



## Executive Summary

# FINANCIAL IMPACT OF KANGAROO CARE

Evidence Based Kangaroo Care Practice Provides a Financial Savings  
Of

***\$88,125 average per premature infant***

**For Every 128 Premature Births, Kangaroo Care Saves Approximately:\***

<u>Shortened Stay</u>	<u>Lower re-admit rate</u>	<u>Fewer NEC cases</u>	<u>Grand Total:</u>	<u>Per Baby</u>
<b>\$8,960,000</b>	<b>\$1,152,000</b>	<b>\$1,168,000</b>	<b>\$11,280,000</b>	<b>\$88,125</b>

*\*In the United States, 12.8% of all babies are born premature each year. Approximately \$10,000 is spent per day for an infant in the NICU. The initial NICU stay for infants who receive Kangaroo Care is a minimum of one week shorter, which was used in this study. An infant that is readmitted after discharge from the NICU; the approximate length of stay is 3 days.*

### **Benefits resulting from Kangaroo Care (KC)**

- Shortened stay for pre-term infants
- Re-admit rate is dramatically reduced
- Helps meet national guidelines for breastfeeding
- Higher rates of breastfeeding & provision of breast milk
- Greater GI health because of enhanced peristalsis through KC & breast milk
- Colic reduced
- Enhanced brain and neurological development
- Better temperature regulation
- Protection from infection
- Heart and respiratory stabilization
- Improved oxygenation
- Improved quality of sleep-complete sleep cycles when in KC
- Better survival rate
- Enhanced attachment and bonding
- Improved parent satisfaction surveys

**The physical and financial impact of Kangaroo Care  
will bring our medical professionals  
to a new standard of excellence!**

*~Sylvia Houston, Founder*

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## FINANCIAL IMPACT OF KANGAROO CARE

*Sylvia Houston*

*“The cost savings of practicing Kangaroo Care is just the tip of the iceberg...*

*The social cost savings is immeasurable.”*

*~ Dr. Barbara Morrison*



## ***KEY TERMS AND DEFINITIONS:***

### ***Breastfeeding (BF):***

Breastfeeding is the feeding of an infant or young child with breast milk directly from a woman's breasts, not from a baby bottle or by other means.

### ***Low Birth Weight Infant (LBWI):***

An infant born weighing less than 5.5 pounds (2500 grams), regardless of gestational age.

### ***Necrotizing Enterocolitis (NEC):***

A medical condition primarily seen in premature infants, where portions of the bowel undergo necrosis (tissue death).

### ***Kangaroo Care (KC), AKA Skin-to-Skin Care (SSC), or Kangaroo Mother Care (KMC):***

At the International Network of Kangaroo Care Providers (INK) meeting last October, there was a long discussion regarding what to call the holding of an infant clothed only in a diaper and held upright bare ventral surface to bare ventral surface on the mother's or another person's chest. In some countries, ***Kangaroo Mother Care (KMC)*** has been defined as ***Skin-to-Skin*** care generally by the mother for 24 hours a day and providing warmth, easy access to food and the appropriate habitat, the consensus of the group was that all holding of an infant upright bare chest to bare chest, full-term or preterm, for any length of time will be called ***KMC***. This is the term known by the WHO and around the world.

In the United States, we practice ***Kangaroo Mother Care*** much more intermittently and for that reason have come to call it ***Kangaroo Care***. For many researchers and practitioners, the term ***Kangaroo Care*** is unknown and therefore ***Skin-to-Skin*** has been used to describe the placing of an infant on the mother's chest immediately after birth and during the postpartum period. If you look at the recommendations from AAP, ACOG, AAFP, Academy of Breastfeeding Medicine, CDC Guidelines for Breastfeeding, ILCA, and the new report card questions from the CDC they all refer to the placing of the bare infant on the mother's bare chest as Skin-to-Skin.

***Kangaroo Care*** (as we know it) or ***Kangaroo Mother Care*** as was decided at the INK meeting and even Skin-to-Skin care as stated by professional and national organizations (and questions #4, 5 & 9 of the Baby-Friendly Hospital Initiative), SHOULD BE routine care for all newborns pre-term or full-term starting immediately after birth and continuing for as long and as often as possible. For pre-term infants, the shortest Kangaroo Care time should be 2 hours as this allows for two (2) sleep cycles, the minimum needed for growth and recovery. Shorter periods, especially less than 30 minutes, for pre-term infants does not allow them enough time for acclimation.

***Kangaroo Mother Care*** needs to become the routine care for all newborns as ***KMC*** newborns are in a habitat where they are safe, warm and have easy access to food. In ***KMC***, infants will stabilize more quickly, have amazing brain and attachment development, and display the innate behaviors that allow them to survive.

