Annals, 32</u> (5), 317-325. Reviews the Rush Mother's Milk Club Program elements, all strategies to improve BF, including Pictures of KC on page 317, pg321, 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**

Meier PP, Engstrom JL, Mingoletti SS, Miracle DJ, & Kiesling S. 2004. The Rush Mother's Milk club: Breastfeeding interventions for mothers with very-lowbirth-weight inants. J.Obstet 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 objective. **PT, BF, lactation initiation rate, % feeds of mothers' own milk.**

Messmer PR, Rodrigues S, Adams J, Wells-Gentry J, Washburn K, Zabaleta I, Abreu S. 1997. Effect of Kangaroo Care on sleep time for neonates. <u>Pediatric</u> <u>Nursing, 23</u>(4): 408-414. One group in preKC, KC, postkc for one hour, four times. Increase in sleep time during KC, less agitation, apnea, bradycardia and stable SaO₂ in KC as compared to incubator. Nonsignificant but positive trend for improved maternal attitude and emotional affect and decreased stress during KC.Quasi Experimental, own control, repeated measures. PRETERM, sleep, apnea, bradycardia, oxygenation, agitation, crying, Mat stress, mat attitude, affect. Messmer,P.R., Wells-Gentry, J., Rodriguez, S., & Washburn, K. 1995. Mother's feelings on Kangaroo care for their preterm infants. In P.L. Munhall & V.M. Fitzsimons (Eds.) <u>The Emergence of Women in the 21st Century</u>. New York: NLN Press., page 243-250.

Meyer K, Anderson GC (1999). Using kangaroo care in a clinical setting with fullterm infants having breastfeeding difficulties. MCN. The American J. of <u>Maternal Child Nursing, 24</u>, 190-192. One fullterm who wasn't BF @ 20hrs postbirth got 60 min KC before next feeding. Spontaneously sought and latched on. Two others did same thing at 18 and 40 hrs postbirth when given KC "for about 1 hr". **FULL-TERM, BF.**

Michelsson, K., Christenson, K., Rothganger, H., & Winberg, J. (1996). Crying in separated and non-separated newborns: Sound spectrographic analysis. <u>Acta Paediatrica, 85:</u> 471-475. 29 fullterm 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. **FULL TERM**.

Mikiel-Kostyra K, Boltruszko I, Mazur J, Zielenska M (2001). Skin-to-skin contact after birth as a factor determining breastfeeding duration. <u>Med. Wieku</u> <u>Rozwoj, 5</u>(2), 170-189.

Mikiel-Kostyra K, Mazur, J. (1998). Determination of newborn feeding in maternity hospital care: Part I: Factors associated with breastfeeding initiation. Ginekologia Polska, 60(11), 783-788. **BF, KC is routine. FULLTERM**

Mikiel-Kostyra K, Mazur J. (2000). Birth weight as a factor influencing infant feeding in Polish maternity wards. <u>Med Wieku Rozwoj 4</u>(3), 337-346. They use KC routinely. **BF, KC is routine, FULLTERM**

Mikiel-Kostyra K, Mazur J, Boltruszko I. 2002. Effect of early skin-toskin contact after delivery on duration of breastfeeding: A prospective cohort study. Acta Paediatrica 91, 1301-1306. 9612 healthy fullterm newborns were in three groups according to hospital care in Poland in 1995. 1 group got no KC after birth (n=208), another <20 minutes (n=845; 532 got 1-4 min KC, 200 got 5-9 min, and 113 got 10-19 min) and a third which got >20 minutes of KC (n=72; 20-29 min = 19; >30 min = 53). Years later the national data set was mined 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.saz KC was given to 1020 dyads (81.6%) 96.&% of KC contact was initiated within firs t10 minutes of birth. After c/s, only 11.2% of cases got KC, and in half of them it 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 months compared to no KC group. Especially beneficial was KC >30 min and longer. KC>20 minutes after delivery in DR, increased duration of exclusive BF, but not overall 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 suckling, but 81% of infants with KC >20 min did so).Fullterm, BF, short vs long KC(>20 minutes), Exclusive BF, BF duration. See also Nommsen-Rivers annotation below.

Miller, M. (1990). No pouch necessary... preemies respond to Kangaroo Care. Nurseweek. Nov. 12, pp. 1 & 24.

Modrcin-McCarthy, M.A., Harris, M., & Marlar, C. 1997. Touch and the fragile infant: Comparison of touch techniques with implications for nursing

practice. <u>Mother Baby Journal, 2</u>(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"17.

Moeller-Jensen H., Hjort-Gregersen K., Matthiesen M., Vestergaard, H.F., & Jepsen, B.H. (1987). The kangaroo method used in practice at the hospital of Soenderborg, Denmark. Sygeplejersken 87(19), 12-16 or 16-18. IMPLEMENTATION

Mondlane, R.P., de Graca, A.M.P., & Ebrahim, G.J. (1989). Sin-to-skin contact as a method of body warmth for infants of low birth weight. <u>Journal of</u> <u>Tropical Pediatrics</u>, <u>35</u>, 321-326. **3rd World**

Moon J. (2004). Verse and Vision: Kangaroo Care. J Perinatal Education, 13 (1), iii. A picture of twins in shared KC accompanies the following verse: 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 unfleeting. Research shows it's so, this Kangaroo Care, no matter what the species, it's a mother's care. **POEM**

Mooncey S, Giannakoulopoulos X, Glover V., Acolet D., Modi N. (1997). The effect of mother-infant skin-to-skin contact on plasma cortisol and Betaendorphin concentrations in preterm infants. <u>Infant Behavior and Development</u>, 20(4): 553-557. Plasma beta-endorphin and <u>plasma cortisol were measured after</u> 20 minutes of KC to determine if attenuation of stress response occurred in comparison to a control group. Cortisol did drop significantly after KC in the KC group and after control period in control group; Endorphin dropped significantly in KC group as compared to control. KC results in significant reduction in B-endorphin as sign of attenuation of stress response; no adverse effects occurred.

Moore J, McDermott J. 2004. Body Temperature, In Every Newborn's Health. Recommendations for Care for All Newborns. Washington, DC: Save the Children organization. Available from Save the Children/US, 2000 M Street NW, Suite 500, Washington, DC 20036. or at <u>www.savethechildren.org</u>. Page 1 says "Keep the newborn in close contact with his/her mother. Skin-to-skin is best, as in the 'kangaroo mother care' position. A study conducted in the US (Fardig 1980) shows that immediate, continuous skin-to-skin contact between mother and newborn keeps newborns warmer than using a radiant warmer. The mother is best the best incubator because she keeps the baby at the right temperature.

Moran, M, Radzyminski S.G., Higgins, KR., Dowling, D.A., Miller, MJ, & Anderson, G.C. (1999). Maternal kangaroo (skin-to-skin) care in the NICU beginning 4 hours postbirth. <u>MCN(Amer.J. Maternal Child Nursing), 24(2),74-79</u>. A case study of a 32 weeker. Infant was 32 wks, 193 gr, got 6hrKC/day in 2-3 hr intervals. To intermediate care on day 2, regained BW by Day 12, DC day 21, exclusively BF at 40 wks, high normal develop at 18 mos. **EARLY KC, BF, Develop**.

Morton JA. 2003. The role of the pediatrician in extended breastfeeding of the preterm infant. <u>Pediatric Annals 32</u> (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 breastfeedings. 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 infantgrowth, and competence in BF and extended lactation" pg. 312. Preterm, BF

Motluk, A. (2002). Kangaroo Care. Holding Premature Infants. <u>ORGYN:</u> <u>Organon's Magazine on Women and Health.2002</u>(3), 26-30. This is a general review of KC and its mechanisms. It cites several researcher's work. **Review**

Mukasa GK. 1992. Observations on kangaroo baby care. Mothers Child, <u>11</u>(2), 7. A review of observations of KC in latin America and in Colombia and relates program in Uganda. **Review, program report.**

Mulet, R.C., Figueroa de Leon, R., Gonzalez, J.V.B. (1992). Mother-child early contact with the mothers kangaroo program and natural breastfeeding. <u>Rev.Latin.Perinat.</u> 12,#3-4, 54-60.Randomized trial in Guatemala; 61 in conventional care, 51 KC began KC in 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**

Nakajima H. 1994. Response of newborn when gently accosted by the mother immediately after birth and subsequent growth and development. <u>Keio J Med</u>, 43(3): 167-170. Fullterm newborn listens to mom's voice, has peaceful Buddha-like expressions, and ceases to cry and moves for 10 minutes after birth. Infant of heavy smoker appears anxious and does not stop crying. Infant searches for nipple about 10 min. after birth. Little crying at 1 month. **Fullterm, Very Early Kangaroo Care.**

Nasoro EF. 2002. Kangaroo Care in Malawi-Management for preterm babies. J. Japan Academy of Midwifery 15 (3), 118-119.

Neu, M. 1999. Parents'perception of skin-to-skin care with their preterm infants requiring assisted ventilation. JOGNN, 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.VENT KC, FATHER, Qualitative study

Neu, M., Browne, J.V. & Vojir, C. (2000). The impact of two transfer 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=30.2wks; 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, SAO2 recorded manually for 30 min B4 & after transfer & during 1 hr of KC. Axillary Temp was stable, HR increased, SaO2 decreased and there was more motor disorganization with transfer.VENT KC, FATHER, Infant own control.

Newport, M.A. 1984. Conserving thermal energy and social integrity in the newborn. <u>Western J. Nursing Research, 6</u>(2), 175-192. 39 healthy fullterms got KC, 37 got routine care. KC began after dried and covered with warm cotton blanket and continued for 15 mintes; routine got dried and wrapped and put in Montgomery warmer bed for 15 min. No temp differences, HR, RR had no diffs. No diarrhea, no ketouria, and no diff in weight loss. **FULLTERMS, no mention of assignement method. Delivery KC**

Nissen E, Gustavsson P, Widstrom A-M, Uvnas-Moberg K. 1998.Oxytocin, prolactin, milk production, and their relationship with personality traits in women after vaginal delivery or cesarean sections. J. Psychosomatic OB & <u>Gynaecology 19</u>, 49-58. Personality shift of new mothers is in part dependent upon KC after birth and is reinforced by BF. Moms become 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, BjorvellH. 1990. Personality traits in women 4 days postpartum and their correlation with plasma levels of oxytocin and prolactin. J. Psychosomatic Ob & Gyn, 11, 261-273. Fullterms, maternal personality, delivery KC. Get this we don't have

Nissen E, Lilja G, Widstrom AM, Uvnas Moberg K. 1995. Elevation of oxytocin levels early postpartum in women. <u>Acta Obstetrica & Gynecologica</u> <u>Scandinavica 74, 530-533.It is highly probable that skin-to-skin contact by</u> itself stimulates oxytocin release. Thus, KC may assist in delivery of placenta and involution when used early postpartum. **FT, RCT??, Oxytocin, delivery KC** GET this as we don't have it either.

Nommsen-Rivers, L., 2003. Early skin-to-skin contact: Does duration matter? J.Human Lactation, 19 (3), 331-332. This is a review of Mikiel-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 Mikiel'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 effect EXCLUSIVITY OF BF: no contact exclusive BF duration was 2.47 months, 1-19 mins KC had 2.77 months, 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. **REVIEW OF OTHER STUDY.Delivery KC**

Nunez, MD (1989). Kangaroo babies. Caritas, 55(69), 6-7.

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 about KC's + effects, and 2) reach an interdisciplinary agreement about practical, evidence-based guidelines thatensure safe and consistent care. This article includes the policy at Children's Hosp. In Uppsala, Sweden. **Preterm, Implementation, Policy/Guidelines.**

Nyquist KR, Sjoden P-O, Ewalk, U. (1994). Mother's advice about facilitating breastfeeding in neonatal intensive care unit. J. 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**

Odent, M. 1989. <u>Mothering</u>, Winter 72-73. 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 birthweight 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 ecstatic mother, minimizing energetic output and stopping wgt 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(canhold lots of water), so when baby takes colostrums, 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, antibodies in milk

Ohgi S, Fukuda M, Moriuchi H, Akiyama T., Nugent JK, Brazelton, TB, Arisawa K, Takahashi T,Saitoh H. (2002). The effects of kangaroo care on neonatal neurobehavioral organization, infant development and temperament in healthy low-birth-weight infants through one year. J. Perinatology, 22 (5), 374-379. 26 KCers(healthy LBW) got 20min-2 hours of KC per day from 33 wk-40 wks PCA. KCers showed higher scores in orientation, state regulation 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 and Motor. KC effectively promoted neonatal behavioral organization and enhanced developmental outcome over 1 st year of life. Nonrandomized trial with historical control, NBAS@ 40wks, Bayley and Carey Temperament @ 6,12 mos. Development

Ogi S, Arisawa K, Takahashi T, Akiyama T, Goto Y, Fukuda M, Saito H. 2001. The developmental effects of an early intervention program for very low birthweight infants. <u>No To Hattatsu, 33</u> (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, Temperament. Longitudinal non-randomized as KC grp compared to historical control.**

Olausson H, Lamarre Y, Backlund H, Morin C,Wallin BG, Starck G, Elholm S, Strigo I, Worsley K, Vallbo AB, Bushnell MC. (2002). Unmyelinated tactile afferents signal touch and project to insular cortex. <u>Nature Neuroscience 5</u> (sept). (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, caressing touch. Activation of C tactile (CT) afferents produced faint sensation of pleasant touch. Activation of CT fibers in skin activate the insular cortex (limbic system), not somatosensory areas of S1 and S2. CT is a system for limbic touch that underlies the emotional, hormonal, and affiliative responses to caress-like, skin-to-skin contact between individuals. **Touch physiology. KC as pleasant experience.**

Ortman BL, Schmidt CL (1999).The Effect of Kangaroo Care on the Development of the Preterm Infant. Doctoral Dissertation from North Georgia College and State University. Available from Dr. Sherri Williams, Dissertation chair, Dept. of Physical Therapy. Barnes Hall, R. A-8, Dhlonega, GA 30597. 706-864-1969. A randomized trial of 5 KC and 9 routine parental holding of 27-32 wk PCA prematures. Kcers got 30 min/day x 4days/wk x 4 wks. Control got adlib parental visiting and holding x 4 wks. At end of 4th week, no differences between groups on weight gain, Test of Infant Motor Performance, and Maternal Attachment Inventory and length of stay - but KC infants had significantly lower PCAs at entry. **PT, RCT, MOTOR DEV,Mat attachment, LOS, wgt gain**

Page, J. (1995). Kangaroo Care: Enhancing infant and parent well-being in the NICU. <u>Perinatal Newsletter, 12(1), 5-8</u>. 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.**

Pagliotti F, Anderson GC. (1999). Don't manage third stage. J. Nurse-

midwifery, 44. 423-424.

