

**THE UNITED REPUBLIC OF TANZANIA**



**MINISTRY OF HEALTH AND SOCIAL WELFARE**

# **KANGAROO MOTHER CARE GUIDELINE**



Reproductive and Child Health

Edition August, 2008





## TABLE OF CONTENTS

|  |    |
|--|----|
| ABBREVIATIONS.....   | 3  |
| GLOSSARY .....   | 4  |
| FOREWORD.....  | 6  |
| ACKNOWLEDGEMENTS .....   | 7  |
| 1.0 INTRODUCTION.....  | 8  |
| 1.1 Magnitude of the problem/ Background .....   | 8  |
| 1.2 The purpose of the guideline .....   | 9  |
| 1.3 What and Why Kangaroo mother care .....  | 9  |
| 2.0 ESTABLISHING KMC SERVICES .....  | 10 |
| 2.1 Implementation.....  | 10 |
| 2.2 Setting.....   | 10 |
| 2.3 Staffing .....   | 11 |
| 2.4 Capacity building .....  | 11 |
| 2.5 Facilities, equipment and supplies .....   | 11 |
| 3.0 INITIATING AND MAINTAINING KANGAROO MOTHER CARE.....                               | 12 |
| 3.1 When to Start KMC.....   | 12 |
| 3.2 Kangaroo position .....  | 13 |
| 3.3 Caring for the baby in kangaroo position.....                                      | 13 |
| 3.4. Sleeping and resting during KMC.....  | 14 |
| 3.5 Cord care during KMC.....  | 14 |
| 3.6 Feeding a Baby on KMC.....   | 14 |
| 3.6.1 Quantity and frequency .....   | 16 |
| 3.6.2 Expressing breast milk .....   | 16 |
| 3.6.3 Breastfeeding a baby in KMC .....  | 17 |
| 3.6.4 Support to mothers who breastfeed twins .....                                    | 18 |
| 3.6.5 Alternative feeding .....  | 18 |
| 4.0 Monitoring the baby in KMC.....  | 19 |
| 4.1 Anthropometric measurement .....   | 19 |
| 4.1.1 Weight.....  | 19 |
| 4.1.2 Head circumference.....  | 20 |
| 4.1.3 Length, chest and arm circumference .....  | 20 |
| 4.2 Temperature.....   | 20 |
| 4.3 Breathing .....  | 20 |
| 4.4 Heart Rate.....  | 20 |
| 5.0 Common Problems in LBW babies and their Management.....                            | 21 |
| 5.1 Common Problems .....  | 21 |
| 5.2 Management of common Problems in LBW babies .....                                  | 21 |
| 5.2.1 Hypothermia .....  | 21 |
| 5.2.2 Apnoea.....  | 21 |
| 5.2.3 Redness and/or swelling, foul smelling, discharge from the cord and/or skin..... | 22 |
| 5.2.4 Redness, swelling and discharge from the eyes .....                              | 22 |
| 5.2.5 Inadequate weight gain.....  | 22 |
| 6.0 Discharge.....   | 24 |
| 6.1 Discharge from KMC health facility.....  | 24 |
| 6.2 Termination of KMC .....   | 24 |
| 6.3 Important information to the mother on discharge.....                              | 24 |
| 6.4 KMC at home and routine follow-up .....  | 25 |
| 7.0 MONITORING AND EVALUATION FOR KMC SERVICES .....                                   | 27 |
| 7.1 Monitoring and evaluation .....  | 27 |





## ABBREVIATIONS

|       |  |
|-------|--|
| AGA   | Appropriate for Gestational Age                |
| CHMT  | Council Health Management Team                 |
| ENC   | Essential Newborn Care                         |
| HMIS  | Health Management Information System           |
| HMT   | Health facility Management Team                |
| KMC   | Kangaroo mother care                           |
| LBW   | Low birth weight                               |
| MoHSW | Ministry of Health and Social Welfare          |
| PMTCT | Prevention of Mother to Child HIV Transmission |
| RCH   | Reproductive and Child Health                  |
| RHMT  | Regional Health Management Team                |
| SGA   | Small for Gestational Age                      |
| TDHS  | Tanzania Demographic Health Survey             |



## GLOSSARY

Terms in this glossary are listed under key words in alphabetical order.

### Age

- **Chronological age:** age calculated from the date of birth.
- **Gestational age:** age or duration of the gestation, from the last menstrual period to birth.
- **Post-menstrual age:** gestational age plus chronological age.

### Birth

- **Term birth:** delivery occurring between 37 and 42 weeks of gestational age.
- **Preterm birth:** delivery occurring before 37 weeks of gestational age.
- **Post-term birth:** delivery occurring after 42 weeks of gestational age.

### Birth weight

- **Low-birth-weight infant:** infant with birth weight lower than 2500g (up to and including 2499g), regardless of gestational age.
- **Very low-birth-weight infant:** infant with birth weight lower than 1500g (up to and including 1499g), regardless of gestational age.
- **Extremely low-birth-weight infant:** infant with birth weight lower than 1000g (up to and including 999g), regardless of gestational age. Different cut-off values are used in this guideline since they are more useful for clinical purposes.

### Body temperature

- **Hypothermia:** body temperature below 36.5°C.

### Growth

- **Intrauterine growth retardation:** impaired growth of the foetus due to foetal disorders, maternal conditions (e.g. maternal malnutrition) or placental insufficiency.

### Feeding

- **Breast feeding:** feeding the baby from the breast
- **Alternative feeding method:** not breastfeeding but feeding the baby with expressed breast milk by cup or tube; expressing breast milk directly into baby's mouth.

### Breast milk

- **Foremilk:** breast milk initially secreted during a breast feed.
- **Hind milk:** breast milk remaining in the breast when the foremilk has been removed (hind milk has a fat content and a mean caloric density higher than foremilk).

### Preterm/full-term infant

- **Premature or preterm infant:** infant born before 37 weeks of gestational age.
- **Preterm infant appropriate for gestational age (AGA):** infant born preterm with birth weight between the 10th and the 90th percentile for his/her gestational age.
- **Preterm infant small for gestational age (SGA):** infant born preterm with a birth weight below the 10th percentile for his/her gestational age.
- **Full-term infant small for gestational age (SGA):** infant born at term with birth weight below the 10th percentile for his/her gestational age.