~Barbara Morrison, PhD, FNP, CNM



# FINANCIAL IMPACT OF KANGAROO CARE

*Evidence the Practice of Kangaroo Care Provides  
A Financial Savings While Giving Infants the Best Care*

## 1. SHORTENED STAY FOR PRE-TERM INFANTS.

- **AVERAGE OF ONE WEEK SHORTER STAY:** Infants who receive Kangaroo Care (KC) while in NICU tend to have a shorter stay by an average of one week<sup>1</sup>
- **95 out of 100 LOW BIRTH WEIGHT BABIES DISCHARGED AFTER KANGAROO CARE:** 100 preterm infants (<1500g) were admitted to the KMC ward for 24/7 KMC when VS had stabilized and sucking was demonstrated, approximately the 11<sup>th</sup> day of life... Infants received adlib BF during KC (at least q 2 hrs) for 16 days. The result was that 95/100 exclusively breastfeeding, low birth weight infants (1329g ± 208g) were discharged alive after 16.3 days of Kangaroo Care<sup>2</sup>
- **50% SHORTER HOSPITAL STAY:** The increased weight gain in infants who are kept in KMC also leads to shorter hospital stays. Charpak and colleagues (1997) showed infants weighing ≤ 1800 grams who were provided KMC had a shorter hospital stay. In fact, Kangarooed infants had as much as a 50% shorter hospital stay than babies who were not kangarooed. This in turn means less expense for the hospitals and/or parents<sup>3</sup>

### \$8,960,000 Saved By Shortened Stay per 1,000 Births

Of 1,000 babies born each year, 12.8% are premature	Approx cost per day (estimated)	Hospital's Weekly Cost of Care (estimated)	Total Savings by implementing KC with pre-term infants per 1,000 babies born
128 infants	\$10,000	\$70,000	\$8,960,000

Nearly 543,000 babies were born too soon in 2006 [in the US], according to the National Center for Health Statistics, which today released "Births: Final data for 2006," National Vital Statistics Reports; Vol. 57, No. 7. The nation's preterm birth rate (birth before 37 completed weeks gestation) rose to 12.8 percent in 2006 -- that's a 36 percent increase since the early 1980s (March of Dimes) [http://www.marchofdimes.com/aboutus/49267\\_49328.asp](http://www.marchofdimes.com/aboutus/49267_49328.asp).

## 2. RE-ADMIT RATE IS DRAMATICALLY REDUCED.

- **FROM 30% to 0%:** A 12-month study of preterm infants receiving KC from moms found that it reduced their infant's re-admission rate from 30% to 0% within 4 months of implementing Kangaroo Care training for mothers in the hospital (Personal communication Sue Derrick, (2007-2008))<sup>4</sup>
- **RE-ADMIT RATE LESS LIKELY FOR INFANTS FED BREAST MILK:** *Breast Milk Associated with Greater Mental Development in Preterm Infants, Fewer Re-hospitalizations* — this news release reports on findings of a study of premature infants that indicate preterm infants fed breast milk had greater mental development scores at 30 months than did infants who were not fed breast milk. Also, infants fed breast milk were less likely to have been re-hospitalized after their initial discharge than were the infants not fed breast milk<sup>5</sup>

**\$2,142,000 Projected Saving Per 1,981 Births**

Out of 1,981 babes born, 238 were premature. Of the infant receiving conventional care, 30% are re-admitted	Typical re-admit length of stay was 3 days for each infant (estimate)	After implementing Kangaroo Care – mothers or fathers holding their infant in KC for several hours each day – readmission was decreased to 0% within 4 months	Savings to Hospital implementing Kangaroo Care \$10,000 per child each day (estimate)
71.4 Infants readmitted/ per year	3 Days @ \$10,000/day	0% re-admitted after KC	\$2,142,000 savings each year

\*Copy of Palmetto Hospital Study by Sue Derrick, RN, Nurse Manager, Palmetto Hospital, Columbia, SC is available at <http://www.preciousimagecreations.com>