Parker L, Anderson GC. (2002) Kangaroo (skin-to-skin) care for adoptive parents and their critically ill preterm infant. <u>MCN, Am J Mat Child Nurs, 27</u> (4), 230-232. KC began DAY 3 of five days of ventilation for a 917 gr infant. Adoptive parents both felt immediate and intense connection and began to know infant during KC. **VENT KC ADOPTIVE KC. End of life KC? Also reported in Anderson, Dombrowski, & Swinth, 2001.**

Pearson J, Andersen K. (2001). Evaluation of a program to promote positive parenting in the neonatal intensive care unit. <u>Neonatal Network: J. of Neonatal</u> <u>Nursing, 20</u>(4): 43-48. Not a study of KC per se, but a qualitative study of a parent support groups use to promote parenting. On page46 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."Qualitative Evaluation of Program that included KC but was not focused on KC.

Perlman JM. (2003). The genesis of cognitive and behavioral defici.ts in premature graduates of intensive care. <u>Minerva Pediatrics 55</u> (2), 89-101. Review. Prolonged hospitalization stress impairs Neurobehavioral outcomes. + parent-infant interactions enhance neurobehav dev. KC is recommended as a positive interaction to enhance neurobehavioral development. KC reduces likelihood of developmental delay. **Review, PT, Development**

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 evaluate 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. Includes simple guidelines for choosing infants appropriate for KMC. Descriptive, PT/FT, Implementation, maternal experience.

Ramanathan K, Paul VK, Deorari AK, Taneja U, George G. (2001). Kangaroo mother care in very low birth weight infants. <u>Indian J Pediatrics</u>, 68 (11), Nov. 1019-1023. Stable preterms <1500gmBW 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. KMCer's had better wgt gain 15.9+4.5gm/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). RCT, BF, HOME, WGT gain, Earlier Discharge, Exclusive BF

Ransjo-Arvidson AB, Matthiesen AS, Lilja G, Nissen E, Widstrom AM, Uvnas-Moberg K. (2001). Maternal analgesia during labor disrupts newborn behaviors: Effects on breastfeeding, temperature, and crying. <u>Birth, 28</u>(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, licking movements, and sucking breast all less in grp 3, nearly 40% of grp 2 and 3 infants did NOT breastfeed in first 2.5 hous of life. Grp 2 & 3 infants had higher temp (intrascapular temp went from 35.5-35.6 to 36.3-36.5 in analgesic groups (but 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 hyperexic, and this may make infants too warm, or increased crying can make infants warmer.**FULLTERM, BF, Comparative Survey**

Reid, C. (2004). Kangaroo care. Neonatal Network, 23 (2), 53. This is an

author's reply to some comment.

Renfrew MJ, Lang S, Woolridge MW. (2001). 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. 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 aftter 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.

Rey, S.E., & Martinez, G.H. (1981). Maejo racional del nino prematuro. Proceedings of the Conference 1 Curso de Medicina Fetal y Neonatal, Bogota, Colombia: Fundacion Vivar, 1983. (Spanish). Manuscript available in English from UNICEF, 3 UN Plaza, New York, NY: 10017.

Rey, E.S., & Martinez, H.B. (1983). Manejo rational de nino premature. Proceedings of the conferences I curso de medicina fetal y neonatal, Bogota, Colombia, March 17,1983, 137-151. THE ORIGINAL WORK OF THEIR PROGRESS FROM 1979-1983. BIRTH OF KC!!!

Richards M. (1994 Review of "Kangaroo Care: The Best You Can Do For Your Premature Infant." <u>Birth, 21</u>: 1. Review of Dr. L's book.Says Dr. L comes on too strongly in favor of KC and this might upset mother who cannot do KC

Richardson, H. (1997). Kangaroo Care: Why Does It Work? <u>Midwifery Today</u>, <u>International Midwife 44</u>. Winter 1997, 50-51. This sounds very much like a talk that Dr. Ludington gave and it cits Dr. Ludington throughout. Relates brief history, talks of mother's breast modulating infant temperature, regulated HR and RRs 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**.

Ridley, K. (2000 or 1994? Probably 1994). NICU offers high-touch in a high-tech world: Kangaroo Care. <u>Inside</u>, 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 andthen 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, 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. **RESUSCITATION KC**

Righard, L., & Alade, M.O. (1990). Effect of delivery room routines on success of first breast-feed. <u>The Lancet, 336</u>, 1105-1107. Comparison of fullterm infants who laid 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 min after birth most were sucking at breast. More KC contact infants had correct sucking technique (24/38 vs. 7/34).

Riskin A, Bader, D. (2003). Breast is best - human milk for premature infants. <u>Harfuah, 142</u> (3), 217-222, 236,237. A review of preterm infant sucking capabilities and suitability of breastmilk for them. States on page 216 "Support of lactation in mothers of preemies mandates protection of the mother and child bonding process and early skin to skin contact ("Kangaroo care"). **Review, BF**
Roberts, K.L., Paynter, C., McEwan, B. (2000). A comparison of Kangaroo Mother Care and Conventional Cuddling Care. <u>Neonatal Network, 19</u>(4), 31-35. 30healthy preterms, ≥30wk GA, no O2 help, with stable temp for 24 hrs, in crib or incubator randomly assigned to 2 hrs 5days/wk x4 wks of KMC (n=16) or holding while clothed (n-14). No control group in study because both groups got some holding. No differences in weight gain, temperatures, duration of BF, parental stress (**PSS-NICU** score), or parental expectations score. Limitations were clinician values for temp & wgt 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. **RCT, PARENTAL KC.**

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 & Behavioral Pediatrics 24 (3), 163-168. 60 preterms (swaddled holding = 27; KC = 33) <32 wks GA, <1500 grm, hemodynamically stable with minimal ventilatory support. KC was for up to 8 hours per day(periods up to 4 hr/twice a day) every day til infant reached 2000 gm 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 mean 27% of swaddled holding time, 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 sig diff between groups (but 2 KC babies died during study, one swaddled died). SSC group had significantly greater total head growth and head growth rates once head size at birth was accounted for. 9/26 (35%) of swaddled were successfully breastfed; 18/30 (60%) of KC 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 (pg. 166). RCT Preterm, Paternal KC, Temperature, Regurgitation, BF, Length of Stay, Head Circumference, length, Daily caloric intake, mortality.

Roller, CG. (1999). Kangaroo care for a restless infant with gastric reflux: One nurse midwife's personal experience. <u>MCN Am. J. Maternal Child</u> <u>Nursing, 24(5): 244-246</u>. Full-term infants 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. **SURROGATE KC**

Roller, CG, Meyer K, Anderson GC (1999). Birth kangaroo (skin-to-skin)care and breastfeeding: An eclamptic woman's story. <u>MCN, The Amer.J. Maternal Child</u> <u>Nursing. 24</u>, 294-295.34 wk infant who got KC 10 min postbirth. BF exclusively at 6 wks and still doing HOME KC.**BF, Eclampsia KC, EARLY KC.**

Ruiz JG, Charpak N, Figuero Z. 2002. Predictional need for supplementing breastfeeding in preterm infants under Kangaroo Mother Care. <u>Acta Paediatrica 91</u> (10), 1130-1134.Preterms >1200 grams can grow properly on exclusive BF. 45% of infants on ambulatory KMC grow properly, but 55% need supplementation to grow properly. **Descriptive, Preterm, BF, post-discharge**

Ruiz-Pelaez, J.G. & Charpak, N. (1998). Kangaroo Care: Commentary on a Commentary. <u>Birth 25</u>(1): 62-64.

Sagmeister, C. (1990). Kangaroo care in the NICU. <u>Neonatal Nursing</u> Monitor, Fall. 1990. pg. 1,3.

Salariya EM, Easton PM, Cater JI. 1978. Infant feeding. Duraiton of breastfeeding after early initiation and frequent feeding. Lancet, II, 1141-1143.Fultterm, BF. Get this one.

Scalembra C, Cattaneo A. 2002.?? WHAT IS THIS. CHARPAK referred to it.

Schaller J, Carlsson S.G., Larsson K. (1979). Effects of extended postpartum mother-child contact on the mother's behavior during nursing. <u>Infant</u> Behavior & Development, 2, 319-324. **RCT, FUllterm**

Schanler RJ. (2001). The use of human milk for premature infants.<u>Pediatr</u> <u>Clin North Am 2001, 48</u>(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**

Schmidt, E., & Wittreich, G. (1986). Care of the abnormal newborn: A random controlled 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 BF

Schrod L. & Walter, J. 2002. Effect of head-up tilt position on autonomic function and cerebral oxygenation in preterm infants. Biology of Neonate, 81, 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 to determine if head-up position of KC causes autonomic stress. 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 \rightarrow 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). 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). Descriptive, HRV, HR, SaO2, MAP, cerebral hemoglobin, cerebral oxygen pressure, RR,

Scochi, C.G., Kokuday, Mde L., Riul, M.J., Rossanez, L.S., Fonseca, L.M., Leite, A.M. (2003). Encouraging mother-child attachment in premature situations: Nursing interventions at the Ribeirao Preto clinical hospital. <u>Review Latino American Enfermagen, 11</u> (4), 539-543. Clinical report of nursing interventions in University Hospital NICU of Univ. of Sao Paulo. KC is encouraged at first parental NICU visit. All aspects of program have promoted Maternal-infant attachment. **PT, Clinical report, attachment, maternal feelings.**

Sepkowitz, S. (1985). The marsupial mother. <u>The Lancet</u>, July 13, 1985, p. 100.

Sheridan, B. (2000). Katie's story: A little inspiration. <u>Central Lines</u> <u>16(4):</u> 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 kangaroos her baby."

Simkiss DE (1999). Kangaroo mother care [Editorial]. J Tropical Pediatrics, <u>45</u>(4), 192-194.

Sleath, K. (1985). Lessons from Colombia.Nursing Mirror, 160(4), 14-16.

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.Randomized controlled trial, Development.

Smith S. 1996. Skin-to-skin contact for premature and sick infants and their mothers. In <u>Contemporary Issues in Nursing</u>, Biley F & Maggs C (Eds.). Edinburgh: Churchill Livingstone, 31-78.VENT KC, Cross Over, Own Control

Smith, S.L. (1999). Skin-to-sklin 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 (36.58 for skin temp). Babies needed 14% more 02 during KC and their Sa02 was lower during KC than in incubator. Smith postulates that increased energy and 02 consumption occur during two hours of KC with ventilated infants. **VENT KC, thigh temp, skin temp, Fi02,oxygenation, Sa02**

Smith SL (2001). Physiologic stability of intubated VLBW infants during skin-to-skin care and incubator care. Advances in Neonatal Care, 1(1)(Oct), 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 higher skin (37.02) and leg temps occurred than during incubator (36.58 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. VENT KC, randomized quasi experimental study. Skin temp, thigh temps, SaO2, FIO2

Smith SL (2002). Infant holding in intensive care. <u>AACN News, 19</u>(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 study here as well.

Smith SL. 2003. Research corner: Myth vs. Reality: Holding intubated infants in the NICU. <u>AACN News</u>.nsf. Available on http://www.aacnnews.nsf. A case study of Jay, a 26 weeker who is 38 days old and intubated and given KC starts this report of 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!!!). She reviews Neu's work and concludes that the "data regarding safety and efficacy of KC on intubated VLBW infants is conflicting. **Clinical review, Vent KC.2nd report of temp drop during KC**.

Smith, SL. 2003. Heart period variability of intubated very-low-birthweight 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. 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, Cross-over design, HRV, Temp, SaO2,FiO2**

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.

Sontheimer, D., Fischer, C.G., Buch, K.E. (2004). Kangaroo transport instead of incubator transport. <u>Pediatrics 113</u> (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 felts 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**.

Sosa R, Kennell JH, Klaus M. Urrutia JJ. 1976. The effect of early mother-infant contact on breastfeeding, infection, and growth. In Elliott K, Fitzsimmons DW (Eds.) Breastfeeding and the Mother. Ciba Foundation Symposium vol. 45, NY: Elsevier Excerpta Medical, 1976: 170-193. This is a report of 3 studies conducted in Guatemala. Primip moms of NSVD of 37-42 weeks GA. 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 1^{st} 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: KCers 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 1^{st} year of life, controls Bf for mean of 104 days. KCers 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.183).Wgt gain sig more at 6 months (4.5kg kc VS. 3.7kg non-KC) and sig. More at 1 yr (6.0kg vs 5.7kg) maternal sensitive period is <12 hours and early Mat-infant contact PP has far-reachinhg effects on infant health during 1st yr. RCTs Full-term, BF, Infection, Wgt gain.

Stening W. (1997). The kangaroo method (skin-to-skin contact) for premature infants. <u>Kinderkranenschwester, 16</u>(8), 308-310.

Stening, W., & Roth, B. (1993). The kangaroo method for premature infants. in I. Blum (ed)., <u>Prenatal Perception</u>, Berlin: Leonardo Publ. p. 221-244.Literature Summary Stening W, Roth B. 1999. Dissemination of the Kangaroo Method in Germany. J Perinatology 19(6): 450-451. 91% of German NICUs offer KC; ¾ 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,

Strachan-Lindenberg C, Cabrera-Artola R, Jimenez V. 1990. The effect of early postpartum mother-infant contact and breastfeeding promotion on the incidence and continuation of breastfeeding.<u>International J Nursing Studies 27</u>, 179-186. Conducted 4 month follow-up. **RCT**, **Fullterm**, **BF**

Svejda MJ, Campos JJ, Emde RN, 1980. Maternal-infnat "bonding": Failure to generalize. <u>Child Development, 51</u>, 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 own room. Then 90 min of wrapped contact at each feeding for breastfeeding.Control (n=15), 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, held the wrapped infant briefly before going to nursery. No differences in maternal behavior between groups or between situations were seen. **RCT, fullterm.**

(SAREC) Swedish Agency for Research Cooperation with Developing Countries. (1985). Breathing and Warmth at Birth: Juding the Appropriateness of Technology (Sarec Report R2. Sterky G, Tafari N, Tunell 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.

Swinth JY, Anderson GC, Hadeed AJ. (2003). Kangaroo Care with a preterm infant: Before, during and after mechanical ventilation. <u>Neonatal Network.</u> 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, 4.0hr of VentKC, and 6.0 hrs of post-ventilationn KC given. KC assisted in recovery from RD and fostered maternal relaxation and reduces maternal stress. **Vent KC, Case study, Maternal relaxation, Mat stress, sleep, crying, FiO2, SaO2, protocol for positioning and securing lines on pg.35.**

Swinth JY, Nelson LE, Hadeed A, Anderson, GC. (2000). Shared kangaroo care for triplets. <u>MCN Amer.J. Maternal Child Nursing, 25</u>(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. Triplets were co-bedded in nursery. **Triplet preterm KC.**

Syfrett EB, Anderson GC, Behnke ML, Hilliard B. in progress. Very early kangaroo care for healthy breastfed preterm infants: A pilot randomized controlled trial. Available from Dr. Anderson

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. I think this is a review of Nils Bergman's film.

