54 Kangaroo Mother Care

Kangaroo mother care (KMC) is a method of care of preterm or low birth weight (LBW) neonates by placing them in skin-to-skin (STS) contact with mother or other caregiver in order to ensure their optimum growth and development.[1-4] Initially devised as an alternative to conventional technology-based care, KMC is now considered as the standard of care for LBW neonates in all settings.

Benefits of KMC: What is the evidence? [5]

The Cochrane review on benefits of KMC demonstrated:

- Improved exclusive breast feeding at discharge or 40 to 41 weeks' postmenstrual age (RR 1.16, 95% CI 1.07 to 1.25 and at 1 to 3 months' follow-up (RR 1.20, 95% CI 1.01 to 1.43)
- Reduction in the risk of mortality (RR 0.60; 95% CI 0.39-0.92)
- Reduction in nosocomial infection/sepsis (RR 0.35, 95% CI 0.22 to 0.54)
- Reduction in hypothermia
- Reduction in length of hospital stay (mean difference 2.4 days, 95% CI 0.7 to 4.1)
- Increase in:
  Weight gain (mean difference [MD] 4.1 g/d, 95% CI 2.3 to 5.9)
  Length gain (MD 0.21 cm/week, 95% CI 0.03 to 0.38)
  Head circumference gain (MD 0.14 cm/week, 95% CI 0.06 to 0.22)

Components of KMC [6-8]

1. Kangaroo position
   - The kangaroo position consists of skin-to-skin contact (SSC) between the mother and the neonate in a vertical position, between the mother's breasts and under her clothes
   - The provider must keep herself in a semi- reclining position to avoid the gastric reflux in the neonates
   - The kangaroo position is maintained until the neonate no longer tolerates it- as indicated by sweating or refusing to stay in KMC position

- When continuous care is not possible, the kangaroo position can be used intermittently, providing the proven emotional and breastfeeding promotion benefits
- The kangaroo position must be offered for as long as possible (but at least 1-2 hr/sitting), provided the neonate tolerates it well.

2. Kangaroo nutrition
   - Kangaroo nutrition is the delivery of nutrition to "kangarooed" neonates as soon as oral feeding is possible.
   - Goal is to provide exclusive or nearly exclusive breastfeeding with fortification, if needed.
3. Kangaroo discharge and follow up
   - Early home discharge in the kangaroo position from the neonatal unit is one of the key components of KMC.
   - Mothers at home require adequate support and follow-up; hence a follow-up program and access to emergency services must be ensured.

KMC in different settings

KMC may be used in three different scenarios

1. **No specialized care for LBW neonates**
   LBW neonates born at home or at first level health facility with no specialized care and no possibility of being transferred to a proper healthcare unit can be provided KMC as the sole modality of care. In such cases, KMC including skin-to-skin contact, breastfeeding and adequate follow-up represent the best available means of survival of non-sick premature infants.
2. **Specialized care but limited resources**
   KMC represents an effective alternative which allows better utilization of available resources in these settings
3. **Specialized care and adequate resources**
   KMC is used as an adjunct to technology based care to establish healthy bonding between mother and newborn and to increase the breastfeeding rates. The intermittent kangaroo position in hospital is the most widely used component in such a setting.

Requirements for KMC implementation [6-8]

KMC is feasible everywhere, because it is not based on equipment, and it presents advantages for the organization of health services provided the following requirements are met:

1. **Appropriate health facility**
   a. The health facility should allow entry of the parents to the neonatal unit at all times
   b. A room near to or at the neonatal unit, furnished with comfortable seats for mothers is needed for KMC practice and for education of mothers and families
   c. Reclining chairs in the nursery and postnatal wards, and beds with adjustable back rest should be arranged
   d. Mother can also provide KMC sitting on an ordinary chair or in a semi-reclining posture on a bed with the help of pillows
2. **Appropriate supporting staff and professionals**
   a. Presence of a nurse available full time and trained in assisting mothers in KMC is a must
   b. Staff should receive adequate training on KMC. Additional training is needed for expression and storage of breast milk, using alternate methods of feeding, and daily monitoring of growth of LBW neonates. The training may best be done by exposing them to units practicing KMC
   c. Educational material such as information sheets, posters, and video films on KMC in local language should be available to the mothers, families and the community
3. **Good quality follow-up**
   a. Early discharge in kangaroo position should be attempted only if adequate and appropriate follow up can be ensured
4. **Institutional, social and community support**
   a. The requirement for a successful KMC program can be summarized in three words: communication, sensitiveness and education
   b. Apart from supporting the mother, family members should also be encouraged to provide KMC when the mother wishes to take rest
   c. Mother would need her family's cooperation to deal with

her conventional responsibilities of household chores till the infant requires KMC

d. Community awareness about the benefits should be created. This is particularly important when there are social, economic or family constraints