**3. KANGAROO CARE PROMOTES BREASTFEEDING.**

- **KC SYNONYMOUS TO BREASTFEEDING:** For pre-term and full-term infants providing Kangaroo Care and Breastfeeding are synonymous. Kangaroo Care, especially if it is started immediately after birth (within 120 minutes) has been shown to significantly increase breastfeeding exclusivity and duration<sup>6</sup>
- **KC PROMOTES LONGER BREASTFEEDING:** Kangaroo Care dyads consistently breastfed longer and also more exclusively, reaching statistical significance at 6 months post-birth<sup>7</sup>
- **BREASTFEEDING IS TIME SENSITIVE:** Breastfeeding is time-sensitive, and duration of breastfeeding is influenced by initiation during the first few hours and days of life<sup>8</sup>
- **BABY-FRIENDLY HOSPITAL INITIATIVE (BFHI) PRACTICES SIGNIFICANTLY INCREASE BREASTFEEDING OUTCOMES:** Step 4 of the BFHI states breastfeeding should be initiated within 30 minutes of birth. This step is interpreted as placing infants in KC starting immediately after birth and leaving them there until after the first feeding. Implementing this and other steps of BFHI has been shown to increase breastfeeding initiation and duration.<sup>9</sup>
- **CORRECT LATCH WITHIN 50-80 MINUTES OF BIRTH:** Newborns placed in Kangaroo Care immediately after birth begin suckling with correct latch within 50 to 80 minutes providing mothers with a sense of success and confidence in the dyads ability to breastfeed<sup>10</sup>

**4. GREATER GASTRO-INTESTINAL HEALTH THROUGH KC AND BREASTMILK.**

- **KC INCREASES OXYTOCIN LEADING TO BETTER FOOD ABSORPTION:** Kangaroo Care and breastfeeding increase levels of Oxytocin in mothers and newborns, which activate 19 gastrointestinal hormones in both the mother and baby. Some of these hormones produce longer villae in the intestines (those tiny hairs that increase food absorption in the breastfed baby and in the mother). The increased motility with each period of suckling removes meconium with its large load of bilirubin.<sup>11</sup>
- **HUMAN MILK HELPS PREVENTS NEC:** Necrotizing enterocolitis (NEC) is one of the diagnoses for which donor human milk is regularly prescribed. The role of human milk in both prevention and treatment of NEC has long been recognized. Human milk, whether mother’s own or donor, provides significant protection against many of the known risk factors of NEC as well as therapeutic protection for the infant recovering from NEC. In the absence of mother’s own milk, donor human milk could be life saving to fragile preterm infants, who are at highest risk of developing NEC<sup>12</sup>

- **NEC REDUCED**: Necrotizing enterocolitis (NEC) is mainly found in premature births. In one study of 926 preterm infants, NEC developed in 51 infants (5.5%). The death rate from necrotizing enterocolitis was 26%. NEC was found to be six to ten times more common in infants fed formula exclusively, and three times more common in infants fed a mixture of breast milk and formula, compared with exclusive breastfeeding<sup>13</sup>
- **KC PROVIDES VAGAL STIMULATION**: Nutrition is improved, both with respect to mother's ability to breastfeed, and with respect to the newborn's utilization of the feed. Both the volume of mother's milk and the frequency of feeds are greatly increased. Even without the increased milk, the vagal stimulation the infant receives from KC allows the gut to better utilize the breastmilk, leading to faster growth<sup>14</sup>
- **EACH CASE OF NEC COSTS \$200,000**: Approximately \$200,000 is spent for each case of necrotizing enterocolitis. The rate of NEC is 10.1 % in formula-fed babies and 1.2% in breastfed babies.<sup>15</sup>

<b>\$10,200,000 Spent on NEC Cases</b>				
# of pre-term infants	Babies who develop NEC	% of deaths	Cost per case of NEC	Total Cost per 51 cases of NEC
926	51 (5.5%)	13 babies (26%)	\$200,000	\$10,200,000

\$200,000 spent for each case of necrotizing enterocolitis, with a 10.1 percent occurrence in formula-fed babies and a 1.2 percent rate in breastfed babies. (Bisquera JA, et al. Impact of necrotizing enterocolitis on length of stay and hospital charges in very low birth weight infants. Pediatrics, 2002)

## 5. TEMPERATURE REGULATION.

- **REGULATION IN 90 MINUTES**: Warming of infant's hands and feet occurs within 90 minutes of birth when infants are in Kangaroo Care versus several days for infants who are swaddled and placed in a crib<sup>16</sup>
- **KC BETTER THAN AN INCUBATOR**: Mothers are able to control the infant's temperature within a very narrow range, far better than an incubator. To accomplish this, the mother's breast temperature can rise up to two degrees Centigrade if baby is cold, and fall one degree if baby is hot. Skin-to-skin contact is better than incubator for re-warming hypothermic infants<sup>17</sup>

## 6. INFANT'S NEUROLOGICAL BENEFIT.

- **INFANT'S BRAIN GROWTH**: 3 hours of KC = 2 weeks in incubator<sup>18</sup>
- **4 MONTHS NEUROLOGICAL ADVANCEMENT**: Infants held skin-to-skin six hours a day the first week after birth and two hours a day the second through fourth weeks appear to be socially bidding to Mom at the age of three months in contrast to the age of seven months as recorded in previous studies<sup>19</sup>
- **NEUROTOXINS REDUCED**: "Protest-despair" behaviour is a stress reaction, and the hormones related to this have been extensively studied. At high levels, these hormones are intrinsically neurotoxic to the brain, particularly areas of the hindbrain, and any area which may already be a little hypoxic. SSC has been shown to markedly reduce these stress hormone levels<sup>20</sup>

