

Kangaroo Mother Care in Low-income Countries

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Introduction

Many of the almost five million neonatal deaths occurring annually in low-income countries¹ could be prevented by appropriate, good quality care of low birthweight infants (LBWI). The technologies currently used in rich countries are unavailable in most low-income countries. Kangaroo mother care (KMC), first described in Colombia,² provides an appropriate and affordable yet high quality alternative technology, easily implemented even in small hospitals of very low-income countries. Several papers have already described its advantages for thermal control,^{3,4} reduction of serious morbidity,⁵ and survival;^{6,7} yet KMC is still not widely used. To review its advantages, disadvantages, and applicability, an international workshop was convened in Trieste, Italy, on 24–26 October 1996. Thirty-six participants from 15 countries (see List of Workshop Participants) reached consensus on the use of KMC in three different settings, including second and third level hospitals in countries where sophisticated technology is available. We report, as previously announced,⁸ their conclusions on KMC in first level facilities in countries with very limited resources and in second and third level hospitals in countries with limited resources. First, comments are made on general newborn care, then KMC is discussed in the above settings, and finally implementation strategies are suggested.

For the purpose of this report, KMC is defined as early, prolonged, and continuous skin-to-skin contact between the mother and the LBWI, both in hospital and after discharge, with exclusive breastfeeding and proper follow-up. First-level facilities in countries with very limited resources are rural hospitals or maternities without equipment and supplies (incubators, radiant warmers, oxygen therapy) for the care of LBWI, without specialized physicians, or no physicians at all, and with a small number of nurses and/or midwives. The definition of second and third level hospitals in countries with limited resources includes most district and provincial hospitals in some countries, but only a small number of urban hospitals in other countries; specialized doctors

and nurses are usually available, as well as basic equipment and supplies, but insufficient to meet the needs; the equipment is often out of order or poorly used, and the staff can devote only a small proportion of its time to the care of LBWI.

General Newborn Care

All neonates, irrespective of birthweight, gestational age, and place of birth, should have skin-to-skin contact with their mothers immediately after birth. The newborn infant should be gently dried with a dry, warm, and clean towel. If the temperature in the delivery room is less than 25°C, the newborn infant should be loosely wrapped with a second, dry, warm, and clean towel. During this procedure the baby should be quickly assessed (airways, breathing, circulation) and resuscitated (bag and mask) if needed. As soon as possible after this drying and assessing procedure, all neonates should be given to the mother for skin-to-skin contact for at least two hours, to stabilize their body temperature, and initiate bonding. Breastfeeding should also start as soon as possible, within 60 minutes from birth.

During this early stabilization period, the newborn infant will be continuously assessed to identify and treat early problems, if any, and will be classified by birthweight and, if possible, by gestational age. A neonatal scale, ideally with 10 g intervals, should be available. International categories for classification are: 2500 g or more, between 1500 and 2499 g (LBWI), and less than 1500 g (very LBWI). For management purposes, the following categories are proposed: 1800 g or more, between 1200 and 1799 g, and less than 1200 g. Where birthweight cannot be determined, or estimated by the use of surrogates (e.g. arm or chest circumference),⁹ LBWI can be classified by size into three groups: large, small, and very small. These proposed categories represent three different levels of risk, with different problems and potential benefits from KMC in different settings.

First-Level Facilities in Countries with Very Limited Resources

In this setting, KMC will be beneficial for large LBWI (1800 g or more), less often affected by prematurity

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related problems, such as respiratory distress syndrome (RDS). Because it improves bonding, promotes breastfeeding, and facilitates thermal control, KMC can help decrease their mortality and morbidity. This is particularly true where neonatal hypothermia is common, that is, in many more settings than previously thought.^{10,11} In the group 1200 to 1799 g, mortality and morbidity can also be reduced, though it should be recognized that for a gestational age less than 32 weeks, respiratory support facilities are required to improve prognosis. In this group, the effect of KMC will depend on the proportion of prematurity-related problems, that is, on the premature-to-small-for-gestational-age (SGA) ratio existing in each specific setting. Though there are reports of good outcome,⁶ there is no evidence that KMC will reduce mortality and morbidity in very small LBWI (less than 1200 g) heavily affected by prematurity-related problems; this is still a matter for research. Where referral facilities do not exist for such neonates, KMC is the best that can be offered.

All KMC infants should be continuously monitored or regularly reassessed. The maternity staff should be able to look at how they breathe, feed, and maintain their temperature. Infants who have problems with breathing or feeding (problems with thermal control are less likely during KMC), usually in the small or very small group, should be transferred to a higher level of care, if available. Referral will be useless if more skilled staff and better equipment (respiratory support) are not available at the referral facility. When referral is useless or impossible, for reasons ranging from cost to distance and to parental rejection, these LBWI with breathing or feeding problems will have to be cared for with KMC at the first-level facility. Many of these neonates will die. As death will occur at the mother's breast, research on the acceptability of such an event should be carried out in any given society before issuing guidelines.

