



1. What is Kangaroo Mother Care (KMC)

Kangaroo Mother Care (KMC) is a special way of caring of low birth weight babies. It fosters their health and well being by promoting effective thermal control, breastfeeding, infection prevention and bonding.

In KMC, the baby is continuously kept in skin-to-skin contact by the mother and breastfed exclusively to the utmost extent, KMC is initiated in the hospital and continued at home.

Components of KMC

- Skin-to-skin contact
- Exclusive breastfeeding

Pre-requisites of KMC

- Support to the mother in hospital and at home
- Post-discharge follow up

1.1 The two components of KMC are:

i. Skin-to-skin contact

Early, continuous and prolonged skin-to-skin contact between the mother and her baby is the basic component of KMC. The infant is placed on her mother's chest between the breasts.

ii. Exclusive breastfeeding

The baby on KMC is breastfed exclusively. Skin-to-skin contact promotes lactation and facilitates the feeding interaction.

1.2 The two pre-requisites of KMC are:

i. Support to the mother in hospital and at home

A mother cannot successfully provide KMC all alone. She would require counseling along with supervision from care-providers, and assistance and cooperation from her family members.

ii. Post-discharge follow up

KMC is continued at home after early discharge from the hospital. A regular follow up and access to health providers for solving problem are crucial to ensure safe and successful KMC at home.



Skin to skin contact of the infant on the mother's chest

2. Benefits of KMC

Breastfeeding: Studies have revealed that KMC results in increased breastfeeding rates as well as increased duration of breastfeeding. Even when initiated late and for a limited time during day and night, KMC has been shown to exert a beneficial effect on breastfeeding.

Thermal control: Prolonged skin-to-skin contact between the mother and her preterm/ LBW infant provides effective thermal control with a reduced risk of hypothermia. For stable babies, KMC is at least equivalent to conventional care with incubators in terms of safety and thermal protection.



Early discharge: Studies have shown that KMC cared LBW infants could be discharged from the hospital earlier than the conventionally managed babies. The babies gained more weight on KMC than on conventional care.

Less morbidity: Babies receiving KMC have more regular breathing and less predisposition to apnea. KMC protects against nosocomial infections. Even after discharge from the hospital, the morbidity amongst babies managed by KMC is less. KMC is associated with reduced incidence of severe illness including pneumonia during infancy.

Other effects: KMC helps both infants and parents. Mothers are less stressed during kangaroo care as compared with a baby kept in incubator. Mothers prefer skin-to-skin contact to conventional care. They report a stronger bonding with the baby, increased confidence, and a deep satisfaction that they were able to do something special for their babies. Fathers felt more relaxed, comfortable and better bonded while providing kangaroo care.

3. Requirements for KMC implementation

- Training of nurses, physicians and other staff involved in the care of the mother and the baby.
- Educational material such as information sheets, posters, video films on KMC in local language should be available to the mothers, families and community.
- If possible, reclining chairs in the nursery and postnatal wards, and beds with adjustable back rest should be arranged. Mother can provide KMC sitting on an ordinary chair or in a semi-reclining posture on a bed with the help of pillows.

- Once KMC is implemented, nurses and other staff appreciate KMC because of the health benefits to the babies and the satisfaction expressed by the mothers.
- KMC does not require extra staff

4 Eligibility criteria

4.1. Baby

All stable LBW babies are eligible for KMC. However, very sick babies needing special care should be cared under radiant warmer initially. KMC should be started after the baby is hemo-dynamically stable. Guidelines for practicing KMC include:

- I. *Birth weight >1800 g* : These babies are generally stable at birth. Therefore, in most of them KMC can be initiated soon after birth.





- II. *Birth weight 1200-1799 g* : Many babies of this group have significant problems in neonatal period. It might take a few days before KMC can be initiated. If such a baby is born in a place where neonatal care services are inadequate, he should be transferred to a proper facility immediately after birth, along with the mother/ family member. He should be transferred to a referral hospital after initial stabilization and appropriate management. One of the best ways of transporting small babies is by keeping them in continuous skin-to-skin contact with the mother / family member during transport.
- III. *Birth weight <1200 g* : Frequently, these babies develop serious prematurity-related morbidity often starting soon after birth. They benefit the most from in-utero transfer to the institutions with neonatal intensive care facilities. It may take days to weeks before baby's condition allows initiation of KMC.

- KMC can be initiated in a baby who is otherwise stable but may still be on intravenous fluids, tube feeding and/ or oxygen .