**Small baby:** in this guide, a baby who is born preterm with low birth weight.

**Stable preterm or low-birth-weight infant:** a newborn infant whose vital functions (breathing and circulation) do not require continuous medical support and monitoring, and are not subject to rapid and unexpected deterioration, regardless of inter-current disease.

*Note: Throughout this document babies are referred to by the personal pronoun “she” or “he” in preference to the impersonal (and inaccurate!) “it”. The choice of gender is random*





## FOREWORD

Some 20 million low-birth-weight (LBW) babies are born each year, because of either preterm birth or impaired prenatal growth, mostly in less developed countries including Tanzania.

LBW and preterm birth are associated with high neonatal and infant mortality and morbidity. Of the global estimated 4 million neonatal deaths, preterm and LBW babies represent more than a fifth.

In Tanzania, it is estimated that 16% of babies are born with low birth weight. Of the estimated 45,000 neonatal deaths every year, preterm babies represent 27% (12,150) and 86% of neonatal deaths are low birth weight babies. Therefore, the care of such infants becomes a burden for health and social systems everywhere.

Kangaroo Mother Care is an effective way to meet baby's needs for warmth, breastfeeding, protection from infection, stimulation, safety and love. It is one of the evidence-based and cost-effective interventions that will contribute to the reduction of neonatal mortality. It is less labour intensive and requires few/limited resources than conventional care, hence financially and economically feasible.

It is the expectation of the Government that, the Kangaroo Mother Care guideline will be used by the policy makers, planners and implementators and partners to guide the establishment and implementation of Kangaroo Mother Care services at National, Regional, District and health facility levels to ensure survival and optimal development of preterm and low birth weight babies.

**Dr Deo Mtasiwa**  
**Chief Medical Officer**  
**Ministry of Health and Social Welfare**



## ACKNOWLEDGEMENTS

The Ministry of Health and Social Welfare (MoHSW) wishes to express gratitude to individuals and development partners who worked with the Ministry in the development of Kangaroo Mother Care National guideline.

The MoHSW would like to acknowledge partners and stakeholders who contributed in one way or another to the successful development of the document. The Ministry particularly wishes to acknowledge the invaluable contribution of the Dr. Catherine Sanga (RCHS, MoHSW), Dr. Neema Rusibamayila (IMCI, MoHSW), Dr. Georgina Msemu (IMCI/SNL, MoHSW), Ms. Lucy Gomile (IMCI, MoHSW), Mr. John Meena (IMCI, MoHSW), Dr. Koheleth Winani (RCHS/SMI, MoHSW); Dr. Hores I. Msaky (Morogoro Regional Hospital), Dr Safila Telatela (Muhimbili National Hospital); Dr. Theopista John, Ms. Eunice Chege, Dr Nemes. Iriya, Dr. Josephine Obel (WHO Tanzania); Dr. Asia Hussein (UNICEF, Tanzania); and Scholastica Chibehe (ACCESS/Jhpiego, Tanzania).

The Ministry would also like to acknowledge Ms. Gonsalva Makuhana (MoHSW) for her secretarial work with the initial drafts of this document.

Lastly, the Ministry would like to acknowledge technical and financial support provided by WHO for the development and printing of the Kangaroo Mother Care guideline.

**Dr. Donan Mmbando**  
**Director of Preventive Services**  
**Ministry of Health and Social Welfare**



## CHAPTER ONE

### 1.0 INTRODUCTION

#### 1.1 Magnitude of the problem/ Background

Tanzania is among those countries that have had success in reducing child mortality, 24% reduction in under fives and 31% reduction in infant mortality. The reduction in infant mortality was mostly post neonatal and there has been no significant progress in reducing neonatal deaths. The neonatal mortality rate was 40.4 per 1,000 live births in 1999 and 32 per 1,000 live births in 2004/05 (TDHS). Up to 50% of neonatal deaths occur in the first 24 hours of life, with over 75% of them arising in the first week of life. Newborn mortality is a sensitive indicator of the quality of care provided during the antenatal period, delivery and immediate postnatal period.

Low birth weight (LBW) has detrimental effects on the survival, growth and development of newborns and carries an increased risk of neonatal mortality. It is estimated that around 16% of babies are born with low birth weight in Tanzania most of whom are born prematurely. An estimated 27% of newborns deaths are directly due to complications of preterm birth (TDHS 2004/5).

In less developed countries including Tanzania, high rates of LBW are due to preterm birth and impaired intrauterine growth, and their prevalence is decreasing slowly. Since causes and determinants remain largely unknown, effective preventive interventions are limited. Moreover, modern technology is either not available or cannot be used properly, often due to the shortage of skilled staff. Incubators, for instance, where available, are often insufficient to meet local needs or are not adequately cleaned. Purchase of the equipment and spare parts, maintenance and repairs are difficult and costly; the power supply is intermittent, so the equipment does not work properly. Under such circumstances good care of preterm and LBW babies is difficult: hypothermia and nosocomial infections are frequent, aggravating the poor outcomes due to prematurity. Frequently and often unnecessarily, incubators separate babies from their mothers, depriving them of the necessary contact. However, Kangaroo Mother Care (KMC) is an effective way to meet baby's needs for warmth, breast feeding, and protection from infection, stimulation, safety and love.

Additionally, KMC for preterm and low birth weight babies is one of the evidence-based and cost-effective child health interventions that contribute to reduction in neonatal morbidity and mortality when implemented at high coverage. It is less labour intensive and requires few/limited resources than conventional care, hence financially and economically feasible.

#### 1.2 The purpose of the guideline

This guideline describes the KMC method for care of stable preterm/LBW infants (i.e. those who can breathe air and have no major health problems) who need thermal protection, adequate feeding, frequent observation, and protection from infection.

It provides guidance on how to organize services at the health facilities and on what is needed to introduce and carry out KMC, focusing on settings where resources are limited.

This guideline is meant for policy makers, planners, health care providers, trainers and health training institutions at all levels. Each health facility should have and use the KMC guidelines.