Second and Third Level Hospitals in Countries with Limited Resources

In this setting, neonatal mortality may be high even in large LBWI of 1800 g or more despite the availability of some human and material resources due to overcrowding, hospital infections, breakdowns or improper use of equipment, and inadequate follow-up. Moreover, separation from the mother reduces bonding and breastfeeding, two factors that improve the chances of survival after discharge. In this situation, KMC can reduce mortality. In hospitals where good quality conventional care is given, KMC will have little or no effect on mortality, but will decrease morbidity and improve the well-being of LBWI, in hospital and after discharge, by preventing hypothermia and infections, by promoting breastfeeding, and by increasing maternal competence in LBWI care. KMC is well accepted by mothers and staff and it decreases the cost of hospital care. It is indicated for preterm infants from about 32 weeks gestational age onwards. Below this age, infants can be put on KMC

after stabilization of the vital functions. More research is needed on the effectiveness and safety of KMC before stabilization. In practice, all LBWI who are breathing well and are free from severe disease or malformation are eligible for KMC, provided that the mother is available, not severely ill, in the hospital, willing to collaborate, and supported by the family and staff.

Implementation of KMC

KMC implies continuous and prolonged skin-to-skin contact; the least possible separation for bath, toilet, and medical procedures; an upright or semi-oblique position of the baby between the mother's breasts; a naked baby except for the diaper, a hat and socks when the room temperature is above 20°C and a cotton shirt when the room temperature falls below 20°C; the use of complementary methods of thermal control, such as a warm room, where needed; the promotion of exclusive breastfeeding; and the proper supplementation of nutrients (vitamins, micronutrients, preterm formula) when needed.

Exclusive breastfeeding is the rule whenever possible. Premature infants who are still unable to suck can also start on KMC, as this will facilitate initiation of breastfeeding. LBWI who are unable to feed can initially be given expressed breast milk with anything (cup, spoon, syringe, tube) but a bottle until breastfeeding is established. The hospital staff should ensure that every KMC mother is able to express and store breast milk, to feed the baby with a cup, a spoon, or a dropper, to progress to direct breastfeeding, and to maintain exclusive breastfeeding during day and night. Though exclusive breastfeeding is the rule, daily assessments of weight gains in hospital and after discharge are necessary; if weight gain is less than 10 to 15 g/kg/day, and other causes of failure to thrive are excluded, supplementary preterm formula should be added and given by cup, spoon, or dropper. In LBWI, attaining an appropriate weight gain must have priority over the golden rule of maintaining exclusive breastfeeding.

Because it promotes breastfeeding and it enhances the confidence of mothers to care for their small babies, KMC usually allows an earlier and safer discharge from hospital. LBWI can be discharged when they are able to breastfeed adequately and when they recover their birth weight or show a firm upward trend in weight gain for at least three days. Their temperature must be stable and mothers must be capable of good home care, including timely return to the hospital in case of need. If the mother cannot ensure an adequate follow-up, the discharge weight of the baby should be at least 1500 g. The baby will be discharged with the recommendation to maintain the kangaroo position and to use hat and socks. Mothers should be instructed to return daily to the hospital or a clinic for the initial follow-up. Follow-up intervals can later be increased to 3–5 days until 2500 g of weight is reached. The baby will then join the normal follow-up programme for high-risk children. Community nurses

and mothers with previous KMC experience can provide an important support to the follow-up programme.

Finally, KMC can be used for rewarming mildly or moderately hypothermic LBWI¹² and for transport within and between facilities, and between hospital and home.¹³ KMC may result in savings due to a reduced need for sophisticated equipment and an earlier discharge. It may also lead to more efficient use of staff who will have more time for daily assessment of the baby and support to the mother. KMC will hopefully promote a more human approach to birth care.

Requirements for KMC

The hospital should reserve a small room for KMC; this facilitates the regular reassessment of LBWI and allows the place to be kept cleaner and warmer. This small KMC ward should be heated to a temperature of at least 20°C if the environmental temperature is lower, should have adequate toilet and bathing facilities, and should offer the mother some recreation, if possible. The KMC programme should consider that mothers need psychological, social, and educational support not only during hospitalization, but also after discharge. The long period in hospital and the repeated contacts after discharge should be used by the health workers to teach the mother and her family not only the skills of KMC, but also the abilities involved in all aspects of infant health care. In addition, the KMC programme should set up a follow-up system by which the target mothers can have quick and direct contact with a trained provider whenever they need it.

In-service training on KMC should be organized in every hospital providing care for LBWI for all health workers dealing with them. The information on the advantages of KMC and on its use should be given also to the hospital and community staff involved in MCH and antenatal care. Nursing and medical schools should progressively include KMC in their curricula. The hospital should have a written policy and all women attending antenatal care, or at least those who are at risk for a premature delivery, should be informed that KMC is the hospital policy for LBWI. Mothers should be properly informed and adequately instructed. The decision to adopt KMC must in any case be taken by consensus between the mother and the family on one side and the hospital staff on the other.

The hospital should also have a breastfeeding policy well known by mothers and staff. The KMC staff should have extra training on breastfeeding for LBWI, in particular on stimulation of breastfeeding, on expression, storage, and administration of breast milk, and on daily monitoring of growth. Breastfeeding on demand may be inadequate for LBWI and the staff should know how to adapt the breastfeeding programme to the nutritional needs of each baby. The staff should also be able to decide when breastfeeding should be supplemented, what supplements are needed, and how they should be administered. Finally, the KMC staff should be able to

monitor or regularly reassess the clinical conditions of each LBWI, looking at breathing and feeding patterns, and checking temperature and the passing of urine. Last but not least, health workers should know how to provide all the necessary support to mothers.

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List of Workshop Participants

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