## 7. PROTECTION FROM ILLNESSES.

- **IMMUNOGLOBULIN PRODUCTION**: Breast milk and skin-to-skin contact (through entero-mammary pathways) provide immunoglobulin's and other immunological factors to infants, protecting them from illnesses<sup>21</sup>

- **SPECIAL ILLNESS PROTECTION FROM COLOSTRUM:** Colostrum contains a much higher concentration of immunoglobulin's than mature breast milk, 10% vs. 2%. Small quantities, 1 teaspoon, of colostrum coat the intestine and lungs, providing both short-term and long-term protection.<sup>22</sup> Breast-fed babies have fewer illnesses because human milk transfers to the infant a mother's antibodies to disease. About 80 percent of the cells in breast milk are macrophages, cells that kill bacteria, fungi and viruses. Breast-fed babies are protected, in varying degrees, from a number of illnesses, including pneumonia, botulism, bronchitis, staphylococcal infections, influenza, ear infections, and German measles. Furthermore, mothers produce antibodies to whatever illnesses are present in their environment, making their milk custom-designed to fight the illnesses to which their babies are exposed.<sup>23</sup>

#### 8. HEART RATE REGULATION.

- **KC INCREASED HEART RATE:** Infant's heart rate is increased when placed skin-to-skin. Though we can regard this increase as being within the clinical normal range, what is seen is actually a return to the physiologically normal heart rate, the lower rate being due to "protest despair behavior." Infants removed from incubators and placed skin-to-skin show a rise in temperature and a dramatic drop in glucocorticoids, as predicted by the "protest despair response"<sup>24</sup>
- **STRESS REDUCTION:** Kangaroo Care significantly decreases the amount of beta-endorphin (a stress indicator) in the blood (Mooncey et al., 1997). Mooncey et al. (1997) showed a 74% geometric mean decrease in plasma beta-endorphin after Kangaroo Care. Beta-endorphin is synthesized by the anterior pituitary gland along with ACTH which induces cortisol secretion as a response to physiological stress<sup>25</sup>

#### 9. IMPROVED OXYGENATION.

- **KC IMPROVES OXYGEN:** Oxygenation has been shown to be improved on SSC, to the extent that KMC is used successfully to treat respiratory distress. The breathing becomes regular and stable, and is coordinated with heart rate. When removed from incubator and placed SSC, oxygen saturation may rise slightly, or the percentage of oxygen provided to maintain good saturation can be lowered<sup>26</sup>
- **APNEA, BRADY, O2 SATURATION, RESPIRATION AND HEART RATE IMPROVEMENT:** The newest studies that are being done in Sweden and other countries concentrate on full term babies in respiratory distress. They take these babies, who would normally be put on respirators, and place them on the mom's chest immediately after birth in the Kangaroo Care position. Babies stayed on mom until the respiratory distress was gone - within 48 hours for most babies. Oxygen hoods and canulas were used if needed. In preterm babies, the effects of Kangaroo Care on these functions is just as dramatic<sup>27</sup>
- **SLEEP APNEA REDUCED:** In 1998, Susan Ludington (Acta Paediatrica, 87 (6): 711-713) found a four-fold decrease in apnea during Kangaroo Care and mechanically ventilated babies were able to tolerate transfer and position changes without increased oxygen requirements. In 1997, GM Cleary, et al (J. American Osteopathic Assoc., 97 (8): 457-460) concluded there was no increase in bradycardia episodes during Kangaroo Care. In 1998, Gay Gale and Kathleen Vandenburg (Neonatal Network, 17 (5): 1-3) concluded that the heart rate was more regular for Kangarooed infants. All-in-all, the baby fared much better when placed in Kangaroo Care. With my own [Krisanne Larimer's] ventilated preemie (1 pound 12 ounces at birth) I noticed a 50% reduction in oxygen requirements, no apneas or bradys, more stable heart rate, and more spontaneous respiration when I held her skin-to-skin<sup>28</sup>