#### 1.3 What and Why Kangaroo mother care

Kangaroo Mother Care is a method of care of preterm infants carried skin-to-skin to keep the temperature stable, to stimulate the baby's breathing, enable breast feeding and promotes mother and baby bonding. It is a powerful, easy-to-use method to promote the health and well-being of infants born preterm as well as full-term. Its key elements are:

- \_ *position- early, continuous and prolonged skin-to-skin contact between the mother and the baby;*
- \_ *nutrition-exclusive breastfeeding (ideally);*





- \_ discharge with adequate support and follow up;*
- \_ supportive environment in the health care facility and at home.*

Benefits of KMC are:

- \_ it is initiated in hospital and can be continued at home;*
- \_ small babies can be discharged early;*
- \_ it is a gentle, effective method that avoids the agitation routinely experienced in a busy ward with preterm infants.*
- \_ it facilitates breast feeding*
- \_ contributes to the humanization and to better bonding between mother and baby*
- \_ is at least equivalent to conventional care (incubators), in terms of safety and thermal protection, if measured by mortality.*

Almost two decades of implementation and research have made it clear that KMC 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.

This guide will therefore refer to KMC initiated at a health facility and continued at home (domiciliary KMC) with follow up support from the health facility and community health workers. KMC as described in this document recommends continuous skin-to-skin contact acknowledging that it might not be possible in all settings and under all circumstances. The principles and practice of KMC outlined in this document are also valid for intermittent skin-to-skin contact, provided adequate care is offered to LBW and preterm newborn infants when they are separated from their mothers. Guidance on skin-to-skin care may be used for rewarming newborn infants with hypothermia or keeping them warm during transportation to the referral facility

## **2.0 ESTABLISHING KMC SERVICES**

This section describes the establishment and organization of services which also includes provision of essential equipment and supplies for mothers and babies, staffing and capacity building of health providers. Some common constraints faced when implementing KMC, and possible solutions, are discussed in Annex III.

### **2.1 Implementation**

Implementation of KMC and its protocol will need to be facilitated by supportive health authorities at all levels. These include the hospital director, medical officer in charge, Regional and Council health management teams (RHMT, CHMT). This policy guideline aims to ensure a coherent and effective integration of the practice within pre-existing structures of the health system, education and training.

Preterm babies are best cared for in a health facility that provides special medical care required for managing their frequent complications. Thus, when a premature baby is expected, the mother should be transferred to such health facility before birth. If this is not possible, very small babies or small babies with problems should be transferred there as soon as possible. The referral system should be organized in such a way as to guarantee the safety of the baby.

### **2.2 Setting**

The most common settings are:

#### **Maternity facilities and Dispensaries**

These facilities provide basic emergency obstetric and neonatal care, they can initiate KMC and refer the low birth weight and preterm babies in KMC position.

#### **Health centres**

Health centres do conduct deliveries and some of them provide Comprehensive Emergency Obstetric Care. The facility provides inpatient services; therefore Kangaroo Mother Care should be established at this level.







However LBW babies with complications or with weight below 1500g should be transferred to a higher level of care.

### **District and Regional hospitals**

These facilities should have neonatal units. Kangaroo mother care services should be established for all low birth weight babies. However babies with complications should be referred to higher level of care.

### **National and Consultant hospitals**

Low birth weight babies delivered at these facilities should have access to Kangaroo Mother Care services. A common feature is the availability of skilled personnel, specialized equipment and supplies for special neonatal care, therefore all low birth weight babies and neonates with complications should be managed at this level.

### **2.3 Staffing**

Kangaroo Mother Care does not require additional staff at health facility. Existing staff should have adequate training in all aspects of KMC

### **2.4 Capacity building**

All health care providers working in the dispensaries, health centres and those working in neonatal units at higher levels should be trained on basic KMC according to the national guidelines. Each health facility should have a programme of continuing education in the area of KMC and breastfeeding. Nursing, Allied health sciences and medical schools should include KMC in their training.

### **2.5 Facilities, equipment and supplies**

KMC does not require special facilities, but simple arrangements can be made to make the mother's stay more comfortable.

- Rooms that can accommodate enough beds, side cupboard and chairs according to the level of care.
- Health centre should have 2-4 beds according to delivery load
- Hospitals should have 6 or more beds depending on the delivery load.
- The beds should be comfortable, if possible adjustable or with enough pillows to maintain an upright or semi-recumbent position.
- Rooms should have privacy and adequate warmth (22-24°C). Curtains can help to ensure privacy.
- Bathroom facilities, running water and soap should be available.
- Where possible, a small room would be useful for individual work with mothers, discussion of private and confidential issues and for reassessing babies.
- The fathers and relatives should be allowed to support the mother during KMC.
- Recreational, educational and income-generating activities can be organized for mothers during KMC as deemed necessary.

*During KMC* mother can wear whatever she finds comfortable and warm in the ambient temperature, provided the dress accommodates the baby, i.e. keeps him firmly and comfortably in contact with her skin. The babies in KMC require minimal dressing except for the nappy, a warm hat and socks. When the temperature drops below 22°C, baby should be warmed according to training guideline.

Other required equipment and supplies includes:

- *A low reading thermometer*
- *A room thermometer*
- *scales: ideally neonatal scales with 10g intervals should be used;*
- *basic resuscitation equipment, and oxygen where possible, should be available where preterm babies are cared for;*
- *drugs for preventing and treating frequent problems of preterm newborn babies may be added according to national guidelines.*





## CHAPTER THREE

### 3.0 INITIATING AND MAINTAINING KANGAROO MOTHER CARE

This chapter describes how to practice Kangaroo Mother Care (KMC) in the health facility. It describes each component: thermal protection through the correct position, feeding, observing the baby, identifying and managing arising problems. The chapter also explains the criteria for discharge, continuum of KMC at home, follow-up needed to ensure adequate growth and support given to the mother.

#### 3.1 When to Start KMC

KMC should be initiated to a stable preterm and LBW. Initial care for babies with complications should be provided according to national guidelines. In this case KMC will have to be delayed until the medical conditions improve. The judgment on when to start KMC should be individualized. However, the mother of a small baby can be encouraged to adopt KMC very early on. The birth weight ranges below are given as a guide.

- a) Babies weighing 1800g or more at birth (gestational age 30-34 weeks or more) KMC can start soon after birth
- b) Babies with birth weight between 1200 and 1799g (gestational age 28-32 weeks), usually require some kind of special treatment initially. Should delivery take place at a low equipped facility or at home, the baby should be transferred soon after birth, preferably with the mother.
- c) Babies weighing less than 1200g (gestational age below 30 weeks) incur frequent and severe problems due to prematurity. These babies will benefit most if delivered in health facility with neonatal intensive care. It may therefore take weeks before their condition allows initiation of KMC.