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 <u>Infant Behavior and Development 26 (3)</u>, 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 Kcers i.e father, grandmother) or incubator care (kept in incubator til appropriate wgt gain and discharged at 1700gm). At 12 month 336 took Griffiths test . At 12 months KMCers 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, Personal-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, Developmental,Paternal KC, Surrogate KMC, Mixed fullterms with Preterms and LBW, LOS, 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. <u>Pediatrics, 102</u> No.2 August 1998. Abstract e17, pg. 390-391. **Randomized controlled trial.**

Tessier, R. et al., <u>Pediatrics, 102(2)</u>, available off the web.Same as above but full report.

Tessier R et al. See under ABSTRACTS for KMC as method of protecting high risk preemies against developmental delay.

Thomson ME, Hartsock TG, Larson C. 1979. The importance of immediate postnatal contact: Its effect on breastfeeding. <u>Canadian Family Physician, 25</u> (Nov.), 1374,76,78. 15 control term infants were delivered, placed in heated crib, given silver nitrate, wrapped in blanket and held by mom for 5 min before going to nursery. Primip Mom next saw infant at 12-14 hrs postbirth. 15 KC term infants(called early contact group) had same routine but given to mother 15-30 min postbirth, unwrapped and held against her bare chest for 15-20 min covered by warm blanket. Given after delivery of placenta, repair and transfer to stretcher bed. After 15-20 min of KC infant taken to nursery. BF success defined as BF for minimum of 2 months with daily supplementary feeding. 100% of KC BF at discharge, 93%of control. Sig more KCers were successful BF at 2 months (60% KC vs. 40% control). All Kcers attempted BF in delivery room, most sucked eagerly but 2 only mouthed nipple (pg. 1376). Greater BF success attributed to closer bond formed during early sensitive period. **RCT, FULLTERM, BF Success**

Thompson, N.M. (1996). Relactation in a Newborn Intensive Care Setting. <u>J</u> Hum Lact 12(3),1996. Pp.233-235.

Toma, T.S. (2003). Kangaroo mother care: The role of health care services and family networks in a successful program. <u>Cad Saude Publica, Rio de Janeiro,</u> <u>19 (supple 2)</u>, S233-S242. 14 men and women answered questionnaires about how to get KC done for their infants. Health workers needed to address personal and family problems that prevented KC, and consider history of perinatal death, other kids in household, paternal/family involvement, and household management so that KC can be implemented. **Descriptive, implementation.**

Tomlin AC. (1993). Review of <u>Kangaroo Care: The Best You Can Do For Your</u> <u>Preterm Infant by Ludington-Hoe and Golant.</u> Library J. 118(14), 214-215. Sept. 1, 1993.

Tornhage CJ, Serenius F, Uvnas-Moberg K, Lindberg T.(1998). Plasma Somatostatin and Cholecystokinin levels in preterm infants during KC with and without Nasogastric tube feeding. J. Pedtriat Endocrinology & Metabolism, 11(5): 645-651. Preterms kept in KC have lower levels of cortisol and cholescystokinin than babies kept in incubators. NG feeding in KC increased cholecystokinin response to feeding, promoting GI growth and secretion. **Preterm, Cortisol, CCK, Somatostatin**

Tornhage CJ, Stuge E, Lindberg T, Serenius F (1999). First week Kangaroo

care in sick very preterm infants. Acta Paediatrica 88(12), 1402-1404. Took 17 infants (12 on CPAP, 1 on vent, 4 no 02 support) conveniently sampled from other study. Had pretest-test-posttest design, 60 min or more of KC on median age of 3 days of life. Infants were median age 28 weeksGA, median BW 1238g, median wgt on study day 1072 g. 8 infants were fed 4-20 ml human milk by NG. KC did not stop due to infant deterioration in any subject (1403). One infant had brief apneic spell >60 sec during blood sampling. During KC Sa02 was 88-98, Fi02 had to be decreased by 0.09 in one infant, increased by 0.05 and by 0.12 in two infants. TcPO2 increased spontaneously in 9/17 infants and varied in others. TcpCO2 changed <0.5kPa in 15/17 infants (in two infants went from 5.2-6.3 or 6.5kpA). PaCo2 changed <0.8kpa in 15/17. In one infant paCO2 increased from 5.7 to 7.5 and decreased from 5.9 to 4.4 kpa in another. Arterial pH changed <0.06 in 15/17 infants, and decreased from 7.35 to 7.28 and 7.31 in two infants. HR range 130-180 BeforeKC and 135-190 after KC. No bradycardia occurred. Temp was unchanged or increased <0.2C in 8/15; decreaed <0.5C in 6 and 0.5-0.9 in 2/15. The lowest post-KC temperature was 36.2 after a drop of 1.0C in one infant. Before KC, infants were crying, awake. AT 30 minutes of KC 16/17 were quiet sleep, 1 was drowsy. AT 60 minutes of KC15/17 quiet sleep, 2 were awake. NG feed tolerated without adverse effects. Sick and very preterm infants tolerate KC early in life (1404). "Tolerability of of repeated, prolonged periods of KC (\leq 4 hrs) has been excellent" in their nursery (1404). Descriptive, VENT KC, KC +NG, Apnea, Behav.state, HR, SaO2, temp, TcPo2, TcpCO2, Bradycardia, arterial pH, and arterial CO2, FiO2. sleep, crying, awake, CPAP

Tuomikoski-Koiranen, P. (1990,June). Kangaroo Care As Part of Nursing Premature Infants and Some Results From A Study on Kangaroo Care in the Neonatal Unit of Turku University Hospital, 1986. Paper presented at the Third Biennial International Conference for Maternity Nurse Researchers, Nordic School for Public Health, Gothenberg, Sweden. **KC by 2 Fathers**.

Turner B. (2000). The child with an acute or critical illness. Commentary on Roberts KL, Paynter C, McEwan B. (200). A comparison of Kangaroo mother care and conventional cuddling care in <u>Neonatal Network, 19(4)</u>, 31-35. J Child Family Nursing, 3(6), 414-415. She raises some concerns that interpretation of data does not correspond to the data presented in the charts.

UNICEF (1984). Kangaroo treatment saves underweight babies. <u>News</u> Feature, May 1984.

Uvnas-Moberg K. 1999. Effects on mother and infant of oxytocin released in the postpartum period. In N.A. Fox, LA Leavitt, J.G. Warhol (Eds.) <u>The role of early experience in infant development</u>. Pp. 283-290.New Brunswick, NJ; Johnson and Johnson Pediatric Institute. On page 284 starts a whole section on the effects of early skin-to-skin contact on mothers and infants. Excellent reading as this talks about the Swedish studies with Widstrom and her rat model investigations. Mothers report being warmer, sleepier, and thirstier than mothers without this contact. Both mothers and infants become calmer, activity in the sympathoadrenal axis decreases, and some aspects of vagal nerve activity linked to increased GI function and anabolic metabolism are enhanced (pg. 285). **REVIEW, comfort, Gastrin, CCK, Vagal Nerve stimulation.**

Vaivre-Douret L, Papiernik E, & Relier JP. (1996). Kangaroo method and care. Archives Pediatrics, 3(12),1262-1269.

Van den Bosch, C., & Nhalne, C. (1993). Problems with Kangaroo babies in Africa. J. Tropical Pediatrics, 39(3): 193-194 [Letter].

Van Rooyen, E., Ludington-Hoe, S.M. under review. Use of the Kangaroo Wrap. <u>Neonatal Network</u>.

Van Rooyen, E., Pullen, A.E., Pattinson, R.C., Delport, S.D. 2002. The

value of the kangaroo mother care unit at Kalafong Hospital. <u>Geneeskunde. The</u> <u>Medical Journal</u>, April 2002, 6-10. This is a report of 18 months of mandated practice of KC with low birthweight 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 LOS 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, BF,infection, follow-up.**

Vaughans, B. (1990). Early maternal-infant contact and neonatal thermoregulation. <u>Neonatal Network,8:</u> 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. **FULLTERM**

Victor & Persoon (1994). Implementation of Kangaroo Care: A parent-Health Care Team Approach. <u>Crit Care Nursing Clinics of North America, 6</u>(40)., 891-895.**IMPLEMENTATION**

Villalon U,H., Alvarez C,P., Barria H, E., Caneleo H, D., Carrillo M, L., Duran G, S., Luz Feres R, C., Mansilla A, P., Navarro C, A., Olivares G, C., & Torres R, V. 1992. Effect of early skin-to-skin contact on temperature regulation, heart rate, and respiratory rate in healthy, full-term newborns. <u>Rev</u> <u>Chil Pediatr, 63:</u> 140-144. Gave KC immediately after birth for 4 hours(92 <u>newborns, , KC= 47</u>, remainder were controls who got routine maternity ward care. No diff between groups in HR, RR and ability to regular body temp;93.6% (n=44) of KC moms and ALL STAFF "expressed very good opinion about KC. KC can be used safely with fullterm healthy newborn with environmental temp as low as 19 degrees C. **FULLTERM RCT, TEMP, HR., RR, Mat Impression, Staff Impression,**

Villalon, UH, Alvarez, CP. (1993). Short term effects of early skin-toskin contact (kangaroo care) on breastfeeding in healthy fullterm newborns. <u>Rev.</u> <u>Child Pediatr. 64</u>(2), 124-128. Randomized controlled trial of 119 dyads(KC=59) who got early KC (started 2-4 hrs postbirth) vs controls who stayed in observation nursery for first 4 hrs postbirth in Chile. 89.9%KC vs. 63.3% control breastfeeding at 24 hrs postbirth; 93.3% KC vs. 66.7% control BF at discharge; 78.8% KC vs. 56.2% control BF at 14 days postdischarge. Maternal self confidence at discharge (89.9KC vs.53.3m p<.001) and 14 days (97%).**FULLTERM. RCT**

Victor, L., & Persoon, J. (1994). Implementation of kangaroo care: A parent-health care team approach to practice change. <u>Critical Care Nursing</u> <u>Clinics of North America</u>, 6(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**

Wahlberg, V. (1987). Alternative care for premature infants: The Kangaroo Method- Advantages, risks, and ethical questions. <u>Neonatologia</u>, 4, 362-367.Describes origins of KC & Bogota, that mortality & abandonment dropped (LITERATURE SUMMARY

Wahlberg, V. (1991). The "kangaroo method" and breastfeeding in low birth weight babies. NU Nytt on U-landshalsovard,5(3), 22-26. Reports how KC began,

that mortality and abandonment decrease (p.24), includes report of 33 Kcers in Sweden and less HR, lower o2 needs, less restless, 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**.

Wahlberg, V., Affonso, D. & Persson, B. (1992). A retrospective, comparative survey using the kangaroo method as a complement to the standard incubator care. European Journal of Public Health, 2, 34-37. **Descriptive**, **retrospective comparative**.

Wallace, J., & Ridpath-Parker, J. (1993). Kangaroo care. <u>Quality</u> <u>Management in Health Care, 2</u>(1), 1-5. **Resuscitative/Consoling KC**

Wallace H, Marshall D. 2001. Skin-to-skin contact: Benefits and difficulties. Practical Midwife, 4(5), 30-32.

Wallis, C L. 2000. Kangaroo Care. <u>Neonatal Network 19</u>(7), 68. This is a letter to the editor that KC is used routinely and shows pictures of twins in KC. **TWIN KC, routine use in U.S.**

Weller A, & Feldman, R. 2003. Emotion regulation and touch in infants: The role of cholecystokinin and opioids. <u>Peptides 24</u> (5), 779-788. Cholecystokinin and opioids 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 benefits the development of emotion regulation in the human. KC has been shown to improve the infant's ability to self-regulate and to moderate the effects of some risk factors. **Theoretical review. Stress, emotional development.**

Weller A, Rozin A, Goldstein A, Charpak 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.' <u>Hormone Research 57</u> (1-2),22-26.

Wheeler JL, Johnson M, Collie L, Sutherland D, Chapman C. (1999). Promoting breastfeeding in the neonatal intensive care unit. <u>Breastfeeding</u> <u>Review, 7</u>(2): 15-18. Forty-one infants watched during feeds for 21 days. Infants were 32-37 wks (M=34.21wks, MBW=2225.02g). On day 1, 22.2% BF while nude on breast (called KC); days 2-9 % 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. **BREASTFEED**, **Descriptive**.

Whitehead, SM & Cundall, D. (1985). The marsupial mother. <u>The</u> <u>Lancet</u>, July 13, 1985, 99-100."The reporting of Whitelaw's article (the Lancet, 1985) can do much to diversify thnking about the management of LBW babies in Third World.

Whitelaw, A. (1986). Skin-to-skin contact in the care of very low birth weight babies. <u>Maternal and Child Health</u>, 7, 242-246.**FATHERS- 5 fathers gave KC**, no measurements reported.

Whitelaw, A. (1990). Kangaroo baby care: Just a nice experience or an important advance for preterm infants? <u>Pediatrics</u>, <u>85</u>(4), 604-605.

Whitelaw, A., Diaz-Rosello, J, Anderson GC. 2000. Skin-to-skin contact between mothers and their newborn infants in hospital (Protocol for a Cochrane Review). In: The Cochrane Library, Issue 3, 2000. Oxford: Update Software. Whitelaw, A., Heisterkamp, G., Sleath, 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.

Whitelaw, A., & Liestol, K. (1994). Mortality and growth of low birth weight infants on the kangaroo mother program in Bogota, Colombia. <u>Pediatrics</u>, 94(6), 931-932.**BF, Wgt gain**

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.

Widstrom AM, Ransjo-Arvidson AB, Christensson K, Matthiesen AS, Winberg J, Uvnas-Moberg K. (1987). Gastric suction in healthy newborn infants. Acta <u>Paediatrica Scand, 76</u>, 566-572. 21 healthy term infants were randomized into routine gastric suctioning after birth or no suctioning. Prefeeding behav was watched after dried, nude infant placed on maternal abdomen. Pictures of how infants spontaneously move up to breast to feed. Gastric suctioning disrupts this natural behavior.**FULL TERM. RCT KC is part of routine care**

Widstrom, A-M, Wahlberg V, Matthiesen A-S, Eneroth P, Uvnas-Moberg K. Werner S, Winberg J. (1990). Short term effects of early suckling 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 gastrin 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, KCBF, SEARCH BEHAVIOR, maternal behavior, gastrin, prolactin

Uvnas-Moberg K, Widstrom AM, Nissen E, Bjorvell H. 1990. Personality traits in women 4 days postpartum and their correlation with plasma levels of oxytocin and prolactin. J. Psychosomatic Obstetrics & Gynaecology, 11, 261-273. The personality profiles of BF women differ from those of nonpregnant, nonlactating women of same age. BF mothers describe themselves as more open, more interactive, and calmer than nonpregnant, nonBF women. This temporary shift in personality begins a few days after delivery and lasts as long as BF is continued, and is in part dependent on KC after birth and is reinforced by BF. Full term, BF, Maternal personality. See also Nissen article. Get this one, we don't have it.

Widstrom, Marchini, Matthiesen. 1988. Nonnutritive sucking in tubefed preterm infants. J. Pediatr Gastroenterology Nutrit, 7, p. 517-???

