

Introducing kangaroo-mother care

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Kangaroo-Mother Care (KMC) has recently caught the attention of the media in South Africa, but little has been published in local professional journals. Though only recently introduced in this country, KMC has a long history, and may become standard care for low-birthweight babies. The purpose of this article is therefore to provide a brief presentation of this intervention for medical and nursing colleagues.

KMC was first described in English medical literature by Whitelaw (1985) following a visit to Bogotá, Colombia. Very large numbers of low-birthweight babies with very few incubators resulted in high mortality rates from infection. Partly as a means of getting babies out of the hospital, doctors Rey and Martinez introduced maternal-infant skin-to-skin contact if they survived the first week or two. They encouraged exclusive breast-feeding and discharged the babies early. As long as the babies could feed and were gaining weight, they were discharged, regardless of weight. A modification of this is still practised in Bogotá today (Charpak *et al*, 1997).

Kangaroo-Mother Care (KMC) consists of:

- ◆ firm skin-to-skin contact between mother and baby
- ◆ feeding only with own mother's milk and later breast-feeding
- ◆ possibility of much earlier discharge

However, in most of the world, early discharge is not a primary component of KMC. Skin-to-skin care and breast-feeding are the essential components. The baby is dressed only in a small nappy and a cap, and then placed on the mother's naked chest. The baby can be secured in a number of ways. The simplest is to tie the baby on firmly with a non-stretching cotton cloth, for example a theatre towel. It should be knotted in the mother's axilla, to enable her to lie comfortably (Bergman and Jurisoo, 1994). For newborn and

unstable babies, the mother should lie at 30 to 40 degrees inclination. Once the baby is stable, the mother should be encouraged to be ambulant. For ambulatory KMC, some means of supporting the baby on the mother's chest is needed. A simple pattern for a home-made shirt which provides firm and comfortable support while freeing the mother's hands completely is available from the author.

Breast-feeding should be encouraged, though adequate volumes should always be ensured, if required by expressing from the mother's breasts and feeding by tube or cup or spoon, never bottle. Skin-to-skin care can facilitate the establishment of direct breast-feeding in babies of 28 to 30 weeks gestation, previously thought not possible (Wahlberg, 1993). Such babies can feed in the KMC position. Tube feeding can otherwise be done with the baby in the mother's lap with due care for hypothermia. Skin-to-skin care has a powerful effect on the volume of milk produced per day, and on the duration of breast-feeding (Anderson, 1991). The mother should be regarded as the primary care giver, and should be taught

to tube feed and provide any other care as early as possible. This requires emotional and practical support from nursing staff (Colonna *et al*, 1990).

In contexts where there is inadequate or no access to incubators, KMC could be the standard method of managing LBW babies. A five-fold improvement in survival has been documented from a mission hospital in Zimbabwe where there were no incubators available (Bergman and Jurisoo, 1994). KMC is also the ideal way of transporting small newborns to referral centres, and for warming hypothermic babies. It has also been used as "compassionate care" for infants with poor or no prognosis (Collins, 1993).

Skin-to-skin care should ideally be initiated from birth, as part of the Baby Friendly Hospital Initiative (UNICEF, 1993). It should also ideally be continuous 24 hours per day. However, even a mere 10 minutes per day for 10 days started three weeks after birth has been shown to significantly increase volume of milk produced and duration of breast-feeding (Bier *et al*, 1996). KMC is increasingly being recognised as an extremely valuable adjunct to the management of babies in neonatal ICUs; one third of all NICUs in the USA presently practise it (Gale and Vanden Berg, 1998). It also has positive effects on the mother, and on nursing-staff morale. As babies grow faster, hospital stay is significantly reduced (Kronson, 1996). Moreover, mothers become empowered and confident to care for their infants, and this also allows for earlier discharge. Ideally such discharge should be to some support network. The result is significant cost savings in terms of hospital care (Sloan *et al*, 1994). "Soft care", which may include skin-to-skin care but embraces the same principles, has been shown to produce significantly

Some of the benefits of KMC:

to baby:	improved cardio-respiratory stability faster growth and development
to mother:	better breast-feeding better bonding psychological healing and empowering
to hospital:	significant cost-savings improved morale better survival (in "Third World" situation) better quality care (in "First World" situation)

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fewer complications in very low-birth-weight babies (Als *et al.*, 1994).