The following criteria will determine when to decide that the mother adopts KMC.

- Should be **willing** to provide KMC;
- Should be **full-time available** to provide care. Other family members can offer intermittent skin-to-skin contact but they cannot breastfeed;
- Should be in **good general health**.
- Should **refrain from unhealthy practices**, such as smoking (active or passive).
- Should be able to stay in health facility until discharge.
- Should have **support from the family and community**: this is particularly important when there are social, economic or family constraints.

**NB:** All mothers can provide KMC, irrespective of age, parity, education, culture and religion. KMC may be particularly beneficial for adolescent mothers and for those with social risk factors. Adopting KMC should be the result of an informed decision and should not be perceived as an obligation.

KMC can begin during tube-feeding. The ability to feed (to suck and swallow) is therefore not an essential requirement for initiating KMC.

#### 3.2 Kangaroo position

Proper positioning of the small babies for KMC is crucial in order to achieve its objective which is keeping the babies warm, maintaining feeding while ensuring the mothers comfort.

Length of baby stay at KMC position without interruption is crucial. Skin-to-skin contact should start gradually, with a smooth transition from conventional care to continuous KMC. Sessions that last less than 60 minutes should, however, be avoided because frequent changes are too stressful for the baby. The length of skin-to-skin contacts should gradually be increased to become as continuous as possible, day and night, interrupted only for changing nappy, especially where no other means of thermal control are available.





When the mother needs to be away from her baby, he can be well wrapped up and placed in a warm cot, away from draughts, covered by a warm blanket, or placed under an appropriate warming device, if available. During those breaks family members (father or partner, grandmother, etc.), or a close friend, can also help caring for the baby in skin-to-skin kangaroo position

Positioning the baby for KMC should include the following:

- Placing the baby between the mother's breasts in an upright position, chest to chest.
- Securing the baby with a binder.
- The head is turned to one side in a slightly extended position. The top of the binder being just under baby's ear. That extends the head position slightly keeps the airway open and allows eye-to-eye contact between the mother and the baby.
- Both forward flexion and hyperextension of the head should be avoided.
- The hips should be flexed and extended in a "frog" position.
- The arms should also be flexed.
- A cloth should be tied firmly enough with part of the cloth over the baby's chest so that the baby does not slide out.
- Baby's abdomen should not be constricted and should be somewhere at the level of the mother's epigastric region. This way the baby will have enough room for abdominal breathing.
- Mother's breathing can stimulate the baby (reducing Apnea)

### **3.3 Caring for the baby in kangaroo position**

Babies can receive most of the necessary care, including feeding and sleeping while in kangaroo position. Daily bathing is not needed and is not recommended. If local customs require a daily bath and it cannot be avoided, it should be short and warm (about 37°C). The baby should be thoroughly dried immediately afterwards, wrapped in warm clothes, and put back into the KMC position as soon as possible.

Babies should be moved away from skin-to-skin contact only for:

- Changing nappy, hygiene and cord care
- Clinical assessment when needed.

During the day the mother carrying a baby in the KMC position can do whatever she likes which will make her stay less boring. She has to meet, however, a few basic requirements such as cleanliness and personal hygiene.

### **3.4. Sleeping and resting during KMC**

Mothers in KMC should best sleep with their babies in kangaroo position in a reclined or semi-recumbent position; about 45 degrees from horizontal. This can be achieved with an adjustable bed, if available, or with several pillows on an ordinary bed. This position may decrease the risk of apnoea for the baby.

If necessary the mother should be allowed to sleep as she prefers, because the advantages of KMC are much greater than the risk of apnoea.

A comfortable chair with adjustable back may be useful for resting during the day.

### **3.5 Cord care during KMC**

Cord care is important in preventing newborn from getting infection such as tetanus and septicaemia. Cord care should include the following:

- Putting nothing on the cord, keeping it clean and dry ( no medication or dressing)
- The baby should only be given sponged bath until the cord falls off and the umbilicus has healed.
- Avoid contact with urine or stool ( If it happens the cord should be washed with clean water and soap and dried with clean cloth)
- Looking for the signs of infection of the cord daily until it has healed. Such signs includes, pus





- discharge, foul smelling, redness and swelling of the skin around the umbilicus.
- Putting the baby on appropriate medical treatment immediately once the signs of infection are identified.

**NB:** Wet Cord is not a contraindication to KMC. Mothers should be assured that the baby is safe and cord healing will take place normally while the baby is cared in KMC. The mother should also be advised on her personal cleanliness and hygiene.

### 3.6 Feeding a Baby on KMC

Breastfeeding is a special gift from a mother to her baby. It does not only provide a natural opportunity for bonding but also supports the growth and development of the newborn. However, breastfeeding a very small baby (LBW and preterm) is a special challenge.

Oral feeds should begin as soon as baby's condition permits and the baby tolerate them. This is usually around the time when baby can be placed in kangaroo position. This helps the mother to produce breast milk.

Feeding small babies depend on its gestational age and weight:

- a) Babies who are less than 30 weeks gestational age usually need to be fed through a naso-gastric tube, which can be used to give expressed breast milk. Tube-feeding can very well be done when the baby is in kangaroo position. Tube-feeding is used when the baby cannot swallow, or coordinate swallowing and breathing, or tires too easily and does not get enough milk. Tube feeding will require a feeding tube and syringe. The mother can try breast and cup feeding, as soon as the baby shows signs of readiness for oral feeding, (breastfeeding or cup), he should be fed once or twice a day, while he is still mostly fed through a tube. Gradually tube feeds should be reduced and the tube removed when the baby takes at least three consecutive feeds of breast milk by cup.
- b) Babies from 30 to 32 weeks gestational age can take feeds from a small cup. Cup feeds can be given while a baby is also introduced to the breastfeeding slowly. If baby breastfeeds well, cup-feeding can be stopped. While cup-feeding, the baby should be taken out of the kangaroo position, wrapped in a warm blanket and returned to the kangaroo position after the feed.

Cups can be used to feed even very small babies, as long as they swallow the milk. Mothers should be trained on the benefits and technique to feed their babies with adequate amounts of breast milk

Advantages of cup feeding over bottle-feeding

- It does not interfere with suckling at the breast;
  - A cup can easily be cleaned with soap and water, if boiling is not possible,
  - A cup enables the baby to control his own intake.
- c) Babies from 32 to 34 weeks gestational age are usually able to start suckling on the breast. Sometimes, the baby may only root for the nipple and lick it at first or he may suckle a little. In such situation, the mother should be advised to give expressed breast milk by cup.