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: Prill H, Stauber M (eds.) <u>Advances in psychosomatic</u> <u>obstetrics and gynaecology, Springer Verlag, Berlin, pp. 482-487. In Austria,</u> <u>Primip mothers. KC got 15 minutes of KC at 1-2 minutes postbirth (n=</u> <u>unspecified, n for control unspecified, but N=95). Control babies were cleaned,</u> <u>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</u> 98 days vs 36 days in control group. RCT, Fullterm, BF

Winslow, E.H. (1993). Snuggling saves energy. <u>American Journal of</u> Nursing, 93(6), 16.

Wise J. (1998). Hypothermia improves with skin-to-skin care. <u>British</u> <u>Medical Journal, 317</u>, p. 967. This refers to Christensoon & 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.

World Health Organization (1985). Preliminary report of joint consultation. Bogota. (written by Bellman et al.). World Health Organization/Pan American Health Organization. Interregional Conference on Appropriate Technology Following Birth. Trieste, Italy, 1985.

World Health Organization, Dept. of Reproductive Health and Research. 2003. <u>Kangaroo Mother Care. A Practical Guide</u>. Geneva: World Health Organization. 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, evidency 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). ISBN: 92 4 159035 1 Available from Marketing and Dissemination, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel: +41 22 791 2476; Fax: +41 22 791 4857). **Preterm, Positions, Policy, and Breastfeeding, BF in KMC position**

NON-ENGLISH LANGUAGES ORIGINAL MANUSCRIPTS

Agostino, R., DeLuca, T., Marino, P., Gerardi, R., Patrizi, S.& Bucci, G. (1988). La marsupioterapia come nuovo approccio per favorire l'attaccamento madre bambino nei neonati di peso molto basso. Risultati prelimina. <u>Italian</u> Journal Pediatrics, Supple. 14(5), p. 136-139.

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Bosse, H.M., Sontheimer, D., Bussmann, H. (1997). Erfahrungen mit der Kanguruh-Methode in Botswana. <u>Curare, 201</u> (2): 183-187. Report of Kangaroo Care in primary pediatric setting where they have little, if any, equipment to handle preterm infants.

Dala Sierra, E., Pineda Barahona E., Banegas R.M. (1994). Experiencia madre Canguro (Kangaroo Mother Experience0. <u>Rev Med. Hondur 62</u>, 43-46. **RCT** Delval, A.C. (1998). The Kangaroo method: a bond in caring for prematures.(French). Rev Infirm 1998 Feb;35:26-28.

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Ennen-Hansing-Eilers, M. (1997). Besonderheiten in der pflege schwerkranker fruhgeborener. KinderKrankenschwester, 16 (5): 175-179.

Ezinga, G., & Ezinga-Scotten, D.E. (1985). Onderzoek naar het eventueel ontstaan van hypothermi en hyppoglykemie bij thuisgeborenen na langdurig huidcontact postpartum. Ned Tijdschr Geneeskol, 129, 449-451. **FULLTERM**

Fischer, C.B., Sontheimer, D., Bauer, J., & Linderkamp, O. (1997). Die Kanguruhpflege Fruhgeborener. Stand der Forschung und Erfahrungen in Heidelberg. <u>Padiatrische Praxis</u>, <u>52</u>(4), 609-619. (Kangaroo care of premature infants. Status of research and experience in Heidelberg. Has English abstract on page 617).

Flament, P. (1994). Le Portage Kangourou. FINB-INFO, #6, December, 3-5.

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Hamm, S., Stoffel, L., Strebel, E., & Wyss, E. (1993). Method for strengthening the mother-child relationship. As warm as in the kangaroo pouch. Krankenpflege-Soins Infirmiers, 86(8), 9-11.

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Horiuchi, T. 1999. Kangaroo Care (Japanese Book). Available from Takeshi Horiuchi, 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: isokichi@wf5.so-net.ne.jp

Hsieh Y, Huang M. (2000). Preliminary study of kangaroo care for preterm infants: Effect on parent-infant relationship. J.Nursing (China), 47(3), 33-40. See Hsieh and Huang under abstracts for this report of 16 parents who experienced KC and answered 8 open ended questions about their experience. Results were KC decreased parent's anxiety, increased parental self-confidence in caring for infant, promoted parent-infant relationship.**Preterm, Qualitative Study, Maternal/Paternal anxiety, confidence in caring for infant, relationship.**

Jurado A, Closa Monasterolo R. (1998). [Kangaroo method in delivery room for full-term babies.] <u>Annals Esp. Pediatric, 48</u>(6), 631-633.**FULLTERM**

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Martinez JC. 1991. El contacto madre-hijo prematuro piel a piel un apote a la moderna asistencia neonatal. Arch Argent Paediatr, 89: 142-147.

Mazurek T., Mikiel-Kostyra K, Mazur J, Wieczorek P, Radwanska B, Pachuta-Wegier L. 1999. Influence of immediate newborn care on infant adaptation to the environment. <u>Med Wieku Rozwoj, 3</u>(2), 215-224. Three randomized groups n=22in 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 growing in 6 (27%) of infants. Bl glucose highest in KC (60.1mg/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 in KC, lying beside, separated groups respectively. KC is optimal for newborn adaptation and a protection agst hypothermia and hypoglycemia. **RCT, FULLTERM**

Mikiel-Kostyra K, Boltruszko I, Mazur I, Zielenska M. 2001. Skin -to-skin contact after birth as a factor determining breastfeeding duration. <u>Med Wieku</u> Rozwoj, 5(2), 179-189.

Mikiel-Kostyra, K., Mazur J. 1998. Determination of newborn feeding in maternity hospital care. Part I: Factors associated with breastfeeding initiation. <u>Ginekologia Polska, 69</u>(11), 783-788. Data from 11,750 **FULLTERM** collected from 427 polish hospitals in 1995 showed that lack of KC after birth (odds ratio 8.5; population attributable risk in percent = 60.9%) and maternalinfant separation longer than 1 hour/24 hrs (odds ratio 13%, PAR = 87.2%) are factors associated with artificial feeding.

Mikiel-Kostyra K, Mazur J. 2000. Birth weight as a factor influencing infant feeding in Polish maternity wards. <u>Med Wieku Rozwoj, 4</u>(3), 337-346. (POLISH) FULLTERM. 11,784 newborns from 427 maternity hosps were studied. 97.2% of all newborns breastfeed; 72.5% of preterms breastfeed. 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.

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Mulet, R.C., Figueroa de Leon, R., Gonzalez, J.V.B. (1992). Mother-child early contact with the mothers kangaroo program and natural breastfeeding. <u>Rev.Latin.Perinat. 12</u>,#3-4, 54-60. See annotation under English section.

Persson B. (1990). [The kangaroo method. A medical ambivalence towards nature?]Lakartidningen, 87(13), 1034-1035 **SWEDISH**

Pignotti MS, Rubaltelli FF. (1997). Kangaroo Care: Parents' answers and staff problems. <u>Riv Ital Pediatri 23</u>, 1054-1057. In three years 95% of LBW and VLBWs (580-2000 gm, 25-38wkGA) 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**

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 gherapi@dada.it

Riskin A & Bader D. 2003. Breast is best-human milk for premature babies. Harefuah, 142 (3), 217-222, 236, 237. Review article of how breastmilk is best for preemies. States "support of lactation in mothers of preemies mandates protection of the mother and child bonding process and early skin-to-skin contact "Kangeroo care" (pg. 217). **PT, Review, BF**

Sarman, G. 2000. Effects of KC on Mother's Competency for Caring for Multiplets. Available from Gulnihal Sarman, M.D., FAAP, American Hospital, Guzelbahce sok. No 20, Nisantasi 80200, Istanbul, TURKEY.

Shiau SH. (1999). The effects of kangaroo care on sleep and crying of healthy fullterm newborns. <u>Nursing Research (China), 7</u>(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=.000) on days 1 & 2 but not 3; Kcers had more sleep (total47.64 min vs.40.36, p=.000 on days 1,2,3) and less awake time (total 14.55 vs. 17.45 min, p=.046) and less awake time on day 3 but not on days 1,2. FULLTERM, RCT crying, sleep, wakefulness Chinese.

Sluis M (1987). [Communication with the help of the kangaroo method]. Tijdschr Ziekenverpl 41(14), 440-442.

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Stening, W. (1997). Die Kanguruh-Methode (Haut-zu-Haut-Kontakt) bei fruhgeborenen Kindern. <u>Kinderkrankenschwester</u> 1997 <u>16(</u>8):308-310.

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Vaivre-Douret, L., Papiernik, E., Relier, J.P. (1996). Methode et soins kangourou. Archives de Pediatrie. 3(12):1262-9, 1996 Dec.

Vial M. 1991. L'unite de surveillance des nouveau-nes a la maternite dite "Les Kangourous". In Raimbault G, Manciaux M (Eds.) <u>Enfance menacee</u>. <u>Analyses</u> <u>et prospectives</u>. Paris: Editions Inserm. P. 137-141.

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Cabrol D., Pons JC (eds.) Obstetrique Paris: Flammarion Medicine-Sciences. P. 151-154.

Vial-Courmont M. 2000. The "kangaroo" ward. <u>Med Wieku Rozwoj, 4</u> (2 Supple 3), 105-107. Polish report of Paris experience at Clamart academic hospitalwhere it began in1987. Article discusses organization of KC ward, list advantages of kc as continuous contact, less maternal anxiety, better well-being of child, more efficient maternal involvement. **Clinical Report, Implementation.**, maternal anxiety, caregiving, well-being of child

Villalon UH, Alvarez CP, Baria HE et al. 1992. Effect of early skin-toskin contact on temperature regulation, heart rate, and respiratory rate in healthy, full-term newborns. <u>Rev Chil Pediatr, 63:</u> 140-144.**FULLTERM. See review** under English section.

Villalon, UH, Alvarez, CP. (1993). Short term effects of early skin-toskin contact (kangaroo care) on breastfeeding in healthy fullterm newborns. Rev. Child Pediatr. 64(2), 124-128. FULLTERM. BF and maternal confidence. See review under English section.

Virgin C, (1987). [Children's Health. 15. Kangaroo method returns children to mothers]. Sygeplejersken, 87(19), 10-14.

von Stockhausen, H.B. (1997). Kommentar: Auf Anforderung der Schriftleitung. <u>Padiatrische Praxis</u>, <u>52</u>(4): 618-619. Commentary on Fischer article of 1997 reporting KC in Heidelburg.

Wahlberg V (1985). [The natural incubator. Report on "kangaroo methods" in Colombia, South America]. Jordemodern, 98(10), 315-319.

Wahlberg, V. (1991). The "Kangaroo method" and breastfeeding in low birth weight babies. Nu Nytt on U-landshals vard, 5, 23-27.

Wahlberg, V., Persson, B., & Affonso, D. (1987). Kangurumetoden-den manskliga kuvosen. Lakartidningen, 87(5), 288-289.

Warren L, Tan GC, Dixon PD, Ghaus K, (2000). Breastfeeding success and earl discharge for preterm infants: The results of a dedicated BF programme. J. Neonatal Nursing 6 (2), 43-48.**BF Get this from D. Dowling.**

Wieland, Ch., Bauer, K., Bisson, K. & Versmold, H. (1995). Kanguruh-pflege bei 39 Fruhgeborenen. <u>Monatsschr Kinderheilkd</u>, <u>143</u>: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**

Yin Y, Wang R., Lee MM, Yuh Y. (2000). Influence of kangaroo care and traditional nursing care on premature physiologic parameters (Chinese). <u>Nursing</u> <u>Research (China), 8</u>(3), 362-374. Observations 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**.

The following research investigations of Kangaroo Care are reported in the 1990 UNICEF publication of the <u>First International Conference on Mother Kangaroo</u> <u>Program, Bogota, 1990</u>. The full text is available, free of cost, from UNICEF, 3 UN Plaza, N.Y., NY 10017. Also called <u>Primer Encuentro Internacional-Programa</u> Madre Canguro.

1. Martinez, H., Rey, E., Navarett, L., & Navarette, C.M. Mother kangaroo program at the Maternal-Infant Institute in Bogota, Colombia. p. 21-44.

2. Riano de Otalora, E.M.R. Promotion, diagnosis and early intervention for sensory motor alteration in biologically high risk infants. p. 45-56.

3. Gonzales de Pinzon, L.E. Visual and ocular validation of the mother kangaroo program at the Maternal-Infant Institute in Bogota. p. 57-62.

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.

6. Gomez, L.A. Evaluation of two years of mother kangaroo program at the Caldas Regional Hospital in Antioquia, Colombia. p. 91-102.

7. Restrepo, f., & 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 Turbo Hospital in Antioquia, Colombia., p. 107-126.

9. Vargas, N.B., & Correa, J.D. Fathers kangarooing and their ideas and psychological responses. p. 127-132. **FATHERS**

10. Lopez, J.M. Experiences with the mother kangaroo method at the Joaquin Paz Borrero Hospital in Cali, Colombia. p. 133-142.

11. Currea, S. Ambulatory care of premature infants. p. 143-152.

12. Feraudy, P.Y. Mother kangaroo program: Ambulatory care of the low birth weigh newborn at the San Gabriel Hospital in La Paz, Bolivia. p. 153-176.

13. Arandia, R., & Morales, L. Mother kangaroo program at the University of San Simeon in Cochabamba, Bolivia. p. 177-200.

14. Camacho, L.L. Ambulatory care of premature infants in Maternity Hospitalin Quito, Ecuador. p. 201-204.

15. Stern, C., Sloan, N.L., & Pinto, E. Mother kangaroo program- Care of low birth weight neonates in Quito, Ecuador. p. 205-232.

16. Arestegui, R.U. Evaluation of the pilot program of mother kangaroo at the San Bartolome Hospital in Lima, Peru. p. 233-248.

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17. Arestegui, R.U. Information about the mother kangaroo pilot program at the San Bartolome Hospital in Lima, Peru. p. 249-254.

18. Martinez, J.C. Mother kangaroo program is a great opportunity for modern neonatal help. p. 255-260.

19. Picon, C. Low birth weight premature infants: An environmental technology appropriate for resistance. p. 261-278.

20. de Molina, H. Evaluation of mother kangaroo program at the Dr. Luis Edmundo Vasquez Hospital in Chalatenango, El Salvador. p. 279-282.

21. Diaz-Rosello, J.L.D., Lozano, P.M., & Tenzer, S.M. Impaired growth of low birth weight infants in an early discharge program. p. 283-306.

22. Meza, G.C., Rosales, J.M., & Pineda, D.P. Efficacy of mother kangaroo program in the development of low birth weight infants at Roosevelt Hospital in Guatemala. p. 307-350.

23. Mulet, R.C., Figueroa, de Leon, & Gonzales, J.V. Efficacy of mother kangaroo program in the development of low birth weight neonates at the Social Security Obstetric Hospital in Guatemala, p. 351-361.