4.2 Mother

All mothers can provide KMC, irrespective of age, parity, education, culture and religion. The following points must be taken into consideration when counseling on KMC:

- Willingness*: The mother must be willing to provide KMC. Healthcare providers should counsel and motivate her. Once the mother realises the benefits of KMC for her baby, she will learn and undertake KMC.
- General health and nutrition*: The mother should be free from serious illness to be able to provide KMC. She should receive adequate diet and supplements recommended by her physician.
- Hygiene*: The mother should maintain good hygiene: daily bath/sponge, change of clothes, hand washing, short and clean finger nails.
- Supportive family*: Apart from supporting the mother, family members should also be encouraged to provide KMC when mother wishes to take rest. Mother would need family's cooperation to deal with her conventional responsibilities of household chores till the baby requires KMC.
- Supportive community*: Community awareness about the benefits should be created. This is particularly important when there are social, economic or family constraints.



5. Preparing for KMC

5.1 Counseling

When baby is ready for KMC, arrange a time that is convenient to the mother and her baby. The first few sessions are important and require extended interaction. Demonstrate to her the KMC procedure in a caring, gentle manner and with patience. Answer her queries and allay her anxieties. Encourage her to bring her mother/mother in law, husband or any other member of the family. It helps in building positive attitude of the family and ensuring family support to the mother which is particularly crucial for post-discharge home-based KMC. It is helpful that the mother starting KMC, interacts with someone already practicing KMC for her baby.

5.2 Mother's clothing

KMC can be provided using any front-open, light dress as per the local culture. KMC works well with blouse and sari, gown or shawl. A suitable apparel that can retain the baby for extended period of time can be adapted locally.

5.3 Baby's clothing

Baby is dressed with cap, socks, nappy, and front-open sleeveless shirt or 'jhabala'.

6. The KMC procedure

6.1 Kangaroo positioning

- The baby should be placed between the mother's breasts in an upright position.
- The head should be turned to one side and in a slightly extended position. This slightly extended head position keeps the airway open and allows eye to eye contact between the mother and her baby.
- The hips should be flexed and abducted in a "frog" position; the arms should also be flexed.
- Baby's abdomen should be at the level of the mother's epigastrium. Mother's breathing stimulates the baby, thus reducing the occurrence of apnea.
- Support the baby in bottom with a sling/binder.





6.2 Monitoring

Babies receiving KMC should be monitored carefully especially during the initial stages. Nursing staff should make sure that baby's neck position is neither too flexed nor too extended, airway is clear, breathing is regular, color is pink and baby is maintaining temperature. Mother should be involved in observing the baby during KMC so that she herself can continue monitoring at home.

- Ensure that baby's
 - neck is not too flexed or too extended,
 - breathing is normal, and
 - feet and hands are warm



Baby upright between mother's breasts

6.3 Feeding

The mother should be explained how to breastfeed while the baby is in KMC position. Holding the baby near the breast stimulates milk production. She may express milk while the baby is still in KMC position. The baby could be fed with paladai, spoon or tube, depending on the condition of the baby.

6.4 Privacy

KMC unavoidably requires some exposure on the part of the mother. This can make her nervous and could be de-motivating. The staff must respect mother's sensitivities in this regard and ensure culturally-acceptable privacy standards in the nursery and the wards where KMC is practiced.



7. Time of initiation

KMC can be started as soon as the baby is stable. Babies with severe illnesses or requiring special treatment should be managed according to the unit protocol. Short KMC sessions can be initiated during recovery with ongoing medical treatment (IV fluids, oxygen therapy). KMC can be provided while the baby is being fed via orogastric tube or on oxygen therapy.

8. Duration of KMC

- Skin-to-skin contact should start gradually in the nursery, with a smooth transition from conventional care to continuous KMC.
- Sessions that last less than one hour should be avoided because frequent handling may be stressful for the baby.
- The length of skin-to-skin contacts should be gradually increased up to 24 hours a day , interrupted only for changing diapers.
- When the baby does not require intensive care, she should be transferred to the post-natal ward where KMC should be continued.

9. Can the mother continue KMC during sleep and resting?

A comfortable chair with adjustable back may be useful to provide KMC during sleep and rest. In the KMC ward or at home, the mother can sleep with the baby in kangaroo position in a reclined or semi-recumbent position, about 15 -30o degrees from above the ground. This can be achieved with an adjustable bed, if available, or with several pillows on an ordinary bed. It has been observed that this position may decrease the risk of apnea in a baby. A supporting garment to carry the baby in kangaroo position will allow the mother or the father or the relatives to sleep even with the baby in the kangaroo position. When the mother and the baby are well adapted to KMC they can be discharged from the hospital.