**NB:** When a small baby starts to suckle, he may pause during feeds quite often and for quite long periods. It is important not to take him off the breast too quickly. The baby should be left on the breast so that he can suckle again when he is ready. The baby can be left on the breast up to an hour if necessary. Otherwise, he may be offered a cup feed after the breastfeed, or alternate breast and cup feeds. Good positioning and attachment may make effective suckling possible at an earlier stage.

- d) Babies 34 weeks gestational age and above often take all that they need directly from the breast. However, expressed breast milk by cup continues to be occasionally necessary.





During the initial period of feeding small babies, the mother needs a lot of support and encouragement to establish and maintain lactation until the baby is ready to breastfeed. Usually first deliveries, adolescent mothers, and those of very small babies may need even more encouragement, help and support throughout the KMC period (health facility stay and at home).

### 3.6.1 Quantity and frequency

Frequency of feeding will depend on the quantity of milk the baby tolerates per feed and the required daily amount. The quantity and frequency of feeding depends on the weight of the baby. As a guide, the amount per feed for small newborn preterm babies should be steadily increased as follows:

- Up to day 5 the amount per feed and total amount should be slowly increased to help the newborn to get used to oral feeding
- After day 5 the quantity should be increased to achieve the amount required for the baby's age and weight as indicated in Tables 2 and 3 below
- By day 14 the baby is expected to take 200ml/kg/day, which is the amount required for his steady growth.
- Very small babies should be fed every two hours, larger babies every three hours.
- If necessary, wake mother and baby during the day and night to ensure regular feeding.
- Avoid overfeeding or feeding too rapidly to lessen the risk of milk aspiration or abdominal distension

**Table 2. Amount of milk (or fluid) needed per day by birth weight and age**

| Birth weight | Feed every | Day 1    | Day 2    | Day 3    | Day 4     | Day 5     | Day 6-13      | Day 14        |
|--------------|------------|----------|----------|----------|-----------|-----------|---------------|---------------|
| 1000-1499 g  | 2 hours    | 60 ml/kg | 80 ml/kg | 90 ml/kg | 100 ml/kg | 110 ml/kg | 120-180 ml/kg | 180-200 ml/kg |
| ≥1500 g      | 3 hours    |          |          |          |           |           |               |               |

**Table 3. Approximate amount of breast milk needed per feed by birth weight and age**

| Birth weight | Number of feeds | Day 1   | Day 2   | Day 3   | Day 4   | Day 5   | Day 6-13   | Day 14  |
|--------------|-----------------|---------|---------|---------|---------|---------|------------|---------|
| 1000g        | 12              | 5ml/kg  | 7ml/kg  | 8ml/kg  | 9ml/kg  | 10ml/kg | 11-16ml/kg | 17ml/kg |
| 1250g        | 12              | 6ml/kg  | 8ml/kg  | 9ml/kg  | 11ml/kg | 12ml/kg | 14-19ml/kg | 21ml/kg |
| 1500g        | 8               | 12ml/kg | 15ml/kg | 17ml/kg | 19ml/kg | 21ml/kg | 23-33ml/kg | 35ml/kg |
| 1750g        | 8               | 14ml/kg | 18ml/kg | 20ml/kg | 22ml/kg | 24ml/kg | 26-42ml/kg | 45ml/kg |
| 2000g        | 8               | 15ml/kg | 20ml/kg | 23ml/kg | 25ml/kg | 28ml/kg | 30-45ml/kg | 50ml/kg |

When the baby moves on to exclusive breastfeeding and measuring the amount of milk intake is not possible, weight gain remains the only way to assess whether feeding is adequate

### 3.6.2 Expressing breast milk

Hand expression is the best way to express breast milk. It is less likely to carry infection than a pump, and can be used by every woman at any time. A technique to express milk effectively is described in the National infant feeding guideline.

They should express as much as they can and as often as the babies would breastfeed. This means at least every 3 hours, including during the night to build up their milk production. Mothers should be encouraged to express breast milk their own way, provided it works for them.

If a mother is expressing more milk than her small baby needs, she should be advised to feed her baby hind milk, which gives him the extra energy he needs and helps him grow better. If the mother can only express very small volumes at first, give whatever she can produce to her baby and encourage her to express more. Mother should be advised to start at least half an hour before the baby's feed, irrespective of the method used. Mother should be encouraged to use freshly expressed breast milk for each feed. Breast milk can be stored in a refrigerator for up to 48 hours at 4°C or 6 hours in the room temperature.

### 3.6.3 Breastfeeding a baby in KMC

As soon as the baby shows signs of readiness for breastfeeding, by moving tongue and mouth, and





interest in sucking (rooting reflex), help the mother to get into a breastfeeding position that ensures good attachment.

#### ***Important breastfeeding information for the mother in KMC***

- Assurance that she can breastfeed her small baby and she has enough milk.
- Milk is the best food for such a small baby.
- Feeding for a small baby is even more important than for a big baby
- Usually, at the beginning a small baby does not feed as well as a big baby as he may – tires easily and suck weakly at first therefore:
  - Suckle for shorter periods before resting
  - Fall asleep during feeding
  - Have long pauses after suckling, and feeds longer
  - Does not always wake up for feeds
  - Breastfeeding will become easier as baby becomes older and bigger;
  - Requires help to place and attach her baby in the kangaroo position.

If the breast is engorged, the mother should be encouraged to express a small amount of breast milk before starting breastfeeding; this softens the nipple area hence making it easier for the baby to attach.

For mothers with inadequate milk, Domperidone can be prescribed to help increase milk supply. It could be used as a supportive procedure and only after all other effective methods for improving milk production have been tried out.

*Fig.7 Breastfeeding in KMC*



#### **3.6.4 Support to mothers who breastfeed twins**

Mother should be supported to feed her LBW twins babies in KMC position

- Mother should be assured that she has enough breast milk for two babies
- The mother should feed one baby at a time until breastfeeding is well established
- If one of the twins is weaker, the mother should be encourage to make sure that the weaker twin gets enough milk. She should express milk for him and feed him by cup after initial breastfeeding
- The babies should be breastfed alternating on each side daily.