24. De Leeuw, R. History of kangaroo care in the neonatal department of the academic medical center. p. 365-370.

25. Anderson, G.C., Overview of current knowledge about skin-to-skin (Kangaroo) care for preterm infants -p. 371-390.Lit Review.

26. Anderson, G.C. Risk in mother-infant separation postbirth. p. 391-402.

27. Ludington, S.M. Energy conservation during skin-to-skin contact between premature infants and their mothers. p. 403-416.

28. Whitelaw, A. Kangaroo baby care: Just a nice experience or an important advance for preterm infants: p. 417-420.

29. Wahlberg, V. Alternative care for premature infants - the Kangaroo method: Advantages, risks, and ethical questions. p. 421-430.

30. Borel J., B., Mayorga G, V., & Vado L., C. Alternate care for neonates weighing less than 1800 grams in the Bertha Calderon Roque Women's Hospital, Managua, Nicaragua. p. 431-450.

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.

Abstracts

Agbodjan-Djossou AO, Akue D., Peeira SB, Maboudou AL, Assimadi JK. 2000. The raising of premature inants by KM: Experience at Tokoin Teaching Hospital Lome-Togo. Paper presented at 3rd International KM Congress, Jakarta, Indonesia, Nov. 22-25, 2000. Report of 66 infants, 30-33wksGA given KC. Daily mean wgt gain was 22.8gs.Mean duration of KC was 13 days. No mortality.

Agostino, R, De Luca., T., Marino, P., Gerardi, R., Patrizi, S., d'Apolito, S., & Bucci, G. (1988). La marsupioterapia come nuovo approccio per favorire l'attaccamento madre-banbino nei neonati di peso molto basso (NPMB): Risultati preliminari. <u>Italian J of Pediatrics, Supplement 14(5), vol. 14(5)</u>: p. 136.

Anderson, G.C. (1989). Kangaroo care and breastfeeding for preterm infants. Breastfeeding Abstracts, 9(2), 7-8.

Anderson, G.C. (1999). Overview and Introduction to "Insights Gained from a Randomized Controlled Trial in Progress." Proceedings of the 23 Annual Midwest Nursing Research Conference, April 11, 1999, p. 82-83.

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 25^{th} Annual Conference of Midwest Nursing Research Society. Chicago, IL, March 2002. Significant improvement in weight gain due to minimal amounts of KC during hospitalization , KCn=51; control n=49 atw birth, then 42 at 6, 43 @12s, 43 @18 (KC Group n); Control grp n = 29 @6 mos, <u>33@12</u> mos, 33 @ 18 mos. Also presented CORTISOLS salivary which were (KC vs Con): 8.34 vs. 7.74 (p<.005)@ 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, Albert J, Dombrowski MAS. (2002). Types of contact in a randomized trial of KC. 13th Biennial Conference of International Society of Infant Studies. April 18-21, Toronto, CANADA.

Anderson GC, Chiu S-H, Dowling DA. (2000). Effect of early skin-to-skin (Kangaroo) care on toe temperature in preterm infants. Unspecified number of subjects, **Preterm, RCT. Available from Gene Anderson**

Anderson GC, Chiu S-H, Morrison B, Burkhammer M, Ludington S. 2003. Skinto-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, GC, Chiu S-H, Pagliotti F. (2000). Pretest-test-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 (pretest),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 (postkc), suggesting possibility of increased vascular perfusion of internal organs in 31 preterms . **RCT, Toe Temp.**

Anderson GC, Chiu SH, Pagliotti F, Dowling D. (2000). Early kangaroo (skin-to-skin) care: Effect on toe temperature (Vascular perfusion) in preterm infants. Presented at 12th Biennial International Congress of Infant Studies in Brighton, England, July 2000. Same as above.

Anderson, GC, Dombrowski MAS, Swinth JY. 2000. Kangaroo (skin-to-skin) care in the new millenium: Variations on the theme. Presentation at 3rd international congress of KMC, Jakarta, Indonesia, Nov 22-25, 2000. Tells that she will present 11 case studies, including **SURROGATE KC, SIBLING KC, VENTILATED KC, SUBSTANCE ABUSING MOM KC**. Same as abstract that follows.

Anderson GC, Dombrowski MAS, Swinth JY. 2001. Extending typical kangaro (skin-to-skin) care to other vulnerable populations: Why not? Presented at Midwest Nursing Research society Annual Meeting, Cleveland, OH, March 2-5, 2001. Case study reports of 11 uses of KC, including a respiratory distress baby given KC and not foregoing ventilatory support.

Anderson, GC, Ludington-Hoe SM, Morrison B, Burhammer M.D. (2002). Closing the gap in health disparities with skin-to-skin care for breastfeeding difficulties. 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**

Anderson, G.C., Marks, L, & Wahlberg, V. (1987). Kangaroo care for preterm infants around the world: State of the art. Society for Research in Child Development Biennial Meeting. (not published).

Anderson GC, Morrison B, Ludington-Hoe SM, Burkhammer M, Chiu S-H. (2002). Kangaroo (skin-to-skin) care for breastfeeding difficulty postbirth in motherinfant dyads. Paper presented at the Touch Research Institute Pre-Conference. 13th Biennial Conference of the International Society on Infant Studies. April 18, Toronto, Ontario, CANADA. Report of pilot work on 10 mothers who get KC for 1.5-2.0 hrs before anticipated feeding and breastfeed in KC position to see if KC will correct BF difficulty within 1st day postpartum.

Argote, L.A., Rey, H., Ludington, S., Medellin, G., Castro, E., & Anderson, G. (1991). Dificultad respiratoria transitoria y contacto piel a piel temprano como manejo. <u>Memorias de XVII Congreso Colombiano de Pediatria</u>, Cali, Colombia, p. 532.

Bauer K, Pasel K, Versmold H. (1996). Chest skin temperature of mothers of term and preterm infants is higher than that of men and women. <u>Ped Research</u>, <u>39</u>(4) Pt. 2,p. 195A. Recorded mean chest skin temperature of 10 women with premature infants, 10 women with term infants, and 10 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-toskin care was no cold stress for VLBW infants as oxygen consumption and centralperipheral temperature gradient did not increase. <u>Ped. Res.</u>, <u>37</u>(2), 196A.

Bier JAB. Ferguson AE, Liebling JA, Morales Y, Archer D., Oh W, Vohr BR.

1995. Skin-to-skin contact improves physiologic states of breast-fed lowbirthweight infants. Ped Res 37 (4)Part 2, 103A.

Bosque, E., Brady, D., & Wahlberg, V. (1988). Continuous physiological measurements of kangaroo versus incubator care in a tertiary level nursery. <u>Pediatric Research</u>, <u>39</u>(4), Part 2, 196A.

Breitbach KM. 1994. Development and validation of the nursing intervention "Kangaroo Care". Unpublished master's thesis, Univ. Iowa. Definition and activites of Kangaroo Care were delineated.

Charpak, N., Figueroa, Z., Ruiz, J.G., & Charpak, Y. (1997). Kangaroo mother versus traditional care for newborn infants (<2000 grams). A randomized controlled trial. <u>Pediatric Research</u>, 41(4), Pt. 2, 192A. 382 KC started KC upon discharge and <u>practiced it 24 hours/day</u>. 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.

Charpak N, Ruiz JG, deCalume Z, Charpak Y. 1995. Comparison between two methods for newborn infant with birthweight under 2000 grams: A randomized controlled trial. Pediatric Research, 37(4, Part 2), p. 199A.

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**.

Chiu S-H, Anderson GC, (2002). Completion of six-month follow-upp of mother-infant interaction in a randomized trial of early KC. 25th Annual Conference of the Midwest Nursing Research Society, Chicago, IL., March.

Chiu S-H, Anderson GC (2002). Types of contact and persons providing contact for preterm infants 0-48 hours postbirth in a RCT of KC. International State of Science Congress, Sept. 2002, Washington, DC.

Chwo, Miao-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 healty preterm infants in TAIWAN were randomly assigned before first feed. KC was done during BF, controls were clothed and wrapped and 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.**

Chwo, Miao-Ju, & Huang, Li-Hung (2002). Effects of very early kangaroo care on infant's extrauterine 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 and KC had more quiet sleep (41%vs. 13.5%) and alert inactivity (27.6% vs. 2.8%) than controls. Controls had more drowsy and cyring (38.5 vs. 15.1%) than KC.. KC moms had less fatigue @ 60 min (37.67 vs. 42.36) RCT. Fullterm, temp, HR, SaO2, Brady, State, Fatigue. Delivery KC

Dombrowski MAS, Anderson GC. 2001. Salivary cortisol and depression in postpartum women participating in a study of Kangaroo (skin-to-skin) care with preterm infants. Paper presented at Midwest Nursing Research Society, Cleveland, OH, March 2-5, 2001. Salivary cortisol collected on filter paper at 6 hrs postbirth and twice a day on days 1-5 postbirth. **RCT**.

Dowling, DA., Anderson, GC, Miller MA. Moran M., Radzyminkink, S., & Higgins, K. (1999). Maternal Kangaroo Care (Skin-to-Skin) Care in the NICU Beginning Four Hours Postbirth. Proceedings of 23 Annual Midwest Nursing Research Society Conference., 4/11/99., p. 82.

Dutcher, J. 1996. Nursing Attitudes About Kangaroo Care in the United States. Abstract presented at National Association of Neonatal Nurses's Annual Meeting, Nashville, TN, Sept. 15-17, 1996. Available from Janet Dutcher. Address is on researcher list @ back

Engler, A. & Ludington SM. (1999). Kangaroo care in the United States: A national survey. J. Investigative Medicine, 47 (2): 168A.

Feldman R, Eidelman AI, Weller A, sirota L. (2001). Mother-infant skin-toskin contact promotes self-regulation in premature infants: Sleep-wake cyclicity, 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 stimili, improved m-I attention and exploratory skills.

Ferreira, C., & Ludington, S. (1994). Does frequent skin contact improve respiratory pattern in preemies? Respiratory Care, 39(11): 1061.

Gloppestad, K. 1994. Differences between fathers and mothers initial close contact with their prematurely born infants. Proceedings of the 7th Biennial Conference of European Nurse Researchers. "The Contribution of Nursing Research: Past-Present-Future. Vol. 1 July 306, 1994, p. 297.

Grazel R, Hahn E. (2001). Parental stress during Kangaroo Care. <u>Central</u> <u>Lines, 16</u>(3), 6. Quasi-experimental, repeated measures, crossover design with moms as own controls. MG30.4 wks, MBW 141 grm, MmatAge-25 yrs. Listenting to music by headphone during KC decreased mat. Stress, as did KC without headphones. Stress reduction was greater with headphones. Used PSS:NICU scale.

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. <u>Pediatric</u> <u>Research, 9, 259.</u> 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.**

Hadeed, A.J., Ludington, S.M., & Siegal, C. (1995). Skin-to-skin contact (SSC) between mother and infant reduces idiopathic apnea of prematurity. <u>Pediatric Research</u>, <u>37</u>(4), Part 2, p. 280A, #1233.

Hake Brooks, SJ, Anderson GC, (2002). Effects of KC on breastfeeding status of mothers of preterm (32-36 weeks GA) infants. International State of Science Congress, Sept. 2002, Washington, DC 2002.

Herzenstiel G. 2000. Introduction of KMC in Malawi, East Africa; An example of successful implementation of KMC in a $2^{nd}/3^{rd}$ level hospital in a country without resources. Presentation at 3^{rd} International KMC congress, Jakarta, Indonesia, Nov. 22-25, 2000. Zomba Gen Hospital cares for 4500 newborns/yr, 20% are Preemies. This is report of how to implement KMC by building a K ward with 12 beds.

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 exerpeince 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 maternalinfant 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**, **pain**

Kostandy RR, Anderson GC. 2000. Kangaroo (skin-to-skin) care in healthy fullterm neonates: Effect on pain from hepatitis B vaccine injection. Presented at the Biennial Interntional Congress of Infant Studies meeting in Brighton, England, July 2000. 30 neonates randomized to 30 min of KC before injection or bassinette.Infants rotated to supine position in KC for shot in thigh. HR, behavioral state, crying time measured preinjection, during injection, and post.FULLTERM, pain

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.FULLTERM, 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 Interntl 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, SM. 1990. Energy conservation during skin-to-skin contact between preterm infants and their mothers. Heart and Lung, 19, 445-451.

Ludington, S.M. (2000). Evidence for restructuring NICU to accommodate Kangaroo Care. Amer. Academy Nursing 2000 Mtg & Conference, San Diego, 11/2-4 p68

Ludington, S.M. 2000. EEG-basd 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 and indeterminate sleep does not change. Intensification of sleep is seen in KC.

Ludington-Hoe, SM (2002). Pumonary Function during KC. 25th Annual

Midwest Nursing Research Society meeting, Chicago, Il. March. Preterm, RCT

Ludington, S.M., Ferreira, C., Swinth, J. (1999). Skin-to-skin contact (SSC) effects on pulmonary function tests in ventilated preterm infants. J. Investigative Medicine, 47(2): 173A. 12 ventilated infants <1000 gm. Temp decreased slightly during KC but stayed WNL. FiO2 requirements tended to decrease and pulmonary function test values remained within clinically acceptable range. Vent KC,not an RCT.

Ludington, S., Hadeed, A. & Anderson, G.C. (1991) Physiologic effects of kangaroo Care. Pediatric Research April issue, pg.

Ludington, S., Irwin S, Swinth J, Becker J, Rao S, Hadeed A. 1994. Skin contact and breathing in preterms. Respiratory Care, 39(1): 1060.

Ludington, S.M., Swinth, J., & Nguyen, N. (1996). Skin contact compared to incubators for prevention of heat loss in preterm infants. <u>Infant Behavior</u> and Development, 19 (Special ICIS issue), p.

Ludington-Hoe, S.M., Anderson, G.C., Rey, H., Argote, L.A., & Hosseini, B. (1992). Transitional physiology and state behavior of Colombian preterm infants in skin-to-skin (Kangaroo) care and open-air cribs beginning in the delivery room. Infant Behavior and Development, 15 (Special ICIS issue), 537.

Ludington, S.M., Thompson, C.A., & Swinth, J. (1992). Efficacy of kangaroo care with preterm infants in open air cribs. <u>Neonatal Network</u>, <u>11</u>(6), 101.

Ludington-Hoe, S.M., Dorsey, S.G. (1998). Meta-analysis of Kangaroo Care Effects. J. Investigative Medicine.46 (1): p. 175A.

Ludington-Hoe S, Swinth J. 1994. Abnormal breathing reduction in preterm infants during skin-to-skin contact. <u>Infant Behavior and Development</u>, Special Issue, vol. 17, p. 792.

Ludington-Hoe S, Swinth J, Nguyen N. 1994. Maternal stress reduction with skin contact with premature infants. <u>Infant Behavior and Development</u>, <u>17</u> (special issue), p. 793.