## 10. SLEEP TIME INCREASED/COLIC REDUCED.

- **LESS AGITATION, APNEA, AND BRADYCARDIA EPISODES:** [The Study's] **PURPOSE:** To determine the change in behavioral state and physiologic parameters due to Kangaroo Care (K Care). **METHOD:** A quasi-experimental design using a pretest-posttest with neonates serving as their own controls for 4 episodes of 1 hour each: Pre K Care, K Care and Post K Care. Twenty neonate-parent dyads participated. RespiTrace PT Non-invasive Monitoring system was used to record heart and respiratory rate and oxygen saturation. Behavioral state was derived from analyzing RespiTrace PT cardiorespiratory data as well as observation criteria. **FINDINGS:** There was a significant increase in sleep time for the neonates during K Care as compared to when they were not receiving K Care. The neonates exhibited less agitation, apnea, and bradycardia episodes and maintained stable oxygen saturation during K Care. **CONCLUSION:** K Care is safe even for very small neonates and is well tolerated. The stability of the preterm infants receiving K Care documents the need to incorporate it into standards of care<sup>29</sup>
- **SIGNIFICANT INCREASE IN SLEEP TIME:** Researchers have come a long way in determining the major cause of colic. The common conclusion in 1999 is that colic is caused by a baby's (whether premature or full term) inability to transition from one sleep state to another - like from an alert state into a sleep state and back again. The gas associated from colic is caused by the excess of crying during these transitions. Kangaroo Care performed in a quiet, low light environment with ANY baby has been proven to reduce crying and help the baby learn to transition from one sleep state to another. A study done by Patricia Messmer, et al (Pediatric Nursing, 23 (4): 408-414) in 1997 found a significant increase in sleep time for the neonates during Kangaroo Care. I [Krisanne Larimer] want to impress upon all that Kangaroo Care works just as well with full term infants as it does with premature infants<sup>30</sup>



## 11. IMPROVED PARENT SATISFACTION SURVEYS.

- **LESS CRYING:** Infants in KC cry 10 times less and for shorter periods than infants in cribs<sup>31</sup>
- **GREATER ATTACHMENT:** Kangaroo Care and breastfeeding increase levels of Oxytocin in mothers, enhancing attachment to their infant and their sense of motherhood<sup>32</sup>
- **KC TRIGGERS TRUST HORMONE:** Kangaroo Care and breastfeeding increase levels of Oxytocin in mothers<sup>33</sup> Researchers have discovered that babies nursing at their mother's breast set off a cascade of events leading to the release of Oxytocin in their mother's brains. Practicing Skin-to-Skin results in less crying from baby, less neglect by mom and increased parent satisfaction with care. Therefore, Mom feels more confident with herself as a parent and more connected with her content infant<sup>34</sup>
- **POST-PARTUM DEPRESSION REDUCED:** Mothers who maintained longer periods of skin-to-skin contact experienced less postpartum depression in the infant's first few weeks of life and were more sensitive to their infants during feeding<sup>35</sup>

## 12. BETTER SURVIVAL RATE.

- **SURVIVAL OF KC INFANTS REMARKABLY BETTER:** A randomized controlled trial was conducted over a 1-year period (November 2001–November 2002) in Addis Ababa to study the effectiveness of early Kangaroo mother care before stabilization of low birth-weight infants as compared with the conventional method of care. The conclusion was that survival for the pre-term low birth-weight infants was remarkably better for the early kangaroo<sup>36</sup>

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**KANGAROO CARE HELPS TO MEET:  
NATIONAL GUIDELINES FOR BREASTFEEDING  
HHS BLUEPRINT FOR ACTION ON BREASTFEEDING<sup>37</sup>**