#### **3.6.5 Alternative feeding**

For HIV positive mothers who choose replacement feeding and the newborn orphans, cup or tube feeding is the best alternative feeding method.

The mother/caretaker should be advised to give alternative feeding based on **Affordability, Feasibility, Availability, Safety and Sustainability (AFASS) only**. It should be ensured that the rules prescribed by the National Code of Marketing of Breast-milk Substitutes are followed. For further information on this issue, reference should be made to the national breastfeeding guideline, IMCI training manuals and PMTCT national guideline.

Small babies who are on alternative feeding should be monitored more closely for their health and growth since they are more prone to infection and malnutrition than the breastfed babies.



## CHAPTER FOUR

### 4.0 Monitoring the baby in KMC

Monitoring of the baby is important for assessment of growth and development. The following should be used for the monitoring babies in KMC:

#### 4.1 Anthropometric measurement

##### 4.1.1 Weight

Small babies should be weighed daily and checked their weight gain to assess the adequacy of fluid intake and growth. Usually, small babies lose weight at first, immediately after birth whereby weight loss of up to 10% in the first few days of life has been considered acceptable. After the initial weight loss, newborn babies should slowly regain their birth weight, usually between 7 and 14 days after birth. Thereafter, babies should be gaining weight steadily. Steady and appropriate weight gain is considered a sign of good health in a newborn following the initial few days of weight loss. Poor weight gain or no weight gain indicates a problem that must be addressed. Weight gain for breastfed infants should be not less than 15g/kg/day

**Approximate weight gains for different gestational ages are given below:**

**Adequate daily weight gain from the second week of life is 15g/kg/day BUT:**

- 20g/day up to 32 weeks of gestational age, corresponding approximately to 150-200g/week
- 25g/day from 33 to 36 weeks of gestational age, corresponding approximately to 200-250g/week
- 30g/day from 37 to 40 weeks of gestational age, corresponding approximately to 250-300g/week.

***The aim is to gain weight of at least 2500g or more by the 40th week of gestational age***

If there is weight loss or weight gain is not adequate for 3 days (i.e. gaining an average of less than 10g/day) then:

- Danger signs or specific conditions that can cause poor weight gain such as poor suckling, lack of warmth (e.g. long periods of wet nappies), infections and congenital malformations should be looked for.
- Mothers should be advised to increase the frequency of feeds for the baby and/or feed the baby on demand

##### 4.1.2 Head circumference

The head circumference is expected to increase by 0.5 to 1cm per week. For adequate head growth national anthropometric standards should be used

##### 4.1.3 Length, chest and arm circumference

Baby's length, chest and arm circumference are the alternative methods for monitoring growth however such measurements are less useful for growth monitoring and are not recommended for the following reasons:

- Length is less reliable than weight. It increases more slowly and does not help to make decisions about feeding or illness
- Chest and arm circumference are usually used as assessment tool to determine the size of baby at birth and evaluate the need for special care.
- Their effectiveness for growth monitoring in LBW and preterm babies is yet to be determined.

#### 4.2 Temperature

- When starting KMC, baby's axillary temperature should be measured every 6 hours until it becomes stable for three consecutive days then it should be measured only twice daily. **Rectal temperature should be avoided in these small babies since it is associated with a small but significant risk of rectal perforation**





Temperature should be measured by using a low reading thermometer. A well-fed baby, in continuous skin-to-skin contact, can easily retain normal body temperature (between 36.5°C and 37°C) when in kangaroo position. Temperature can be measured less frequently than when the baby is not in the kangaroo position. If the body temperature is below 36.5°C, an action should be taken

#### **4.3 Breathing**

The normal respiratory rate of an LBW and preterm infant ranges between 30 and 60 breaths per minute, and breathing alternates with intervals of no breathing (apnoea). If the baby does not resume breathing spontaneously, quick and appropriate action should be taken to avoid the risk of brain damage.

The more premature or smaller the baby is (less than 1500g at birth or born less than 32 weeks gestation age) the longer and more frequent the spells of apnoea can happen. Skin-to-skin contact makes breathing more regular in preterm infants and reduces the incidence of apnoea. Mothers should be informed about the risk of apnoea and be trained how to recognize, intervene it immediately and seek help.

#### **4.4 Heart Rate**

The normal heart rate of an LBW and preterm infant ranges between 100 and 160 beats per minute. A heart rate less than 100 or above 160 beats per minute, should be considered abnormal and action taken.





## CHAPTER FIVE

### 5.0 Common Problems in LBW babies and their Management

#### 5.1 Common Problems

Danger signs pose a serious problem in the newborn. To prevent deaths, the mother and family should be trained on how to recognize danger signs in small babies so as to seek attention timely. Similarly, health providers should know and recognize specific danger signs in the newborn in KMC and be able to manage and/or refer the baby appropriately. The following are the common danger signs of newborn baby (particularly LBW and premature) may present with:

- *Breathing problems*
- *Hypothermia*
- *Poor sucking or other feeding problem*
- *Lethargy.*
- *Redness and/or swelling, foul smelling, discharge from the cord and/or skin*
- *Redness, swelling and discharge from the eyes*
- *Weight loss or gaining less than 10g/day*
- *Fever (Temperature more or equal 37.5°C)*
- *Convulsions*
- *Stiff limbs*
- *Jaundice*

**NB** Mothers should be assured that there is no danger if the baby:

- Sneezes or has hiccups
- Passes soft stools after each feed
- Does not pass stools for 2-3 days.

#### 5.2 Management of common Problems in LBW babies

##### 5.2.1 Hypothermia

- A baby with hypothermia (less than 35°C) should be rewarmed immediately by covering the baby and making sure that the mother is in a warm place
- The temperature should be measured one hourly until the normal range (between 36.5°C and 37°C).
- Look for possible causes of hypothermia. When no obvious cause can be found and the baby continues to have difficulty in maintaining normal body temperature, possible bacterial infection should be considered.

##### 5.2.2 Apnoea

Mothers should be given the following information to appreciate the importance of reporting any irregularity in their babies breathing (apnoea).

- If breathing stops for 20 seconds or more, or baby becomes blue (blue lips and face), this may be a sign of a serious disease; mother should stimulate her baby by lightly rubbing the back or head, and by rocking movements until the baby starts breathing again.
- If baby is still not breathing after the above stimulation, the mother should seek further help immediately.
- A baby with prolonged apnoea and normal breathing cannot be restarted through stimulation should be managed in a health facility whereby resuscitation guidelines for such babies will be followed.