Martinez, LYR. 2000. KM program in the civil hospital of Guadlajara. Presentation at 3rd Internt KMC Congress, Jakarta, Indonesai, 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. **Infections, cost.**

Modi, N. & Glover, V. Non-pharmacological redution of hypercortisolemia in preterm infants. <u>Infant Behavior and Development, vol. 21</u>, April 1998, Special ICIS issue, pg. 86.

Mowder A, Dombrowski BA, Chiu S-H, Anderson, GC. 2001. Development of premature infants receiving KC in a randomized controlled trial. Presented at Midwest Nursing Research Society Annual Meeting, Cleveland, OH, March 2-5, 2001. Conducted Bayley at 18 months corrected age on 50 infants. **RCT**

Narayana I, Bambroo A. 2000. Alternate methods of feeding LBW infants during the transition to BF. Presentation at $3^{\rm rd}$ Intntl KMC Congress, Jakarta, Indonesia, March22-25, 2000. This is a comparison of the paladai to cup and bottle feed, and only a reference is made to KMC, saying paladai can be used with KMC.

Numprasert, W. 1996. Kangaroo care for LBW infants and the bonding and

adaptation roles of mothers. Masters Thesis abstract. First 40 moms assigned to KC in first two days postpartum; second 40 moms got routine care. Infant bonding and maternal role adaptation higher in KC group. Bonding, Maternal Role Adapt.

Punthmatharith B, Anderson GC. (2001) Randomized controlled trial of early Kangaroo care: Effects on maternal feelings, maternal-infant 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 adlib. On day 2 postbirth, no sig diff in MIBQ, IBS, H&Hlactation Scale; but Bonding Observation Check List was sig between groups.041. One month postbirth KC had high Attention and Connection to Infant (a subscale of Mat-Inf Bonding Questionnaire). No sig diff in BF succeses. KC might have weak effect on Mat-Inf Bonding.**Fullterm RCT BF**

Rate AB. 2000. Parents' experiences of providing KC to their preterm infants. Presentation at 3rd INTNL KMC Congress, Jakarta, Indoenesia 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**

Rey, et al. (1995). Transitorio Difficultad Respiro abstract.

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.<u>Ped Res 43</u>(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-skincare 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.**

Roller, C.(1999). Early and Very Early Kangaroo Care: Maternal Reflections One Week Following Infant Discharge Home. 23 Annual Midwest Nursing Research Society Conference., 4/11/99, p. 82.

Rozin A, Weller A, Charpak N, Ruiz JG, de Calulme Z., Charpak Y, Sack J. (1995). Maturation of the pituitary-thyroid axis and the adrenal in low birthw eight infants (LBWI) raised by the "Kangaroo" method. <u>Ped. Res, 37(4)</u>, Part 2, 235A. 144 LBWI randomnly assigned to KC or standard incubator care. Thyroxine, TSH, and other blood levels taken at randomization, 14 days later, and term. No sig diff between groups: hormonal maturation of LBWI reared out of incubators is not compromised.**METBOLIC OUTCOMES**.

Ruiz JG, Figueroa Z, Charpak N. 2000. Information technology as a tool for monitoring quality of health care in a development country: the KMC program experience. Presentation at 3rd Interntl KMC Congress. Jakarta, Indonesia, Nov. 22-25, 2000. They developed an electronic med record for KMC follow-up.

Serenius E, Lindberg I, & Stuge E. (1999). Early Kangaroo Care in sick very premature infants. <u>Ped Res, 45</u>(4), 224A, Part 2. Same as Tornhage et al., 1999 study.

Shiao S. 1998. Nursing care for low birthweight infants: Kangaroo Care. Paper presented at the Health Promotion for Thai Children Conference, Bangkok, Thailand. KC has been in Thailand since 1994. 34 infants given KC at 7 days age (about 34 wks) and no hypothermia, no apnea, earlier discharge. Grwth & Dev. WNL.Developmental outcomes. Randomization unknown.

Shiau, S-H Hwang, Anderson G.C. 2000. Randomized controlled trial of kangaroo care with fullterm infants: Effects on maternal anxiety, breastmilk maturation, breast engorgement, and breastfeeding status. Presented at 12th Biennial International Congress of Infant Studies, Brighton, England, July 2000. **FULLTERM, BF,**

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 $12^{\rm th}$ 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**

Shiau, S-H Hwang, Anderson, GC. 1997. Randomized controlled trial of kangaroo care with fullterm infants: Effects on maternal anxiety, breastmilk maturation, breast engorgement, and breastfeeding status. International Breastfeeding Conference, Sydney, Australia, Oct. 23-25, 1997. KC moms of fullterms had less state anxiety, less breast engorgement, better BF status. NO diff in milk maturation.Fuillterm, BF, RCT.

Smith, S. 2000. Physiologic responses of intubated very-low-birth-weight infants during skin-to-skin care (Kangaroo Care). <u>American Journal of Critical</u> Care 9(3): 210-211.

Swinth JY, 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 another3.5 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**

Swinth, J.Y. & Ludington-Hoe, S.M. 1998. Kangaroo Mother Care during Phototherapy: Effect on Bilirubin Profile. <u>Infant Behavior and Development</u>, vol. 21 Special ICIS issue, April 1998, p. 708.

Syfrett, E.B., Anderson, G.C., Behnke, M., & Neu, J. (1993). Early and virtually continuous kangaroo care for lower-risk preterm infants: Effect on temperature, breastfeeding, supplmentation, and weight. <u>Proceedings of the</u> <u>Biennial Conference of the Council of Nurse Researchers</u>, Washington, D.C.: American Nurses Association, November 1993.

Syfrett, E.B., Anderson, G.C., Behnke, M. & Neu, J.(1993) Kangaroo care for 34-38 week infants beginning in the delivery room: Four infants and what we learned. <u>Proceedings of the 8th Annual Nursing Conference in</u> <u>Neonatology.Kangaroo Care: Changing Times and Emerging Trends.</u> Boston, MA: Brigham and Women's Hospital, June 13, 1993.

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.

Tessier R., Cristo M, Velez S., deC, Zita Figueroa, Charpak Y, Ruiz-Pelaez JG, Charpak N. (1998). Kangaroo mother care (KMC): A method of protecting high risk premature infants against development delay. Pediatric Research 43 (4), Supplement 2 April, 1998. Abstract # 1347. pg. 230. KMC and mental and physical growth at 6 & 12 months. N=553 (280 in KC once adapted to extrauterine life and able to breastfeed and gets kangaroo nutrition. Carried in KC at home; 273 in traditional care in incubator, no KC) infants <2001 grams. Results #1: KMC infants had more stimulating environment being carried in KMC. #2: KMC have higher IQ than TC.RCT, development

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): 390-391.

Whitelaw, A., Sleath, K., & Acolet, D. (1988). Safety and effectiveness ofskin-to-skin contact for very low birth weight infants. <u>Pediatric</u> <u>Research, 24</u>, 269. 35 kc, 36 swaddled infants <1500gr given kc in hosp. KC babes cried less and moms lactated 4 wks longer. Skin temp well maintained if head cap and blanket used.

Wilkerson SA, & Crout L.(1998) Kangaroo care with very premature infants. Midwest Nursing Research Society, 22nd Annual Research Conference, April 1998, p. A218. Infants were able to tolerate KC even with intubation and Ivs. All rested for longer periods of time after KC.

All abstracts from the 2^{nd} WHO KC Network meeting in Bogota, Nov. 1998 are now available on the Kangaroo care website at Javeriana listed under websites on this bib at the end.

TEXTBOOKS SPEAKING TO KC:

Fanaroff and Martin, 1992. "Chapter 26: Physical environment" in $5^{\rm th}$ Edition, Neonatal-Perinatal Medicine. Vol. 1: St. Louis: Mostby. On page 408 under how to keep the baby warm in the delivery room, it states " If the mother desires skin-to-skin contact with her infant, they should be swaddled together under a warm blanket."

Fanaroff and Martin, (1997). 6th Edition, Neonatal-Perinatal Medicine. Vol. 1. St. Louis: Mosby, Two chapters, chapter 28 by P.H. Perlstein entitled The Physical Environment refers to KC on 488 for temperature regulation of infant, and in chapter 31, Care of Mother, Father, and Infant by M.H. Klaus and J. H. Kennel, refers to KC on page 556 and on 557 as an intervention to enhance bonding.

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.

Kenner, C, & McGrath, J.M. (2004). Developmental Care of Newborns and Infants. A guide for health professionals. N.Y.: Elsevier. In chapter 14 (Tactile interventions) and Chapter 15 (Caregiving and the environment)you'll find KC. KC is considered an individualized developmental family centered care intervention.

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.

Verklan 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 performskin-to-skin contact with their diaper-clad 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,

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, 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.

VIDEOS/SLIDE PRESENTATIONS VIDEOS

Armstrong, H., & Kamau, M. (1986). Feeding low birthweight babies. Coproduced by IBFAN and UNICEF (ESARO). Videotape available from Tony Tirado, UNICEF, Division of Information, RTFSH9-F, 3 UN Plaza, N.Y., NY 10017

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.

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 Afric a or by email at <u>bergman@xsinet.co.za</u> 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 positive review of this film. 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

INJOY VIDEOS. 1999. Breastfeeding and Kangaroo Care for your NICU Baby. Order #BP501. Made in 1999, Cost is \$129.95. Lasts 8 minutes. InJoy Videos, 1435 Yarmouth, Suite 102-C, Boulder, CO 80304. 303-447-2082 or 800-326-2082.

Kangaroo Foundation (Funacion Canguro). "Piel a Piel en la intimidad" (U.S. \$20.00 24 minutes). Available in NTSC and PAL-SECAN, English, French and Spanish. Calle 56 No. 40-02, Bloque A13, Apto 416, Edificios azules, Pablo VI, Santafe de Bogota, Colombia, S.A., 1995.

Morton, J.A. 2003. A Premie Needs His Mother. Available from Videotransform, Palo Alto, CA whose website is <u>www.breastmilksolutions.com</u>. Cost is \$125.00 and you can email the author, a Clinical Professor of Pediatrics, School of Medicine, Stanford University at <u>jamorton@vermotel.net</u>. 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.

Rice, Ruth D. 1998. Kangaroo Care. Available from Ruth D. Rice, Ph.D., 6455 Meadow Rd., Dallas, TX 75230, (214) 363-7244.

Rosenberg, Susan (1995). Kangaroo Care: A Parent's Touch. Available from Susan Rosenberg, 333 E. Superior Street, Room 484, Chicago, Ill. 60611 (312) 908-7398. (18 min). \$65.00 Fax: 312-926-8081.

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.

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 offerred. 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.

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.

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.

Cleary et al. (1997). Protocol from Thomas Jefferson University Hospital in Philadelphia, PA. Mechanically Ventilated.

Drosten-Brooks. F. 1993 in <u>MCN</u> on page 253 has elements of a protocol with any infant, not just those ventilated.

Evanston 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.

Gale, G., & VandenBerg, M.A. (1998). Kangaroo Care. <u>Neonatal Network, 17</u> (5): 69-71. Lists a protocol for KC with preterm infants.

Ludington-Hoe, S.M., et al., 1994, Neonatal Network article. See under first section of the bibliography.

Ludington-Hoe, S.M., Ferreira C, Swinth, J., & Ceccardi, J. (2003) Safe criteria and procedure for kangaroo care with intubated preterm infants. <u>JOGNN</u> 32 #5. See under first section. Mechanically Ventilated.

Martin Luther Hospital-Anaheim, Ca. Neonatal Intensive Care Kangaroo Care Policy # NIC302.9 (3 pages) Neonatal Intensive Care Unit, Martin Luther Hospital-Anaheim, 1830 W. Romney Dr., Anaheim, CA 92801-1854.

Nyqvist,KH 2004. How can Kangaroo mother care and high technology care be compatible? J Human Lactation, 20 (1), 72-75. Includes the policy in use at Children's Hospital in Uppsala, Sweden.

The JOHNS HOPKINS HOSPITAL protocol can be obtained from Dr. Ludington, as can the Univ.of Maryland Medical System protocol.

Page, J. 1995. Kangaroo care; Enhancing infant and parent well-being in the NICU. <u>The Perinatal Newsletter, 12</u>(1), Jan/Mar 1995. Has protocol with preterm infants that uses standing transfer method.

Saginaw General Hospital. Clinical Practice Guidelines for Kangaroo Care. Saginaw General Hospital 1447 N. Harrison St., Saginaw MI 48602

St. Agnes Medical Center, Protocol for Kangaroo Care. Write to Ms. Sheri Fogarty, Neonatal Intensive Care Unit Nurse Educator, St. Agnes Medical Center, 900 Caton Ave., Baltimore, MD 21229 (410) 368-2630.

St. Joseph's Hospital, PO Box 4227, Tampa, FLA 33677-4227 has "Protocol: Kangaroo Care" with assessment, reportable conditions, safety, care, consult, patient instruction and documentation guidelines included.

St. Mary's Hospital Med Ctr., Infant ICU,707 S. Mills St. Madison, Wisconsin 53715-0450. Includes list of inclusion and exclusion criteria.

St. Mary's Hospital, 901 45^{th} 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. Tamiani Terrace, Sarasota, FL 34239-3555

York Health System. Kangaroo Care Policy and Procedure. York Health System. 1001 S. George Street, York, PA 17405, (717) 851-2199.

PAMPHLETS

Breitbach, K. (1993, 2004) What is Kangaroo Care? University of Iowa Hospitals and Clinics pamphlet. Content is History of KC, Benefits of KC (a list), When can Baby start KC? How to Get Started. Available from www.vh.org/pediatric/patient/pediatrics/kanga/

Hoover, Kay. Post birth care impacts breastfeeding. Has lovely pictures of how to implement Kangaroo Care. Compiled by Kay Hoover, Med. IBCLC, Philadelphia Dept. of Public Health, Office of Maternal and Child Health, 500 So. Broad Street, 2nd Floor, Philadelphia, PA 19146 (215) 685-6825.

Promina Cobb Hospital Special Care Nursery, 3950 Austell Road, Austell, GA 30001. (404) 732-4414 Fa: (404) 732-4421. Ms. Pat Beckett, RNC, Dept. Manager of Special Care Nursery.

Larimer, Krisanne 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.

Martin Luther Hospital-Anaheim.Patient Information Sheet (in English and in Spanish)Neonatal Intensive Care Unit, 1830 W. Romney Dr., Anaheim, CA 92801-1854.

Robles, M. (2004) Kangaroo Care: A Pocket Guide to KC. Available from www.unmanitoba.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. Policy/Pamphlet.

Related Articles

Abrams R, Caton D, Calpp J, Barron D. Thermal and metabolic features of life in utero. 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. No citation available but the article is.

Ali Z, & Lowry M. 1981. Early maternal child contact: Effects on later behavior. <u>Dev. Med Child Neuro 23</u>, 337-345. Not a KC article, but good content on early contact's influence on later development.

Craig AD, Chen K, Bandy D, Reiman EM. 2000. Thermosensory activation of insular cortex. <u>Nature Neuroscience 3</u>, 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.