A number of hypotheses have been suggested to explain how KMC works (Ludington-Hoe and Swinth, 1996). Currently favoured (by this author at least) is the "vagal hypothesis". Skin-to-skin contact causes intense vagal (parasympathetic) stimulation in the newborn. This reduces levels of stress, facilitates and speeds the adjustment from intra-uterine to extra-uterine existence, and leads to early autonomic stability. This is easily demonstrated with routine monitoring devices: for example, oxygen saturation improves on average two percent (Ludington-Hoe and Swinth, 1996), breathing is more regular, with fewer apnoeic episodes and less periodic breathing (Ludington-Hoe and Swinth, 1996). Heart rate increases within the normal range, and stabilises, in that beat-to-beat variation is markedly reduced (Ludington-Hoe and Swinth, 1996). The same vagal stimulation enables the gut to function optimally, and is thought to stimulate the newborn's own production of surfactant in the lungs (Anderson, 1975). A remarkable and hitherto unexplained phenomenon is that of "thermal synchrony" (Ludington and Anderson, 1989). Mothers practising KMC are able to maintain their babies' temperature within a very narrow range, usually higher than that average recorded in an incubator. For this, the mother's core temperature may rise two degrees centigrade within a minute, or drop one degree. Fathers lack this capacity, and tend to overheat their babies (Ludington-Hoe and Swinth, 1996). Under such circumstances, the baby will be seen to push an arm out from the cover of the shirt. This thermal self-regulation is one example of advanced neuro-behavioural maturation, another result of KMC (Ludington-Hoe and Swinth, 1996).

In summary, one can say that skin-to-skin care is, in almost all respects, as good as, or superior to, the incubator. With adaptations it can be used even in 700g-newborn and unstable babies as an adjunct to other routine ICU care (de Leeuw *et al.*, 1991). It has thus far in the literature been mostly used for stable infants following ICU care. In the absence of technology, KMC on its own is adequate care for babies above 32 weeks' gestation, (if gestation unknown, say 1 200g) (Cattaneo *et al.*, 1998). Below such age, improved survival figures may depend on access to ventilatory support.

Starting KMC is very simple: the naked baby is placed on the mother's bare chest and secured firmly with a cloth. KMC has been started. However, for the full benefits of KMC to be felt on baby, mother and hospital, a proper programme is needed. Implementation of KMC as a programme requires a little more thought and planning (Bell and McGrath, 1996). Hospitals should formulate a comprehensive plan to cover all stakeholders. Media find the method appealing and should be enlisted to promote and inform. Information (posters, leaflets, videos) should be prepared appropriate to all parties involved. The antenatal clinic should teach KMC to mothers at first visits, and prepare mothers for prolonged hospital stays should they have premature babies. The obstetric units should be fully informed, ensuring that skin-to-skin care can start at birth. For some ICU workers, KMC seems like "future shock" (Ludington-Hoe and Swinth, 1996), and proper information must be provided to doctors and nurses. Formal written protocols should be designed in each unit, recognising different contexts and circumstances. Intensive care units, high-care units and low-care units should be co-ordinated to allow a progression of care. Facilities should be provided to allow mothers permanent presence in the entire unit.

The Baby-Friendly Hospital Initiative (BFHI) promotes breast-feeding (UNICEF 1993). It provides a rigorous, structured programme for ensuring a climate optimally conducive to breast-feeding. Breast-feeding is an integral part of KMC, and KMC should be regarded as an integral part of a Baby-Friendly Hospital Initiative. Under ideal circumstances, it could be introduced following the same principles as the BFHI. Where the BFHI already exists, the implementation of KMC is greatly simplified.

A KMC interest group has been established, which meets monthly at Groote Schuur Hospital. Programmes and protocols suitable for a variety of contexts are being prepared. It is recognised that needs and circumstances vary greatly depending on numerous factors. It is hoped, therefore, that a broad and diverse resource base can be developed to aid any hospital in sub-Saharan Africa in establishing KMC programmes. This interest group is also affiliated to the International Network of Kangaroo (INK). Individuals are also welcome to subscribe to the kangaroo

mailing list: send message to "majordomo@hermes.javeriana.edu.co", leave subject box blank, and in body write only "subscribe kangaroo".

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