**NB:** If apnoeic spells become very frequent, the baby should be examined for early sign of infection and treated accordingly.

##### 5.2.3 Redness and/or swelling, foul smelling, discharge from the cord and/or skin

Umbilical infection can be local or severe leading to septicemia. If redness is localized to the umbilicus should





be treated as local infection. If the umbilical cord is discharging pus, treat for severe infection of the umbilicus. They should be managed according to the national IMCI guidelines.

However, always, caregivers must adhere to infection prevention control practices while caring for LBW babies.

#### **5.2.4 Redness, swelling and discharge from the eyes**

If there is discharge from the eyes they should be cleaned regularly (e.g. three-hourly) with cooled boiled water. A clean warm cloth placed over the eyes may also reduce inflammation. Foremilk contains live cells and antibodies that act as anti-infective agents. Mothers should express a drop of fore milk in the eyes of the baby before feeding. A baby with yellow discharge should be managed at a health facility - according to the national IMCI guideline.

#### **5.2.5 Inadequate weight gain**

If the baby's weight gain is inadequate for several days, the baby should be assessed for; feeding technique, frequency, duration and schedule, and that night feeds are given. The mother should be advised to increase the frequency of feeds or to feed on demand. The mother should be encouraged to drink a lot of fluids.

It is important to look for other possible conditions contributing to poor weight gain:

- **Oral thrush** (white patches in the mouth) can interfere with feeding. It should be treated with oral suspension of Nystatin (100,000 IU/ml); using a dropper to apply 1ml in the oral mucosa and paint the mother's nipples after each feed until the lesions heal. Usually for 7 days.
- **Rhinitis** is quite disturbing for the baby because it interferes with feeding. Nasal drops of normal saline solution in each nostril before each feed may help to relieve nasal obstruction.
- **Urinary tract infection** is a possible insidious cause of poor weight gain. The baby should be investigated and treated accordingly.
- **Severe bacterial infection** can initially be manifested itself with poor weight gain and poor feeding. If a previously healthy baby becomes unwell and stops feeding, consider this as a serious danger sign. The baby should be managed according to national IMCI guideline. At the higher level of health facility the baby should be investigated and treated using appropriate antibiotics and other supportive management.
- Any baby who fails to gain weight without obvious reason should be referred for further investigation and treatment.



## CHAPTER SIX

### 6.0 Discharge

#### 6.1 Discharge from KMC health facility

Early discharge means letting the mother and baby go home to their own environment, though, it could be very different from the KMC unit at the facility, and where they were surrounded by supportive staff. Babies in Kangaroo Mother Care can be discharged early from the health facility to continue with KMC at home when the criteria below are met. **Where there are no follow-up services and the health facility is far away, mother and baby should be discharged later.** Criteria for early discharge include:

- The kangaroo position is well tolerated by the baby and mother.
- The condition of the baby is stable, with good general health and there are no concurrent diseases or infections (stable vital signs consecutively for three days).
- There is appropriate weight gain (at least 15 grams per day) for three consecutive days (after birth weight regained).
- The baby feeds well (with coordinated sucking and swallowing) and is exclusively or nearly exclusively breastfed and is able to come regularly for follow-up visits.
- The home environment is also very important for the successful outcome of KMC. The mother should go back to a warm, smoke-free home and should have support for everyday household tasks.

Usually the above criteria are easily met for babies weighing more than 1500 grams. Babies below that weight should wait until the baby reaches at least 1500 grams and meets the other criteria above before considering discharge.

#### 6.2 Termination of KMC

When the mother and baby are comfortable, skin-to-skin contact continues for as long as possible, first at the health facility, then at home. It should be continued until the baby reaches term (gestational age around 40 weeks) or 2500g. Usually, around that time the baby also outgrows the need for KMC. He starts wriggling to show that he is uncomfortable, pulls his limbs out, cries and fusses every time the mother tries to put him back skin-to-skin. This is the right and safe time for the baby to be gradually weaned from KMC. Mother can put the baby skin-to-skin contact occasionally such as after giving the baby a bath, during cold nights or when the baby needs comfort. They will continue to need support even though this will not have to be as intensive and frequent. The time of discharge may therefore vary depending on the size of the baby, home conditions and accessibility of follow-up care.

#### 6.3 Important information to the mother on discharge

Health workers have an important role to play in encouraging mothers and fathers to express their emotions and love to their babies. They should ensure **that the mother/family members/caretaker knows the following:**

- How to maintain KMC at Home
- Importance of baby's stimulation
- How to maintain cleanliness and hygiene
- Feeding
- Preventive treatment
- When the mother should return immediately to health facility



**The mother should return immediately to health facility if the baby:**

- Stops feeding, is not feeding well, or vomits;
- Becomes restless and irritable, lethargic or unconscious;
- Has fever (body temperature above 37.5°C);
- Is cold (hypothermia - body temperature below 36.5°C) despite rewarming;
- Has convulsions;
- Has difficulty breathing;
- Has diarrhoea;
- Shows any other worrying sign.

*She should always seek help, if in doubt: when caring for small infants as it is better to seek care too often than to disregard important symptoms.*

**6.4 KMC at home and routine follow-up**

The smaller the baby at discharge, the earlier and more frequent follow-up visits will be needed. If the baby is discharged in accordance with the criteria, follow up visits should be as follows:

- Two follow-up visits per week until 37 weeks of gestation
- One follow-up visit per week after 37 weeks.

The content of the visit discussion may vary according to mothers and baby's needs but the following should be checked routinely at each follow-up visit.

- **KMC practice**
- **Feeding:** Appropriate Exclusive Breastfeeding or alternative feeding
- **Growth monitoring weight gain of** at least 15g/kg/day on average is expected.
- **Illness:** Babies should be assessed for possible signs of illness, whether the mother has complained or not.
- **Drugs:** Babies on medication should be given adequate drug supply as per indication with proper instructions.
- **Immunization** The baby should receive immunizations as per National immunization schedule.
- **Routine child care** Mother should be encouraged to attend routine child care once the baby reaches 2500g or 40 weeks of gestational age.
- **Mother's concerns:** Mother/family concerns should be discussed as much as possible aiming at solutions.
- **Next follow-up visit:** Should be discussed and agreed on the next visit, reinforcing specific discussed issues. The mother should be encouraged to keep the next appointment.