Kennell, JH, Jerauld R, Wolfe H, Chesler D, Kreger NC, McAlpine 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 Pospartum 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, Jarvella R, Navojorsky BJ, Klaus MH 1975, Mother-to-child speech at 2 years - effects of early postnatal contact. <u>Behavioral Pediatrics 86</u>, 141-144). FullTerm, RCT, Maternal Behav RCT

Liu D., Diorio J, Day JC, Francis DD, Meaney M. (2000). Maternal care, hippocampal synaptogenesis and cognitive development in rats. <u>Nature</u> <u>Neuroscience, 3</u>(8): 799-806. A direct relationship between maternal behavior and hippocampal devel is present: rat pups who had hi levels of licking, grooming and nursing showed increased expression of NMDA receptor subunit and brainderived neurotrophic fact BDNF mRNA, increased cholinergic innervation of the hippocampus and enhanced spatial learning and memory.

Olausson H, Lamarre Y., Backlund H, Morin C, Walllin BG, Starch G, Ekholm S, Strigo I, Worsley K, Vallbo AB, Bushnell MC. 2002. Unmyelinated tactile afferents signal touch and project to insular cortex. <u>Nature Neuroscience 5</u> (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. Thesefibers 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.

Meier, P. (1988). Bottle and breastfeeding: Effects on transcutaneous oxygen pressure and temperature in preterm infants. <u>Nursing Research</u>, <u>37(1)</u>, 36-41.

Meier, P. & Anderson, G. (1987). Responses of small preterm infants to bottle and breastfeeding. <u>Maternal and</u> <u>Child Nursing, 12</u>, 97-104.

Meier, P., Engstrom, L.L., Mangurten, H.H., Estrada, E., Zimmerman, B., & Kopparthi, R. (1993). A model to provide breastfeeding support services in the NICU. Journal of Obstetric, Gynecologic, and Neonatal Nursing, 22, 338-347.

Co-sleeping/Co-bedding

_____, 1995. A sister's helping hand. Reader's Digest, condensed from Sheehan, N, Worcester Telegram and Gazette Nov. 18, 1995.

_____. 1997. Cosleeping (bedsharing) among infants and toddlers. J Devel Behav Pediatr 18 (6), 408-412.

American Academy of Pediatrics, Task Force on Infant Positioning and SIDS. 1997. Does bed sharing affect the risk of SIDS? <u>Pediatr 100</u> (2), 272.

Byers JF, Yovaish W, Lowman LB, Francis JD. 2003. Co-bedding versus single bedding premature multiple-gestation infants in incubators. J. Obstetric, Gynecologic & Neonatal Nursing, 32 (3), 340-347. Physiologic stability and behavioral effects of cobedding: RCT (16 CB; 21 controls), Sig diff in daily wgt, feeding amount, high activity HR. No diff in parent state anxiety, mat attachment, parental satisfaction, infant sleep-wake synchronicity, stress cues. Demonstrates SAFETY of CB, but no clinical improvement in infant or parent outcomes. Recommends that co-bedding be used. **RCT, safety, physiology, sleep wake states between infants**.

Epstein R, Here P, Tzischinsky O, Lavie P. 1997. Changing from communcal to familial sleep arrangement in the Kibbutz: effects on sleep quality. <u>Sleep 20</u> (5), 334-339.

Hanks CC, Rebelsky FB. 1977. Mommy and the midnight visitor: A study of occasional cosleeping. <u>Psychiatry 40</u>, 277-280. Kaplan SL, Poznanski E. 1974. Child psychiatric patients who share abed with a parent. J Am Acad Child Psychiatr 2, 344-356.

Lozoff B, Wolf AW, Davis NS. 1984. Cosleeping in urban families with young children in the United States. <u>Pediatr 74</u>, 171-182.

Lutes L. 1996. Bedding twins/multiples together. Neonatal Network, 15 (7), 61-62.

Lutes LM, Altimier LB. 1999. Co-bedding multiple premature infants. J. Investigative Med 47 (2), 168A..

McKenna JJ. 1993. Cosleeping. In Carskadon MA (Ed). <u>Encyclopedia of sleep and dreaming</u>. NY, NY: Macmillan, pp. 145-148.

McKenna JJ.**YEAR?** SIDS in cross cultural perspective: Is infant-parent co-sleeping protective? <u>Med</u> <u>Anthrop 10</u>, 9-53.

McKenna JJ. 2003. Mother-infant co-sleeping with breastfeeding: adaptive behaviors worth fighting for. <u>Breastfeeding Abstracts 23</u> (1), 3-5.

McKenna J, Mosko S. 1994. Sleep and arousal, synchrony and independence among mothers and infants sleeping apart and together (same bed): An experiment in evolutionary medicine. <u>Acta Paediatr Scand Suppl 397</u>, 94-102.

McKenna, J., Thomas, E., Anders, T., Sadeh, A., Schnectman, V. & Glotzbach, S. (1993). Infant-parent cosleeping in an evolutionary perspective: Implications for understanding infant sleep development and the sudden infant death syndrome. <u>Sleep, 16</u>, 263-282.

McKenna J, Mosko S, Richard C et al., 1994. Mutual behavioraland physiological influences among solitary and cosleeping mother-infant pairs; Implications for SIDS. <u>Early Hum Dev 38</u>, 182-201.

McKenna, J.J., Mosko, S.S., & Richard, C.A. (1997). Bedsharing promotes breastfeeding. <u>Pediatrics</u>, <u>100</u>(2): 214-219.

McKenna J, Mosko S, Richard C. (1999). Breast feeding and mother-infant cosleeping in relation to SIDS prevention. In Trevathan W, Smith N, McKenna J. (Eds.). <u>Evolutionary Medicine</u>. NY, Ny: Oxford Univ Press, 53-74.

Mosko S, Richard C, McKenna J. 1995. Infant sleep and arousals during bedsharing. Ped Pulmonol 20, 340.

Mosko S, Richard C, McKenna J, Drummond S. 1997. Infant arousals in the bed-sharing environment: Implications for infant sleep development and SIDS. <u>Pediatr 100</u>, 841-849.

Mosko S, Richard C, McKenna J. 1996. Infant sleep architecture during bedsharing and possible implications for SIDS. <u>Sleep 19</u>, 677-684.

Mosko S, Richard C, McKenna J. 1997. Maternal sleep and arousals during bedsharing with infants. <u>Sleep, 20</u> (2), 142-150.

Nyqvist KH, Lutes LM (1998). Co-bedding twins: A developmentally supportive care strategy. J Obstetric, Gynecologic Neonatal Nursing, 27, 450-456.

Richard CA, Mosko SS. 2004. Mother-infant bedsharing is associated with an increase in infant heart rate. Sleep. 27(3), 507-511. 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**

Schacter FF, Fuchs ML, Bijur PE, Stone RK. 1989. Cosleeping and sleep problems in Hispanic-American urban young children. <u>Pediatrics 84</u>, 522-530.

Swinth JS, Nelson LE, Hadeed A, Anderson GC. 2000. Shared kangaroo care for triplets. <u>MCN, Am J</u> <u>Maternal Child Nursing, 25</u> (4), 214-216. Speaks to co-bedding on page 216 and states that KC is the ultimate cobedding. **Case study.**

Touch SM, Epstein ML, Pohl CA, Greenspan JS. 2002. The impact of co-bedding on sleep patterns in preterm twins. <u>Clinical Pediatrics (Phila), 41</u>(6), 425-431. 12 hrs preCB and 12 hrs of CB cardiorespiratory 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,B,PB, temp, oxygen requirements.**

Willinger M, Ko C-W, Hoffman HJ, Kessler RC, Corwin MJ. 2003. Trends in infant bed sharing in the United States, 1993-2000. Arch Pediatr Adolesc Med 157 (1), 43-49.

REFERENCE TO KANGAROO CARE

, 1995. Appropriate technologies can help make motherhood safer. <u>Safe Mother, 18</u>, 4-8. Review of available technologies and KC is one that is identified as keeping the infant warm against the mother's skin and is recommended. **Review. Temperature.**

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? <u>Biol Neonate, 77, 69-82</u>. 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.

Anderson, G.C. (1975). A preliminary report: Severe respiratory distress in transitional newborn lambs with recovery following nonnutritive sucking. Journal Nurse Midwifery, Summer p. 20-28.

Anderson, G.C. (1977). The mother and her newborn: Mutual caregivers. Journal of Obstetric, Gynecologic, and Neonatal Nursing, Sept/Oct., 50-57.

Aucott S., Donohue PK, Atkins E., Allen MC. 2002. Neurodevelopmental care in the NICU. <u>Mental Retardation and Developmental Disabilities Research Reviews,</u> 8(4), 298-308. On page 304 are 1.33 columns of KC, mostly citing the Conde-Agudelo 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-Agudelo 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. <u>Neonatal Network 22</u> (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, andfor 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

De Chateau. 1979. Effects of Hospital Practices on synchrony in the development of the infant-parent relationship. <u>Seminars in Perinatology</u>, 3(1), 45-60.

Drummond T. 1998. Touch early and often. <u>Time July 27, 1998</u>, p. 54-55. Speaks to Dr. Tiffany Fields work with massaging preterm infants and their improvement in weight gain.

Epstein, R., Herer, P, Tzischinsky, O., & Lavie, P. (1997). Changing from communal to familial sleep arrangement in the Kibbutz Effects on sleep quality. <u>Sleep</u>, 20(5): 334-339. Better quality sleep when they change from communal sleep to sleeping with families.Communal sleep group slept worse than children examined during Golf War. Improvement in sleep quality is due to children's increased sense of security when sleeping with their families.

Feldman R, Eidelman AI. (1998). Intervention programs for premature infants. How do they affect development? <u>Clinics in Perinatology</u>, 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.

Field, T.F. (1990) Alleviating stress in newborn infants in intensive care unit. <u>Clinics in Perinatology</u>, <u>17(1)</u>, 1-9.

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. Chwo 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 recive KC. In one survey of 537 NICUs in the United States (Engler et al., 2002), 82% of the NICUs were practicing KC. Enlger 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.

Gorski, P., Huntington, L., & Lewkowicz, D. (1990). Handling preterm infants in hospitals. Clinics in Perinatology, 17(1), 103-112.

Harrison, L. (1997). Research utilization: Handling preterm infants in the NICU. <u>Neonatal Network</u>, <u>16</u>(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

Harrison L, Woods S. (1991). Early parental touch and preterm infants. JOGNN, 20, 299-306/

Hill ST, Shronk LK. 1979. The effect of early parent-infant contact on newborn body temperature. JOGN Nursing Sept/Oct. 1979, 287-290. This was study comparing 50 dried, wrapped infants in parental arms to 50 dried, wrapped infant under radiant warmer just after birth. No differences in temperatures.

Kattwinkel, J., Brooks, J., Keenan, M.E., & Malloy, M. (1997). Task force on infant positioning and SIDS: Does bed sharing affect the risk of SIDS? Pediatrics, 100(2): 272.

Kenner C, Lott J.W. 2003. <u>Comprehensive Neonatal Nursing: A Physiologic</u> <u>Perspective. 3rd Ed.</u> Philadelphia: W.B. Saunders Co. KC was also discussed in the 1998 2nd edition. Has pictures and protocol of KC. Look pg. 260, chapter 17 (Newborn and Infant Neurobehavioral Development chapter by Diane Holditch-Davis, S.T. Blackburn, and K. Vandenberg). It is also in Chapter 49, pg. 959-960 on Assessment and Management of Neonatal Neurobehavioral Development.

Kovach, A.C. (2002)A 5-year follow-up of hospital breastfeeding policies in the Philadelphia area: A comparison with the ten-steps. J Human Lactation, 18(2), 144-153. On page 145 they list a question in their survey of 35 Philadelphia hospitals, "Are babies' 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**

McCain G. 2003. Evidence based practice for neonatal nursing. <u>Neonatal</u> <u>Network 22</u> (6), 5-6. On page 5 she states "early Skin-to-skin contact beween 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-lowbirth-weight infants. J.Obstet Gynecol Neonatal Nursing 33 (2), 164-174. On page 166: "Evidency 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.**

Mellien, A.C. (2001). Incubators versus mothers' arms: body temperature conservation in very-low-birth-weight premature infants. JOGNN, 30(2), 157-164. Has a big review of KC literature, but this is a study of clothed mothers holding swaddled infants close. Axillary temps did not differ between incubator and holding in VLBW infants.VLBW, SWADDLED HOLDING./

Moore J, & Mcermott, J. 2004. "Body Temperature". In Every Newborn's Health: Recommendations for Care for All Newborns. Washington, DC: Save the Children. Set of guidelines for fullterm newborns. States that KC is best for warming and rewarming and for BF. **FULL TERM, recommends KC**>

Mosko, S.S., Richard, C., & McKenna, J. (1997). Maternal sleep and arousal during bedsharing with infants. Sleep, 20(2): 142-150.

Murdoch, D.R., & Darlow, B.A. (1984). Handling during neonatal intensive care. Archives of Diseases in Childhood, 59, 957-961.

Perlman, JM. 2003. The genesis of cognitive and behavioral deficits in premature graduates of intensive care. <u>Minerva Pediatrics 55</u> (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**

Schanler, RJ. (1995). Suitability of Human Milk for LBW Infants. <u>Clinics</u> <u>in Perinatology, 22</u>(1): 207-222. A nursery policy that advocates early skinto-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 her breastmilk".

Stevens BJ, Franck LS. 2001. Assessment and Management of Pain in Neonates. <u>Pediatric Drugs 3</u>(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 maternalinfant 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."

Stevens BJ, Yamada J, Ohlsson A. 2001. Sucrose for analgesia in newborn infants undergoing painful procedures. <u>Cochrane Databae Systematic Reviews</u>, <u>#4,CD001069</u>. "The use of repeated administrations of sucrose in neonates needs to be investigated as does the use of sucrose incombination with other behavioural (facilitated tucking, kangaroo care) and pharmacologic (morphine, fentanyl) interventions."

Weller A, Feldman R. 2003. Emotion regulation and touch in infants: the
role of cholescystokinin and opioids. <u>Peptides, 24</u> (5), 779-788. 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 reduces state level. KC is mentioned as it helps infants self-regulate and moderate effects of some risk factors. Thus, KC is probably quieting due to opioid secretion.

Whitby C., de Cates, C.R., Roberton, NRC (1982). Infants weighing 1.8-2.5 kg: Should they be cared for in neonatal units or postnatal wards? <u>The Lancet</u>, <u>1</u> (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.

Forsyth TJ, Maney LA, Ramirez A, Raviotta G, Burts JL, Litzenberger D..1998. Nursing case management in the NICU: Enhanced coordination for discharge planning. <u>Neonatal Network, 17(7): 23-34</u>. The clinical pathway on page 26 has a drawing of KC and lists KC as the first treatment to give the infants.

Weller A, Feldman, R. 2003. <u>Emotion regulation and touch in infants: the</u> 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.