<b>Hospital Practices Which Influence Breastfeeding Initiation</b>				
	<b>Strongly Encouraging</b>	<b>Encouraging</b>	<b>Discouraging</b>	<b>Strongly Discouraging</b>
<b>Experiential</b>	<ul style="list-style-type: none"> <li>• baby put to breast immediately in delivery room</li> <li>• baby not taken from mother after delivery</li> <li>• woman helped by staff to suckle baby in recovery room</li> <li>• rooming-in: staff help with baby care in room, not only in nursery</li> </ul>	<ul style="list-style-type: none"> <li>• staff sensitivity to cultural norms and expectations of woman</li> </ul>	<ul style="list-style-type: none"> <li>• scheduled feedings regardless of mother's breastfeeding wishes</li> </ul>	<ul style="list-style-type: none"> <li>• mother-infant separation at birth</li> <li>• mother-infant housed on separate floors in post-partum</li> <li>• mother separated from baby due to bilirubin problem</li> <li>• no rooming-in policy</li> </ul>
<b>Verbal Communication</b>	<ul style="list-style-type: none"> <li>• staff initiates discussion re: woman's intention to breastfeed pre- and intrapartum</li> <li>• staff encourages and reinforces breastfeeding immediately on labor and delivery</li> <li>• staff discusses use of breast pump and realities of separation from baby, re: breastfeeding</li> </ul>	<ul style="list-style-type: none"> <li>• appropriate language skills of staff, teaching how to handle breast engorgement and nipple problem</li> <li>• staff's own skills and comfort re: art of breastfeeding and time to teach woman on one-to-one basis</li> </ul>	<ul style="list-style-type: none"> <li>• staff instructs woman "to get good night's rest and miss the feed"</li> <li>• strict times allotted for breastfeeding regardless of mother/baby's feeding "cycle"</li> </ul>	<ul style="list-style-type: none"> <li>• woman told to "take it easy," "get your rest"... impression that breastfeeding is effortful/tiring</li> <li>• woman told she doesn't "do it right," staff interrupts her efforts, corrects her re: positions, etc.</li> </ul>
<b>Non-Verbal Communication</b>	<ul style="list-style-type: none"> <li>• staff (doctors as well as nurses) give reinforcement for breastfeeding (respect, smiles, affirmation)</li> <li>• nurse (or any attendant) making mother comfortable and helping to arrange baby at breast for nursing</li> <li>• woman sees others breastfeeding in hospital</li> </ul>	<ul style="list-style-type: none"> <li>• pictures of woman breastfeeding</li> <li>• closed circuit TV show in hospital on breastfeeding</li> </ul>	<ul style="list-style-type: none"> <li>• pictures of woman bottle-feeding</li> <li>• Staff interrupts her breastfeeding sessions for lab tests, etc.</li> <li>• woman doesn't see others breastfeeding</li> </ul>	<ul style="list-style-type: none"> <li>• woman given infant formula kit and infant food literature</li> <li>• woman sees official-looking nurses authoritatively caring for babies by bottle-feeding (leads to woman's insecurities re: own capability of care)</li> </ul>
<b>Physical Contact</b>	<ul style="list-style-type: none"> <li>• if breastfeeding not immediately successful, staff continues to be supportive</li> <li>• previous success with breastfeeding experience in hospital</li> </ul>			<ul style="list-style-type: none"> <li>• previous failure with breastfeeding experience in hospital</li> </ul>

**Practices for Successful Breastfeeding Services at Hospital and Maternity Centers**

- A written breastfeeding policy that is communicated to all healthcare staff
- Staff training in the skills needed to implement the policy
- Education of pregnant women about the benefits and management of breastfeeding
- Early initiation of breastfeeding
- Education of mothers on how to breastfeed and maintain lactation
- Limited use of any food or drink other than human breast milk
- Rooming-in
- Breastfeeding on demand
- Limited use of pacifiers and artificial nipples
- Fostering of breastfeeding support groups and services

(HHS Dept Of Health & Human Services (USA) Blueprint for Action on Breastfeeding

- <http://www.cdc.gov/breastfeeding/pdf/bluprmtbk2.pdf>)

## ***MATERNITY PRACTICES IN INFANT NUTRITION AND CARE (mPINC)***

Evidence shows that several specific practices in intrapartum medical care settings can significantly affect breastfeeding rates and duration of breastfeeding among women. Birth facility policies and practices that create a supportive environment for breastfeeding begin prenatally and continue through discharge. In 2007, the Centers for Disease Control and Prevention (CDC), in collaboration with Battelle Centers for Public Health Research and Evaluation, completed a national survey of maternity care feeding practices and policies, entitled the Maternity Practices in Infant Nutrition and Care (mPINC) Survey, at all facilities in the United States and Territories providing intrapartum care.

Results from the survey indicate that birth facilities in most states are not providing maternity care that is fully supportive of breastfeeding. In addition, the southern region of the U.S., typically the region with the lowest breastfeeding rates (see Map 1: Percent of Children Ever Breastfed by State among Children Born in 2004<sup>38</sup>), has the lowest maternity care practices scores. More information on the current status of maternity care practices nationally, as well as by state, can be found in the June 13, 2008, MMWR article, “Breastfeeding-Related Maternity Practices among Hospitals and Birth Centers – United States, 2007<sup>39</sup>.”

### ***SKIN-TO-SKIN CARE HELPS TO MEET BREASTFEEDING REPORT CARD INDICATORS***

Improving the health of mothers and their children is a primary goal of the Centers for Disease Control and Prevention (CDC). Encouraging breastfeeding, with its many known benefits for infants, children, and breastfeeding women, is a key strategy toward this goal. People from all walks of life play a role in fostering breastfeeding. When health care professionals, legislators, employers, business owners, and community and family members work together, their efforts can increase the number of women who start breastfeeding and the length of time they continue to breastfeed<sup>40</sup>.