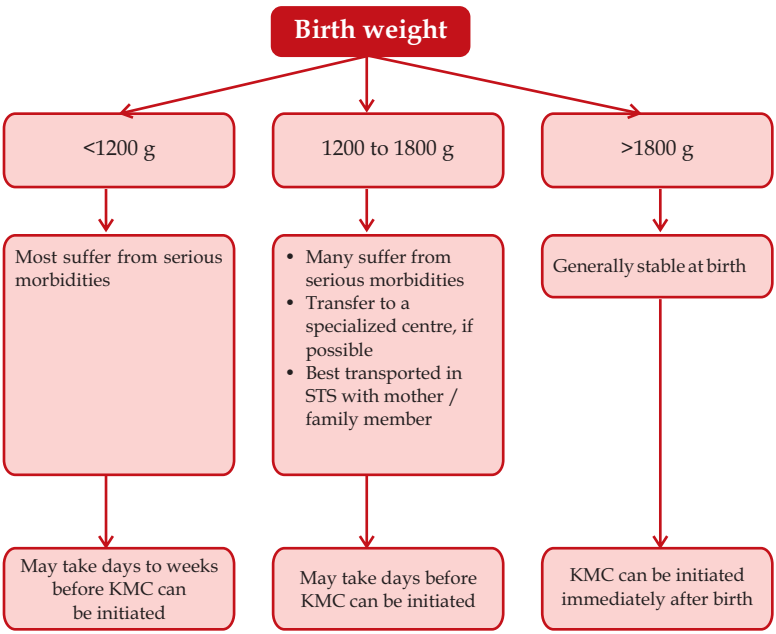

Figure 54.1: Timing of KMC initiation for different birth weight categories

Criteria for eligibility of KMC[6-8]

1. Neonates

All stable LBW neonates are eligible for KMC. However, sick and very small neonates (<1200 g) needing special care need to be cared under radiant warmer initially. KMC need to started once the neonate is hemodynamically stable. Short KMC sessions can be initiated during recovery. KMC can be provided while the neonate is being fed via orogastric tube or on oxygen therapy. Figure 50.1 shows the timing of KMC initiation for different birth weight categories.

2. **Mother/relatives**

All mothers can provide KMC, irrespective of age, parity, education, culture and religion.[6]

The following points must be taken into consideration when counselling on KMC:

1. **Willingness:** The mother must be willing to provide KMC. Healthcare providers should counsel and motivate her. Once the mother realizes the benefits of KMC, she will learn and undertake KMC
2. **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
3. **Hygiene:** The mother should maintain good hygiene: daily bath/sponge, change of clothes, hand washing, short and clean finger nails

Initiation of KMC

1. **Counseling**
   a. When the neonate is ready for KMC, arrange a time that is convenient to the mother and her baby
   b. Demonstrate to her the KMC procedure in a caring and gentle manner and with patience. Answer her queries and allay her anxieties
   c. Encourage her to bring her mother/mother in law, husband or any other member of the family. This 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[8]
   d. It is helpful that the mother starting KMC interacts with someone already practicing KMC
2. **Mother's clothing**
   a. Mother can wear any front-open dresses as per local culture. This may include sari, a blouse, front open gown, a suit, or a simple shirt (Figure 50.2)
   b. KMC can be done with special apparel (such as KEM bag or AIIMS KMC jacket) designed to suit the needs of mothers
   c. Any other suitable apparel that can retain the neonate for extended period of time can be used

3. Baby's clothing

Baby is dressed with cap, socks, nappy, and a front-open sleeveless shirt

Figure 54.2: Mother (A) and father (B) practicing KMC in front open gown and shawl. AIIMS KMC jacket (C) and mother performing KMC using AIIMS KMC jacket (D)

KMC procedure[6-8]

1. Kangaroo positioning (Figure 54.3)

a. The neonate should be placed between the mother's breasts in an upright position

b. The head should be turned to one side and kept in a slightly extended position. This position keeps the airway open and allows eye to eye contact between the mother and her baby

