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Commentary

Why Kangaroo Mother Care Should Be Standard for All Newborns

Caroline Rodgers, BA

It has been 35 years since Edgar Rey Sanabria responded to the high rate of morbidity and mortality among low-birth-weight (LBW)/preterm newborns in Bogotá, Colombia, with guidelines that have become known as kangaroo mother care.[1–4] To address a shortage of incubators and medical personnel, Dr. Sanabria, in a classic case of reverse engineering, analyzed what standard incubator care provided for LBW/preterm newborns and concluded that mothers were ideally suited to provide the warmth and nourishment that even the neediest neonates required.[1–4] The kangaroo mother care model is simple: 1) place the undressed newborn vertically between the mother's breasts to provide warmth with continuous skin-to-skin contact, 2) establish early and exclusive breastfeeding, and 3) enable early hospital discharge.[1–4]

Although it is firmly established that kangaroo mother care saves lives in low-resource areas,[1–3,5] should industrialized nations that boast state-of-the-art neonatal intensive care units (NICUs) consider kangaroo mother care standard treatment for LBW/preterm newborns? A 2011 Cochrane review of kangaroo mother care by Conde-Agudelo et al was appropriately conservative in its assessment of the data within its study criteria and supported kangaroo mother care as an alternative to conventional neonatal care for LBW newborns, defined as weighing less than 2500 g (5.5 lbs.), in resource-limited settings.[1] However, we might ask if kangaroo mother care is better for all newborns in all settings, even healthy full-term newborns in affluent areas. Taking a wider view, what would the economic and societal implications of kangaroo mother care be if it were to become the established norm? If we look beyond studies focusing solely on kangaroo mother care and consider the most recent research available regarding skin-to-skin contact[6,7] and breastfeeding[8] as they apply to all newborns, kangaroo mother care emerges as superior to standard care for all newborns in all settings. Further, there is reason to believe that if widely practiced, kangaroo mother care would result in substantial health care savings and improve communities.

If kangaroo mother care is best for all newborns, midwives are in a pivotal position to teach women the rewards and responsibilities it entails. Midwives can also help women to appreciate that what is good for the newborn is good for the mother by explaining the short- and long-term maternal health benefits of early skin-to-skin contact [6] and breastfeeding.[8]

Address correspondence to Caroline Rodgers, 7 Prospect Place, Matawan NJ 07747. E-mail: caroline.rodgers@rocketmail.com

KANGAROO MOTHER CARE'S 3 CORE PRINCIPLES

Skin-to-Skin Contact

One of the biggest threats to any newborn is hypothermia, which begins at temperatures below 36.5°C (97.7°F).[4] In the first few days of life, even full-term newborns are at risk of hypothermia for a number of reasons, such as their large surface-area-to-body-mass ratio and immature thermoregulatory systems.[7,9] Among the potentially life-threatening health issues caused by prolonged hypothermia are hypoxia, hypoglycemia, respiratory distress, acidosis, renal failure, hyperbilirubinemia, and coagulation defects.[7,9]

A 2010 Cochrane review by McCall et al of hypothermia interventions for LBW/preterm newborns described skin-to-skin contact within 10 minutes of birth, the most natural and immediately available way to warm a newborn, as "non-routine" care.[9] The review described conventional neonatal care for LBW newborns as, "providing a warm delivery room at a minimum of 25°C [77°F]. . . drying the infant, removing any wet blankets and wrapping in a prewarmed blanket, prewarming any contact surfaces, avoiding draughts and, in developed countries, using radiant warmers or incubators."[9]

Despite these many measures, skin-to-skin contact was found to be more effective than conventional neonatal care in preventing hypothermia.[9] A 2012 Cochrane review by Moore et al of early skin-to-skin contact for healthy newborns found that when initiated within the first 24 hours following childbirth, it helped to establish thermal stability, breastfeeding, and increased neonatal blood glucose levels.[6] It should be no surprise that skin-to-skin contact reduces crying in newborns because 2 causes, separation and hunger, are quickly resolved in the kangaroo position.[6,10] Skin-to-skin contact also alleviates crying in response to pain.[10]

For mothers, skin-to-skin contact reduced postpartum bleeding, decreased the time it took to expel the placenta, increased oxytocin levels, and decreased cortisol levels, resulting in happier childbirth experiences, improved bonding with newborns, and increased confidence in their ability to care for the newborns.[6,10] Bramson et al found a dose-dependent correlation between the duration of skin-to-skin contact with full-term newborns initiated within the first 3 hours of childbirth and the establishment of exclusive breastfeeding.[11]

Early and Exclusive Breastfeeding

Ludington-Hoe et al reported that on the basis of A-level evidence, kangaroo mother care is superior to conventional neonatal care in 4 important breastfeeding measures: initiation, exclusivity, quantity, and duration.[10] It is well established