#### **CDC NATIONAL SURVEY OF MATERNITY PRACTICES IN INFANT NUTRITION AND CARE (MPINC) NOW HAS FOUR (4) SURVEY QUESTIONS OUTLINED IN THIS REPORT<sup>41\*</sup>**

1. Approximately, how many mothers are encouraged to hold their healthy full-term infants skin-to-skin for at least 30 minutes within an hour of birth for uncomplicated vaginal births?
2. Are routine newborn procedures (e.g. Apgar, cord clamping, foot printing) after uncomplicated vaginal births done while the mother is holding the healthy full-term infant skin-to-skin?
3. Approximately what percentage of healthy full-term breastfed infants are put to the breast for the first time during the specified period after delivery for uncomplicated vaginal births?
4. Approximately how many mothers (regardless of feeding method) are encouraged to hold their healthy full-term infants skin-to-skin for at least 30 minutes within two hours after delivery for uncomplicated cesarean births?

\* (Full survey can be located at CDC National Survey of Maternity Practices in Infant Nutrition and Care (mPINC) - [http://www.cdc.gov/breastfeeding/pdf/mpinc\\_birth\\_center\\_survey.pdf](http://www.cdc.gov/breastfeeding/pdf/mpinc_birth_center_survey.pdf))

## ***STEPS TO RECEIVE THE BENEFITS OF SKIN-TO-SKIN CARE***

- Immediately after birth ALL newborns should be dried, cap put on head and placed skin-to-skin on their mother's abdomen/chest with a blanket over the infant's back
- For mothers who are planning to breastfeed, birth Kangaroo Care should continue through the first breastfeeding. The process of infant crawling from abdomen/chest to the breast, latching onto the breast, beginning to suckle and completing the first feeding could take 1 to 2 hours and should not be rushed
- During the first 4 days after birth Kangaroo Care encourages frequent, on-demand breastfeeding which will help establish the milk supply and maternal confidence
- Kangaroo Care can be done by mothers, fathers, grandparents, siblings and others as frequently and for as long as desired. For safety reasons infants should be placed in a kangaroo wrap or garment or secured inside a shirt
- Kangaroo Care should occur in intervals of at least 2 hours, especially for babies in the neonatal intensive care unit, to receive maximum benefits
- Kangaroo Care can be continued at home, whether or not the infant is being breastfed. The more Kangaroo Care is practiced the greater the benefits for baby and those providing the Kangaroo Care

~Dr. Barbara Morrison, PhD, CNM, FNP

### **KC BECAME an Official Policy within 5 Years**

Kangaroo Care  
does not  
require additional staff

Once KC was implemented, the results were  
a five-fold improvement in survival of  
Very Low Birth Weight babies

Dr. Nils Bergman introduced KMC to South Africa in 1995, and **AFTER 5 YEARS, KMC BECAME OFFICIAL POLICY** for care of prematures in the hospitals of the Western Cape Province.

\*(Dr. Nils Bergman <http://www.kangaroomothercare.com/drbergman.htm>)

# COST SUMMARY

## Cost Calculation based on:

- 12.8% premature babies are born each year
- Approximately \$10,000 is spent each day on infant care
- Approximate re-admit length of Stay is 3 days

\$11,280,000
<u>128 babies</u>
\$88,125/baby

## For Every 128 Premature Births, Kangaroo Care Saves Approximately:

<b><u>Shortened Stay</u></b>	<b><u>Re-admit rate</u></b>	<b><u>NEC cases</u></b>	<b><u>Grand Total:</u></b>
<b>\$8,960,000</b>	<b>\$1,152,000</b>	<b>\$1,168,000</b>	<b>\$11,280,000</b>

### \$8,960,000 Saved By Shortened Stay per 1,000 Births

Of 1,000 babies born each year, 12.8% are premature	Approx cost per day (estimated)	Hospital's Weekly Cost of Care (estimated)	Total Savings by implementing KC per 1,000 babies born
128 infants	\$10,000	\$70,000	\$8,960,000

Nearly 543,000 babies were born too soon in 2006, according to the National Center for Health Statistics, which today released "Births: Final data for 2006," National Vital Statistics Reports; Vol. 57, No. 7. The nation's preterm birth rate (birth before 37 completed weeks gestation) rose to 12.8 percent in 2006 -- that's a 36 percent increase since the early 1980s (March of Dimes) [http://www.marchofdimes.com/aboutus/49267\\_49328.asp](http://www.marchofdimes.com/aboutus/49267_49328.asp)

### \$1,152,000 Projected Savings Each Year per 1,000 Births

12.8% of 1,000 babies are born premature each year. An average of 30% is re-admitted after using conventional method of care.	Typical re-admit length of stay is 3 days for each infant (estimate)	One hospital reported a reduction to 0% after implementing Kangaroo Care in a 4-month period	Savings to Hospital implementing Kangaroo Care \$10,000 per child each day (estimate)
38.4 Babies Readmitted	3 Days @ \$10,000/day	0% re-admitted after KC	\$1,152,000 saved each year