c. 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

d. Support the baby's bottom with a sling/binder

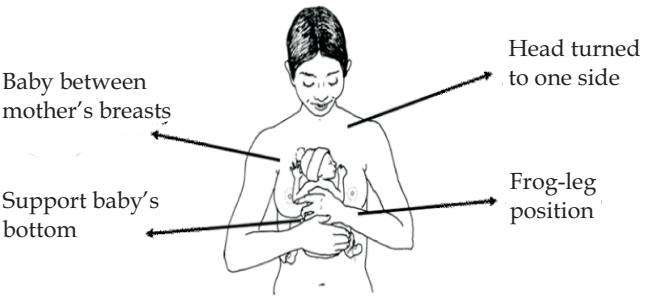

Figure 54.3: Positioning in KMC

2. **Monitoring**
   a. Neonates receiving KMC should be monitored carefully.
   b. Nursing staff should make sure that neonate's neck position is neither too flexed nor too extended, airway is clear, breathing is regular, color is pink and the neonate is maintaining temperature
   c. Mother should be involved in observing the neonate during KMC so that she herself can continue monitoring at home
3. **Feeding**
   a. The mother should be explained how to breastfeed while the neonate is in KMC position.
   b. Holding the neonate near the breast stimulates milk production[5,6]
   c. She may express milk while the neonate is still in KMC position. The neonate could be fed with *paladai*, spoon or tube, depending on his/her clinical condition
4. **Duration**
   a. Skin-to-skin contact should start gradually in the nursery, with a smooth transition from conventional care to continuous KMC
   b. Sessions that last less than one hour should be avoided because frequent handling may be stressful for the neonate
   c. The length of skin-to-skin contacts should be gradually increased up to 24 hours a day, interrupted only for changing diapers

d. When the neonate does not require intensive care, she should be transferred to the post-natal ward where KMC should be continued

Can the mother continue KMC during sleep and resting?[7]

The mother can sleep with her baby in kangaroo position in reclined or semi recumbent position about 30 degrees from horizontal (Figure 54.4). This can be done with an adjustable bed or with pillows on an ordinary bed. A comfortable chair with an adjustable back may be used for resting during the day (Figure 54.4).

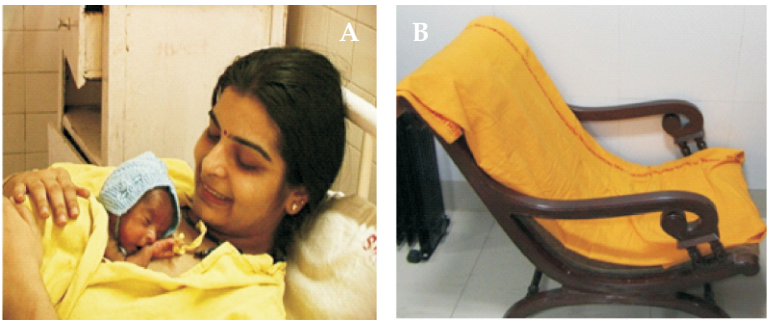

Figure 54.4: Mother practicing KMC in reclining posture (A) and KMC chair (B)

Discharge criteria

The standard policy of the unit for discharge from the hospital should be followed. Generally the following criteria are used at most centres:[7]

- Baby's general health is good
- Gaining weight (at least 15-20 g/kg/day for three consecutive days)
- Maintaining body temperature satisfactorily for at least three consecutive days in room temperature.
- Feeding well and receiving exclusively or predominantly breast milk.
- The mother and family members are confident to take care of the baby

When to discontinue KMC?

KMC is continued for as long as possible at the health facility & then at home. Often this is desirable until the gestation reaches term or the weight is around 2500 g. The time when the infant 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 is the time to wean her from KMC. Even after weaning, mothers can provide skin-to-skin contact occasionally after giving the baby a bath or during cold nights.

Post-discharge follow-up

Close follow up is a fundamental pre-requisite of KMC. The infant is followed once or twice a week till 37-40 weeks of gestation or till he/she reaches 2.5 to 3 kg of weight. Thereafter, a follow up once in 2-4 weeks may be enough till 3 months of post-conception 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-conception age and 10 gm/kg/day subsequently). More frequent visits should be made if the infant is not growing well or his condition demands.

Barriers and enablers of kangaroo mother care

To support kangaroo mother care implementation, one needs context-specific materials, including guidelines, sociocultural norms and behaviour change materials. In addition, systematic training curriculums for health care professionals and mothers, and bed side job aids are needed.

The stress associated with birth of a preterm neonate is compounded by lack of knowledge about KMC among parents, families and health-care workers. This eventually leads to hindrance in 'buy-in' and support from parents and families for practicing KMC. These barriers can be overcome by clear articulation of the benefits for mothers, newborns, caregivers and health-care workers. Engagement of fathers in childcare can help overcome these barriers. In addition, team work and collaboration amongst health care providers can work wonders.

Kangaroo mother care should be practiced systematically and consistently with motivated trained staff, targeted education of

staff and parents, clear eligibility criteria, and improved referral practices and creation of community group in kangaroo mother care participants through support groups. [9,10]

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