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that breastfeeding provides multiple health benefits for newborns and their mothers. The American Academy of Pediatrics (AAP) 2012 Policy Statement on Breastfeeding and the Use of Human Milk notes, for example, that exclusive breastfeeding for periods ranging up to the recommended 6 months reduces the risk of asthma, type 1 diabetes, respiratory tract infections, ear infections, serious colds, and leukemia.[8] Any breastfeeding is associated with a reduced risk of sudden infant death syndrome (SIDS), gastrointestinal tract infections, childhood inflammatory bowel disease, and adolescent and adult obesity.[8] Breastfed children also have better cognitive outcomes.[8]

For mothers, breastfeeding decreases postpartum blood loss, helps to increase the time between pregnancies, reduces the risk of postpartum depression, increases maternal attachment, and improves parental behavior, reflected in a lowered risk of child abuse or neglect.[6,8] Cumulative lifetime breastfeeding is associated with a reduced risk of maternal health issues such as cardiovascular disease, hypertension, type 2 diabetes, rheumatoid arthritis, and both breast and ovarian cancers.[8]

Unlike kangaroo mother care, conventional neonatal care can undermine the establishment of breastfeeding because of routine measuring, weighing, bathing, blood testing, vaccinating, and providing eye prophylaxis and vitamins to the newborn—all procedures the AAP says should be delayed until the first complete feeding.[8] The AAP also urges discontinuing hospital feeding policies that routinely involve water, glucose water, or formula.[8]

Many factors affect the establishment of breastfeeding, such as ethnic, educational, and age-related differences, as well as marital status, length of maternity leave, work environment, and cultural traditions.[8] Midwives can help to overcome barriers by stressing to women the lifelong health benefits of breastfeeding for infants and mothers alike. By teaching women the advantages that any breastfeeding provides, along with the additional benefits of continuing for 3, 4, or 6 months as presented in the AAP policy statement, midwives can help women to set breastfeeding goals. To help support women who must go back to work, midwives can refer them to the Business Case for Breastfeeding, a website developed by the US Department of Health and Human Services with resources for returning mothers and their employers to establish and support work-site lactation programs.[12]

Breastfeeding Savings: From Hundreds to Billions of Dollars

Exclusive breastfeeding can save families hundreds of dollars in formula costs in the first 6 months alone. A 2009 review that compared formula content and prices reported that costs ranged from $0.14 per ounce for the least expensive type in powder form to $0.37 an ounce for specialized ready-to-feed formula.[13] Because the AAP estimates that infants require 2.5 ounces of formula per pound of body weight every 24 hours,[14] it is easy to calculate the increasing cost of feeding newborns as they gain weight and require additional formula over the course of half a year.

On a national level, breastfeeding could save billions of dollars. A cost analysis found that if 90% of all US mothers exclusively breastfed their infants for the first 6 months, the United States would save at least $13 billion a year in direct and indirect medical costs as a result of decreased infant mortality and morbidity.[15]

Early Hospital Discharge

The third component of kangaroo mother care, early hospital discharge, provides 3 advantages over conventional neonatal care: 1) reduced exposure to nosocomial infections, 2) lower neonatal costs due to shorter stays, and 3) better use of NICU resources.[1,3] It is difficult to determine the exact savings achieved by instituting kangaroo mother care because of the lack of cost studies, especially in middle- and high-resource areas.[1] One frequently cited study, by Cattaneo et al, found that when salaries and running costs were calculated, kangaroo mother care costs were about half that of standard care.[16] In a more recent meta-analysis of 9 studies, intermittent kangaroo mother care reduced hospital stays by an average of 2.4 days.[1] Among potential savings anticipated by the World Health Organization (WHO) are buying and maintaining less equipment.[4] Taken together, there is no doubt that establishing kangaroo mother care as the standard for all newborns would systematically save neonatal costs across all categories without compromising neonatal health.

ADDITIONAL BENEFITS

The benefits of kangaroo mother care extend beyond the 3 goals of providing warmth, nutrition, and early hospital discharge. In the summary of evidence provided by the National Association of Neonatal Nurses for implementing kangaroo mother care, A-level evidence found that it also resulted in improved neonatal heart rate, respiratory rate, oxygen saturation, sleep, pain relief, neurobehavioral general development, mental/motor scores, and maternal attachment.[10]

VARIATIONS AND LIMITS

When continuous kangaroo mother care is not possible, intermittent care, involving shorter sessions of skin-to-skin contact and breastfeeding, provides many health advantages. Conde-Agudelo et al even found intermittent care superior to continuous care according to some measures, such as a decreased risk of severe infection/sepsis and increased success in breastfeeding, although unlike with continuous kangaroo mother care, it did not reduce mortality.[1] Although National Association of Neonatal Nurses guidelines recommend sessions at least 65 minutes long, benefits have been demonstrated with 10-minute sessions.[10] Just 5 sessions a week lasting at least 30 minutes had neurobehavioral benefits.[10] Charpak et al recommended that sessions last 2 hours or more to facilitate breastfeeding.[3]

Kangaroo mother care should continue as long as possible. If a newborn resists when placed in the kangaroo position, as can happen when the neonate matures, it may be time to reduce the duration of skin-to-skin contact, although breastfeeding should continue.[3,4] To provide maternal respite, fathers or other relatives can take turns providing skin-to-skin contact in the kangaroo position.[1,3,4,10]