\*(Copy of Palmetto Hospital Study by Sue Derrick, Nurse Manager is available at <http://www.preciousimagecreations.com>)

### Cost of NEC Cases for Hospitals per 1,000 Births

12.8% of 1,000 babies are premature	# of pre-term infants	Babies who develop NEC (5.5%)	26% death rate	Cost per case of NEC	Total Cost per cases of NEC	Savings to Hospital implementing Kangaroo Care
Formula/Breast milk combination	128	7.04	1.8 babies	\$200,000	\$1,408,000	None
Exclusively BF babies	128	1.2	0.31 babies	\$200,000	\$240,000	\$1,168,000

\$200,000 spent for each case of necrotizing enterocolitis, with a 10.1 percent occurrence in formula-fed babies and a 1.2 percent rate in breastfed babies. (Bisquera JA, et al. Impact of necrotizing enterocolitis on length of stay and hospital charges in very low birth weight infants. Pediatrics, 2002)

# CONCLUSION

## **WE HAVE FOUND IN THE PAST 4 YEARS THAT:**

- **WITH PROPER TRAINING**, a small hospitals' standard of Care could be changed to KC within 9 months.
- **MOM IS THE KEY** and needs to be trained on the benefits of Kangaroo Care early in her pregnancy.
- **FOR CONTINUOUS KANGAROO CARE TO BE POSSIBLE**, Mom needs a garment to hold her baby in KC, transition into the breastfeeding position, be discreet and hands-free.

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## **TO HELP MEET THESE NEEDS:**

- **WE DEVELOP TRAINING MATERIALS** for the hospital staff and moms.
- **WE TEACH KANGAROO CARE** in hospitals nationwide.
- **WE DESIGN AND MANUFACTURE SUITABLE GARMENTS** to safely implement Kangaroo Care for an extended period of time with ease and discretion.

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## **PRECIOUS IMAGE™ CREATIONS:**

- **OUR VISION** is to see Kangaroo Care as the standard of care for all newborns.
- **OUR PASSION** is to see every Mother-Baby experience the benefits outlined.
- **OUR DREAM** is to have areas in every maternity unit and NICU for moms to Kangaroo Care their infant a minimum of 6-8 hours a day.
- **OUR GOAL** is to inform hospitals, health care professionals and insurers on how to save money and lives by implementing Kangaroo Care.

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- **THE IMPORTANCE OF KANGAROO CARE:** Through the above-documented studies, reinforced by the National Guidelines and monitored by CDC Report Card, we have sought to prove that the health and financial costs of not practicing skin-to-skin care are substantial for the hospital, for the baby and for the mother.

*“The cost savings of practicing Kangaroo Care is just the tip of the iceberg...”*

*The social cost savings is immeasurable.”*

**~ Dr. Barbara Morrison.**

# *PRECIOUS IMAGE™ CREATIONS*

## *About Us*

Precious Image™ Creations was founded in 1983 by Sylvia Houston to develop fashionable clothing that would allow discretion for mom to easily breastfeed her baby.

Our founder was introduced to Kangaroo Care, *aka* Skin-to-Skin Care in 2004. After learning of the dramatic difference in the overall health and bond between mom and baby, she knew that this would not be possible without a garment for mom to hold her baby for extended periods of time. Our staff worked closely with focus groups and medical specialists to develop garments for moms to easily hold her baby STS and receive all the benefits. We have now developed a complete line of clothing for moms to Kangaroo Care, and discreetly breastfeed hands-free. We design specialty garments for the NICU units to enable moms to hold her premature baby and pump hands free etc. Our garments are used in hospitals across the US and sold in specialty stores.

Precious Image™ Creations has become specialized in the KC/STS field through the utilization of the professional community and extensive research in Kangaroo Care worldwide. Precious Image™ Creations has composed various educational and training materials for moms and hospital staff under the direction of Dr. Barbara Morrison, PhD, CNM, FNP, a Skin-to-Skin Care specialist. Sylvia Houston holds a Kangaroo Care Certification at Case Western University Bolton School of Nursing.

Precious Image™ Creations offers Kangaroo Care training and specialty designs to support breastfeeding and Skin-to-Skin care in hospitals, lactation centers and women's boutiques across the United States, Europe and Australia.

*“Our goal is to provide quality, stylish clothing for mothers to give the ultimate gift of breastfeeding and Skin-to-Skin Care for their infants.”*

~Sylvia Houston, Founder.



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<sup>4</sup> Copy of Sue Derrick's monthly statistics is available at <http://www.PreciousImageCreations.com>

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