When mother is not available, other family member such as grandmother, father or other relative can provide KMC.



10. From hospital to home

10.1 *Criteria to transfer the baby from nursery to the ward*

Standard criteria of the unit for transferring baby from the nursery to the post-natal ward should be as follows :-

- Stable baby
- Gaining weight
- Mother confident to look after the baby

10.2 *Discharge criteria*

The standard policy of the unit for discharge from the hospital should be followed. Generally the following criteria is accepted at most centres:

- Baby's general health is good and no evidence of infection
- Feeding well, and receiving exclusively or predominantly breast milk.
- Gaining weight (at least 15-20 gm/kg/day for at least three consecutive days)
- Maintaining body temperature satisfactorily for at least three consecutive days in room temperature.
- The mother and family members are confident to take care of the baby in KMC and should be asked to come for follow-up visits regularly.

11. When should KMC be discontinued ?

When the mother and baby are comfortable, KMC is continued for as long as possible, at the institution & then at home. Often this is desirable until the baby's gestation reaches term or the weight is around 2500 g. She starts wriggling to show that she is uncomfortable, pulls her limbs out, cries and fusses every time the mother tries to put her back skin to skin. This is the time to wean the baby from KMC. Mothers can provide skin to skin contact occasionally after giving the baby a bath and during cold nights.

12. Post-discharge follow up

Close follow up is a fundamental pre-requisite of KMC practice. Although each unit should formulate its own policy of follow up.

In general, a baby is followed once or twice a week till 37-40 weeks of gestation or till the baby reaches 2.5-3 kg of weight. (Smaller the baby at discharge, the earlier and more frequent follow-up visits should be). Thereafter, a follow up once in 2-4 weeks may be enough till 3 months of post-conceptual age. Later the baby should be seen at an interval of 1-2 months during first year of life.

The baby should gain adequate weight (15-20 gm/kg/day up to 40 weeks of post-conceptual age and 10 gm/kg/day subsequently). More frequent visits should be made if the baby is not growing well or his condition demands.



References

World Health Organization. Kangaroo mother care: a practical guide. Department of Reproductive Health and Research, WHO, Geneva.2003.

Charpak N, Ruiz-Pelaez JG, Charpak Y. Rey-Martinez Kangaroo Mother Program: an alternative way of caring for low birth weight infants? One year mortality in a cohort study. *Pediatrics*. 1994 Dec;94(6 Pt 1):804-10.

Conde-Agudelo, Diaz-Rosello JL, Belizan JM. Kangaroo mother care to reduce morbidity and mortality in low birth weight infants. *Cochrane Database Syst Rev* 2003;(2):CD002771

Charpak N, Ruiz-Pelaez JG, Figueroa de C Z, Charpak Y. A randomized, controlled trial of kangaroo mother care: results of follow-up at 1 year of corrected age. *Pediatrics*. 2001 Nov;108(5):1072-9.

Cattaneo A, Davanzo R, Bergman N, Charpak N. Kangaroo mother care in low-income countries. International Network in Kangaroo Mother Care. *J Trop Pediatr*. 1998 Oct;44(5):279-82.

Sloan NL, Camacho LW, Rojas EP, Stern C. Kangaroo mother method: randomised controlled trial of an alternative method of care for stabilised low-birthweight infants. Maternidad Isidro Ayora Study Team. *Lancet*. 1994 Sep 17;344(8925):782-5.

Ramanathan K, Paul VK, Deorari AK, Taneja U, George G. Kangaroo Mother Care in very low birth weight infants. *Indian J Pediatr*. 2001 Nov;68(11):1019-23.

Chwo MJ, Anderson GC, Good M, Dowling DA, Shiao SH, Chu DM. A randomized controlled trial of early kangaroo care for preterm infants: effects on temperature, weight, behavior, and acuity. *J Nurs Res*. 2002 Jun;10(2):129-42.

Tessier R, Cristo M, Velez S, Giron M, de Calume ZF, Ruiz-Palaez JG, Charpak Y, Charpak N. Kangaroo mother care and the bonding hypothesis. *Pediatrics*. 1998 Aug;102(2):e17.

Goel A, Vani SN. Kangaroo-mother method for the care of low birth weight infants – An Indian experience. Abstracts XVIII Annual Convention of National Neonatology Forum, November 6-8th 1998. P-24, pg 80.

Kiran Kumar BV, Udani RH. Analgesic effect of skin-to-skin contact in kangaroo position in preterm newborns. Abstracts XXII Annual Convention of National Neonatology Forum, December 19-22nd 2002. P-48, pg 158.