## CHAPTER SEVEN

### 7.0 MONITORING AND EVALUATION FOR KMC SERVICES

#### 7.1 Monitoring and evaluation

The aim of monitoring and evaluation (M&E) is to ensure collection of appropriate data that can be used to measure impact of KMC services. When planning for the tracking, monitoring and evaluation of the implementation of KMC there are two foci to attend to, an immediate focus and a long-term focus. The immediate focus is the question whether (and how) KMC has been implemented. The long-term focus address the question whether KMC practices in the context of Essential Newborn Care (ENC) are being maintained and sustained. Figure 2 graphically depicts the different foci in terms of implementation and sustainability.

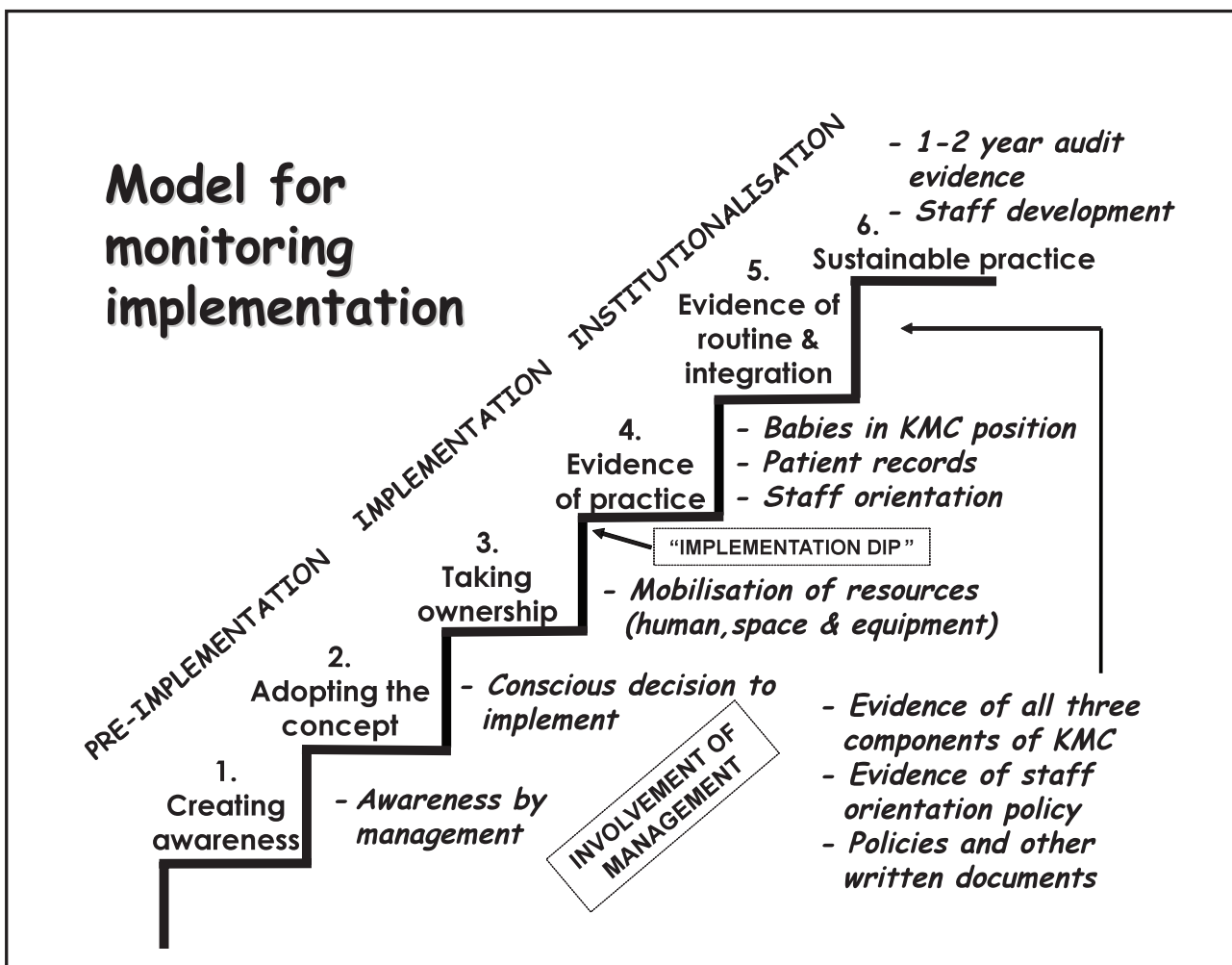


Figure 2 Model for monitoring implementation

The following are a number of aspects that districts and health facilities should take into account when planning the follow-up of the implementation of KMC:

- Collection of pre-KMC data should start 6 months before initiating the actual services; this will be used for comparing impact of KMC introduction on survival and other aspects of LBW baby care at the health facility.
- All KMC data should be recorded daily and analysed monthly at the facility level using list of indicators in annex I
- Data flow: Health Facility KMC Unit (KMC Focal person) -Health Facility Management Team (HMT)/ CHMT/ - District Medical Officer - RHMT/Regional Medical Officer - National Newborn Program Officer - Assistant Director Reproductive and Child Health (RCH) Section - Director Preventive





Services.

- At quarterly intervals, supportive supervisory visit will be done at each health facility implementing KMC by a supervisory team (respective CHMT/RHMT) including a national trainer.
- Independent assessors will conduct health facility assessments, using a progress-monitoring tool to check the progress of implementation and the potential for sustainability hence certification.
- There will be certification for health facilities that have successfully implemented KMC and shown evidence of sustainability (annex – certification criteria)
- KMC monitoring should be incorporated in other tracking and assessment mechanisms of the quality of newborn care (e.g. it should be included in HMIS).



#### **ANNEX: LIST OF KMC INDICATORS**

1. Total number of LBW babies admitted
2. Total number of babies admitted for KMC care
3. Average length of stay of baby in the KMC Unit for those discharged alive
4. Total number of babies discharged from KMC Unit alive
5. Number of KMC babies with positive weight gain discharges from the unit
6. Total number of KMC babies who came for follow-up after discharge from the KMC Unit for the two months period under review.a