Wingert P, & Noonan D. 2000. New hope for Preemies. <u>Newsweek Special</u> <u>Issue, Fall/Winter 2000,</u> p. 51-52. Has two pixs of KC.

Hackman, PS. 2000. Recognizing and Understanding the Cold-Stressed Term Infant. <u>Mother-Baby Journal, 5(4)</u>, 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."

Lay Publications

. 1998. Kangaroo Care: Research on improving the health of preterm infants. The Pulse; Univ. of Maryland School of Nursing, 11(2), Fall, 1998, p. 8.

. (1998). Infant Care. <u>Redbook</u>, Oct. 1998 issue. Refers to the University of Maryland as a resource site for Kangaroo Care information. The article has a few paragraphs of KC information.

-----. (1997) Bare hugs: Skin-to-skin snuggling aids preemies. <u>Prevention Magazine</u>, 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 held swaddled infants. Better VS and higher 02 and more stable milk supply were in the KC group. Citation not provided.

. (1999). Technology and Tenderness: The Secret of Kangaroo Care. Vital Signs. Vol. 12 (1): p.4. Newsletter of Anne Arundel Medical Center, Anne Arundel, M.D. Mar/<u>April/May 1999.</u> Pg. 4

Anner, J. (1994). Kangaroo care: A father's story of caring for his premature daughter. <u>Childbirth Instructor Magazine</u>, Spring 1994, pg. 12-17. He reports that to him "Kangaroo Care was the greatest thing that could have happened."

Arcieri K. (2002). Kangaroo Care gives preterm infants a comforting

jumpstart. <u>Ooh Baby!</u> Spring 2002, p. 18-19. Quotes Dr. Ludington's book and gives good input for parents to think about KC in advance of preterm birth.

Bassi J. 1995. Award-winning kangaroo care: Skin-to-skin contact creates gentle communication <u>Mount Sinai Medical Center and Miami Herald Medical</u> <u>Reports.</u> January 1995. Reports on Dr. Patricia Messmer's study of physiologic stability in kangaroo care preterms.

Cary, Annette. 2000. Kangaroo Care Plan Hopping at Kadlec. <u>Tri-City</u> Herald, vol. 98 #3, Monday, Jan. 3, 2000.Page 1.

Di Caelers. 1999. Kangaroo Care Saves Little Lives. <u>The Argus</u>, April 6th, 1999. Lay report of KC practice at Groote Schuur Hospital in Cape Town, South Africa.

Doster, K. 1999. Kangaroo Care. <u>Circulating News, March 1999.</u> In-house newsletter for Mercy Medical Center in Baltimore, MD. P. 3

Fantin L. 1997. Midwives told kangaroo care for humans too: Professor describes the benefits of cuddling premature infants. <u>The Salt Lake Tribune</u>, Sunday March 9, 1997. Reports on Dr. Ludington's presentation about Kangaroo Care.

Fischman, J. (1999). Taking a Cue from Kangaroos. <u>US News & World Report</u>. June 7, 1999, pg.66 This is an easy to read, one page report of KC in USA.

Funderburg, L. 2000. Saving Jason. <u>LIFE. Collector's Edition</u>, 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.

Gonzalez, E.M. (1988). For premature babies: Kangaroo mothers! <u>Arab</u> News. Saturday, June 25,1988.

Koontz, K. (1998). Hold me tight. <u>Fit Pregnancy</u>, Spring 1998, p. 33-34. This is general review of KC for preterms and cites Dr. Ludington's work.

Mettler, L. 2001. Kangaroo Care. Help for Preterm Infants and Hope for their Parents. <u>Baby Years, Sept. 2001</u>. 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

Norton, D. (1995). Kangaroo love for preemie babies. <u>Living and Loving</u>, September 1995. 133-135.

Rosenthal, E. (1992). Kangaroo's pouch inspires care for premature babies. The New York Times, June 10, 1992, p.H1.

Siegel-Itzkovich, J. (2000). For tiny prematures, a pouch is home sweet home. The Jerusalem Post, Sunday, July16, 200, Health Section, page 17.

Sims, C.I. (1988). Kangaroo care. Mothering, 49, 64-69.

Smyth, A. (1992). Kangaroos know that cuddles work best. <u>The Independent</u>. Tuesday, August 18, 1992, pg. 11.

Soukhanov, a.H. (1992). Word Watch. <u>Atlantic Monthly</u>, (October), p. 127. Reports Kangaroo Care as a noun and kangarooing as a verb to mean holding the premature infant skin-to-skin against a chest.

UCLA Nursing. (1989). Kangaroo care adds human element to neonatal

intensive care. UCLA Nursing, 6(1), 10-11.

Ulrich,L. (1998) Our 15-ounce daughter. <u>McCalls</u>. Oct. 1998, p. 64-78. Article on Micropremie Miracles. Shows picture of KC and talks about how they did it to help their 15 oz. Daughter born at 23 weeks GA. Show baby being same size as cellular phone.

Zero to Three. (1991). Pictures about touch: kangaroo care is one of them. Zero to Three, april 1991, p. 9.

Notable Presentations

de Leon, F. (1992). "The kangaroo care method: Application and use." Presentation at International Well Start, 8/20/92, San Diego. LOOK FOR HIS MANUSCRIPT UNDER MULET et al., 1992.

Bergman, N. 2001. Kangaroo Mother Care: Restoring the Original Paradigm for Infant Care and Breastfeeding. Presentation at La Leche League International Physician's Seminar, July 7, 2001. Chicago, Ill.

Researchers

Gene C. Anderson, R.N., Ph.D., FAAN Professor and Melon Chair Case Western Reserve University School of Nursing Cleveland, OH office: (216)-368-3343 gca@po.cwru.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- 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.

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 insure warmth. Will try to teach KC to them too. pbest@jhsph.edu

Ann Bigelow. July 2002 got approval to study maternal infant interaction in the newborn period, 1 month, 2, a nd 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

Joy Browne, R.N. Ph.D. Children's Hospital of Denver Email: <u>Browne.Joy@tchden.org</u> (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).

Cattaneo, Adriano.

Unit for Health Services Research and International Cooperation Instituto per l'Infanzia, Vil dell'Istria 65/1, 34137 Trieste, Italy Phone; +39 040 3785 236; Fax: +39 040 3785 402, Email: <u>cattaneo@burlo.trieste.it</u>

Chia, Pauline (Summer and Fall 2000- masters student at The University Lodge (Room B101) La Trobe University, Bundoora, 3083, Australia. Studying nurses attitudes toward KC. Home address is 1 Brockhampton Drive, Singapore 559095. Email: chiasioktin@hotmail.com

Gerard Cleary, D.O. Division of Neonatology Abington Memorial Hospital 1200 Old York Rd. Abington, PA 19001-3788 In 1997, conducting a randomized controllled trial of KC with intbuated 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. Ms. Patricia Clifford-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.

Cooper, Sharla, RNC, NNP, MSN. 3247 Woodview Rd. S.W. Roanoke, VA 24018. Email is <u>scooper@runet.edu</u> Home; 540-772-4456 wk: 540-981-7103. Working on Nursing Doctoral dissertation called KC at the breast for preterm infants during **GAVAGE FEEDING:** Effect on infant physiology and maternal lactation. Began work June 1999.

DeMarco, Patrice 79 Beach Rd. Shelburne, VT 05482 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.

Marsha L. Ellett, DNS, RN
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1111 Middle Drive
Indianapolis, IN 46202
317-274-0051 Fax is 317-274-4928 email is <u>mlellett@iupui.edu</u>
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
htstudy at <u>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</u>

more subjects. Teresa Farley, 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. 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: <u>nphanson@hotmail.com</u>. 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. Pamela Green Henderson CNS/NNP Neonatal Intensive Care Unit. Women's College Hospital Toronto, CANADA Email: <u>nprd@ftn.net</u> or phone: 416-323-6400 ext. 4568 Doing research on KC with ventilated infants in Fall, 1998 C. Celeste Johnston 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 Doing research on 15 minutes of Kangaroo Care on infant pain using the Premature Infant Pain Profile, published in PAIN, Nov. 1996. Did 74 infants with KC, Archives of Diseases in Childhood Fetal and Neonatal Edition, 2003 published that KC reduced pain. 2004 now examining KC in another study with an animal model too. Ms. Lisa Klein, R.N.C., MSN. Clinician III, FCC Inova Hospital for Women 3300 Gallows Rd. Falls Church, VA 22042-3300 703-264-8943 Home: 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.

Juhyun Lee 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.

Susan M. Ludington, 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: sml15@po.cwru.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.

Patricia Messmer, R.N.C, Ph.D. Director of Nursing Research at Mount Sinai Medical Center Miami, Florida. Published her study on behavioral state and cardiovascular stability.

Elizabeth Moore, R.N, M.S. (in doctoral program in 1998-1999). 161 Clifftop Drive Hendersonville, TN 37075 Phone: 615-824-7054 In August 1998 she submitted an NINR NRSA with Gene Anderson as outside committee member to examine the effects of KC with **FULLTERM** infants beginning immediately at birth and continuing for two hours on breastfeeding performance.

Lucila Mora, R.N., BSN, 1421 Clement Street San Francisco, CA. 94118 (415) 750-1463 email: <u>lmora@itsa.ucsf.edu</u> Doing some sort of Kangaroo Care research as part of her ms degree at UCSF.

Madalynn Neu, RN, Ph.D., / April 2002 received K award to study 3 seession 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. Ottawa, ONTARIO Canada K1H 8L6 Page: 613-737-8039 613-737-8943 Franche: 613-737-8651 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. Vicki Pearce. 200 Joe Westbury Mews Dr. Summerville, So. Carolina 29485 (843), 871-3680. Doing a study to determine if NICU babies who get KC stay less long than those do not get KC. Starting in Feb. 2000. Hadi Pratomo, 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. Dr. Gherardo Rapisardi - does work in Italy with Dr. Pignotti. Can be reached at gherapi@dada.it Kathryn Roberts, 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 email: kay.roberts@ntu.edu.au Fax: (089) 46-6595 Studying maternal and infant outcomes of KC. Published in Neonatal Network, June 2000, vol. 19 #4, 31-35. 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. 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. Schmidt, Catherine (And Ortman, Bethany). 20 Ashbury Court, Dahlonega, GA 30533

email: <u>clschm1353@ngcsu.edu</u>. 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 Physial Therapy. Abstract appears in A.J. Physical Therapy, 2000.

Schram, Bobbi. 389 N. Amherst Ave., Des Plains, Il 60016. Email: <u>Bschram65@aol.com</u>. Studying the relationship between KC and breastmilk production inlactating mothers of 26-30 weeks gestation." Started work in Sept. 1999.

Shandler, Richard, Nancy Hurst and Chantelle Lau. Have just in 1998 completed an NIH trial of effect of skin-to-skin contact on maternal milk production. See Hurst publication in 1997. Working at Texas Children's Hospital, Fax for Ms. Nancy Hurst: 713-770-3633.

Shiau, SH. Randomized controlled trial of Kangaroo care with **FULLTERM** infants. Effects on maternal anxiety, breastmilk maturation, breast engorgement, and

breastfeeding status.

Sandra Smith, University of Utah. email: <u>SLeeSmith@msn.com</u>. 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.

Amy Wallig 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: 302-733-4387 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: Sa02,HR, RR, temp, resistance, compliance, pC02, p02. Length of KMC unknown. Study was up and running with 4-5 ventilated preterms at any time in their nursery in Fall 1997.

Terry Zeilinger doing data collection of age, wgt, Fi02 and Sa02 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 Instituet, 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, Apto. 2001, Bogota, Colombia. Telephone: +57 1 221-5572; email: herchar5@colomsat.net.co

Wahlberg, Vivian. Nodiska Halsovardshogskolan, The Nordic School of Public Health, Box. 12133, S-402 42, Goteborg, Sweden

WEBSITES FOR KANGAROO CARE

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.

Krissane Larimer also has another web site, and the document on it is Kangaroo Care Benefits. http://www.prematurity.org/baby/kangaroo.html

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.

KangarooCare@aol.com has some articles by Nils Bergman on it.

Kangaroo.javeriana.edu.co is the major KC Network website and 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.

Kcare@yahoogroups.com has Dr. Ludington's and Dr. Andersons' bibs on it. 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.

Natalie Charpak's email is herchar5@colomsat.net.co

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/newsid 184000/184480.stm

2000 Bergman, Nils. "Charge for the future of KC: A public health imperative." Available at http://kangaroo.javeriana.edu.co/abstract42.htm. This is a report of his presentation at the First International Kangaroo Care Conference held Oct. 23-25, 1998 in Baltimore, MD.

2003 Bergman, Nils. Kangaroo Mother Care website, listing his tour dates, the KMC Shop with videos, postcards, Kangacarrier Shirts for sake, and reference list. Go to www.kangaroomothercare.com

2004

Hospitals with Seasoned, Active Programs of KC

WASHINGTON

Kadlec Medical Center, 333 Swift Ave., Richland WA 99352 RN: Mrs. Joan Swinth MD: Anthony J. Hadeed

PENNSYLVANIA Thomas Jefferson University NICU: (215)-955-8346

MARYLAND Anne Arundel Medical Center

Franklin Square Medical Center RN: Ms. Wood MD: Dr.

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: \
 -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

-Soothies Avilable through Puronyx, 990 Park Center Drive, Suite E., Vista CA 92083. 800-944-4006 or 760-597-1460, Fax: 760-597-1466, www.puronyx.com

Similar to Soothies. Available from www.avent.com or -Avent Naturally. Avent, Suffolk, CO10 7QS, England. CARRYING DEVICES and CHAIRS:

Carrying Devices-

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

Kanguruproducter, is a lovely little pouch for preemies from Scandinavia. Address is 4570 Hjortshog, 260 34 Morarp Country:?? Tellophone: 042/23 50 22 (kvallstid), postgiro: 456 98 80-0

Dr. Nils Bergman has a carrying device that includes a blouse that is available from his website (See under websites, 2000, Nils Bergman).

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

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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 sml15@po.cwru.edu to order.

Snug-a-roo. Quilted carrier for preemies (turn down center flap for KC). Has 2 pages instruction (806) 795-8775.

Chairs-

La Napoule or La Fuma Lounge Chair (it goes by both names). All movement 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 extremelly 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 Hammacher-Schlemmer, item # 67821G in the SKYMALL catalog of United Airlines, cost is \$179.95. call 1-800-sky-mall.

4/11/04 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 306122.

-The Kangaroo Care Chair- comes with 10 year warranty. Looks like regular padded chair. Get it from <u>www.ioahealthcarefurniture.com</u> 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 Transversal 39A No 46-29 Santafe de Bogota, COLOMBIA Tel-fax; 57-1-222-70-45 Tel: 57-1-222-01-30 Home page is http://kangaroo.javeriana.edu.co

The KC mailing list is a forum to seek and exchange informaiton on KMC. To suscribe to the KMC email list, send a message to: majordomo@hermes.javeriana.edu.co with no subject and write in the body of the message: subscribe kangaroo.