It should be noted that not every newborn or mother is a good candidate for kangaroo mother care.[10] National Association of Neonatal Nurses guidelines provide practical advice for evaluating neonatal and parental readiness.[10] Among some of the maternal considerations are the presence of depression, mental illness, drug dependence, contagious infections or disinterest in holding or breastfeeding newborns.[10,17] Medically indicated breastfeeding contraindications, while few in number, are addressed in the AAP's breastfeeding policy statement.[8]

RESTORING THE MOTHER-NEWBORN DYAD

It is surprising that skin-to-skin contact is considered an intervention or that conventional neonatal care would routinely remove newborns from their mothers, making it difficult to establish breastfeeding.[6–8] From a historical perspective, Moore et al observed that, "routine mother-infant separation shortly after birth is unique to the 20th century. . . [and] diverges from evolutionary history, where neonatal survival depended on close and virtually continuous maternal contact."[6]

White, in presenting the history of the NICU environment, noted that for the first time ever, mothers "became inessential." The fear that mothers might be sources of contamination was so great that they were allowed very brief visiting periods during which skin-to-skin contact was systematically impeded by the requirement that they be "fully garbed with gowns, gloves and masks."[18] White aptly noted that, "For those who consider the incubator as the gold standard as an optimal environment for a preterm infant, it is important to remember that its superiority was established not in comparison with skin-to-skin, but to infants in an unheated crib."[18]

Despite the many benefits of kangaroo mother care, there has been resistance to implementing it even in the neediest areas globally because of misperceptions that it is "the poor man's alternative" to conventional neonatal care or that baby formula is "more modern and sophisticated" than breast milk.[5] There is also evidence that throughout the world, mother-infant skin-to-skin contact is no longer customary.[5] For instance, community studies in Bangladesh and India found that as few as 1% of newborns experienced skin-to-skin contact.[5] Cultural taboos regarding such contact with newborns or maternal privacy concerns also present challenges.[5] Although many of these issues have been identified in developing countries, US midwives should be alert to culturally based resistance that, once recognized, may be overcome with education and guidance.

To help implement kangaroo mother care worldwide, the WHO recommends that countries develop detailed national plans for integrating kangaroo mother care with traditional care that include a means of monitoring, evaluating, troubleshooting, and following up.[4] Nygvist et al suggested that written materials be provided to all parents prior to birth and again if the need arises for neonatal care.[17] Once parents have received in-hospital training and discharge instructions, parent-to-parent support groups should be encouraged.[17]

BROADENING THE VISION

The 2010 Committee Report on the First European Conference and Seventh International Workshop on Kangaroo Mother Care noted that although continuous kangaroo mother care was being practiced in low-resource settings and intermittent kangaroo mother care was being practiced in high-resource areas, the goal in all cases for LBW/preterm and ill full-term newborns should be continuous kangaroo mother care practiced wherever possible in all environments, even in affluent settings with high-tech facilities.[17,19] The authors found kangaroo mother care to be superior because it safely fulfills the newborn's needs, strengthens families, and benefits child development.[17] Although the report focuses on the treatment of LBW/preterm or ill newborns, the authors venture that healthy full-term newborns, to the extent that they accept kangaroo mother care, would also benefit because of improved breastfeeding and bonding outcomes.[17]

The WHO vision for kangaroo mother care extends beyond caring for LBW/preterm newborns, declaring that it, "is more than an alternative to incubator care. It has been shown to be effective for thermal control, breastfeeding and bonding in all newborn infants, irrespective of setting, weight, gestational age, and clinical conditions . . . in any setting, even where expensive technology and adequate care are available."[4]

CONCLUSION

Winston Churchill was not referring to neonatal care when he said, "The farther backward you can look, the farther forward you can see,"[20] but it certainly applies to kangaroo mother care. Restoring the mother-newborn dyad with early skin-to-skin contact and breastfeeding should not be considered interventions but rather a return to time-honored neonatal care that optimizes maternal and neonatal health while making the best use of resources.[3,6] Although kangaroo mother care was developed for LBW/preterm newborns in low-resource settings, because skin-to-skin contact improves breastfeeding outcomes[6] and the benefits of breastfeeding are so substantial,[8] kangaroo mother care should be universally adopted as the standard care for all newborns in all economic settings. Further, kangaroo mother care reduces the cost of neonatal care, which frees up financial and medical resources for other pressing health care needs.

Although kangaroo mother care is clearly the natural way for humans to care for newborns, it is considered an innovation because it is not commonly practiced. But imagine for a moment what it would mean if all newborns enjoyed immediate, prolonged skin-to-skin contact with their mothers and received the benefits of early and exclusive breastfeeding throughout their first 6 months. The long-term psychological and health benefits would extend beyond the mother-infant dyad into entire families, communities, and even societies because improved parent-newborn bonding and optimal nutrition would give rise to happier, healthier individuals. Midwives can help this become a reality by providing the information, guidance, and support women need to embrace kangaroo mother care.

AUTHOR

Caroline Rodgers, BA, is an independent writer and researcher who specializes in public health issues.

CONFLICTS OF INTEREST

The author has no conflicts of interest to report.

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