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MINISTRY OF HEALTH, ETHIOPIA



Kangaroo Mother Care Technical and Implementation Guideline

Ministry of Health of Ethiopia

January, 2023
Addis Ababa, Ethiopia



FOREWORD

Ethiopia has made continual efforts to improve the health of mothers, newborns, infants, and children, as evidenced by a dramatic reduction in maternal and under-five-year-old child mortality during the last two decades. Ethiopia achieved MDG 4 by cutting under-five child mortality by two-thirds three years before 2015. Furthermore, the Ministry of Health (MOH) is dedicated to accelerating progress in order to reach the SDG 3 targets.

Ethiopia has currently invested nearly 24.5 million USD for 80 hospitals, one in each zone of the country, to establish, upgrade and improve the newborn's Intensive Care Unit (NICU) to level 3 and include Kangaroo Mother Care (KMC) service to avert the neonatal mortality mainly from the small and sick newborns.

Essentially, global and national evidence demonstrated that KMC is a low-cost, safe, effective, and high-impact intervention in the management of Low Birth Weight (LBW) and preterm newborns at all levels of care, including community care. However, there is no standalone KMC implementation guideline for healthcare providers and program managers.

This Technical and Implementation Guideline is the KMC-focused on the national newborn and child health coordination platform, and it was developed in accordance with the NNCHDS, HSTP II 2021-2025, and the Health Sector Medium Term Development and Investment Plan (2023-2026) to facilitate KMC implementation at the hospital, health centre, and community levels of the health system.

I urge the MOH, RHBs, and other government counterparts and development partners to join this effort, mobilize all necessary resources, and finally realize the objectives of this national KMC Technical and Implementation Guideline, so that every newborn in Ethiopia has access to the highest quality attainable standard of health and development in an equitable manner, and has a better tomorrow.

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State Minister, Ministry of Health

A handwritten signature in black ink, appearing to be 'Dereje Duguma'.



ACKNOWLEDGMENT

The development of this national Kangaroo Mother Care (KMC) Technical and Implementation Guideline necessitated extensive consultations with the national newborn and child health stakeholders. It is intended to streamline the execution of the KMC as one of the high-impact interventions for small and sick newborns in order to reduce neonatal mortality, which has been stagnant for decades.

The Ministry of Health's Maternal, Child, and Adolescent Health Services Lead Executive Office would like to thank and recognize everyone who actively participated in the development of this Kangaroo Mother Care (KMC) Technical and Implementation Guideline.

In this regard, we would like to express our heartfelt gratitude and recognition to the following organizations for their unwavering contributions.

The National Newborn & Child Health Team of MCAH Service and UNICEF Ethiopia, which served as the anchoring KMC Technical and Implementation Guideline and led and coordinated with the consultant throughout the development process.

The National Newborn and Child Health Technical Working Group, who assisted in its design and development by reviewing and technically contributing to the guidelines' documents.

Global and regional UNICEF and WHO experts are reviewing the guideline and offering comments and feedback to ensure the guideline is consistent with global recommendations.

Save the Children Ethiopia has provided financial and technical assistance in the development of guideline for hosting consultation sessions.

UNICEF Ethiopia has provided both technical and financial support throughout the guideline development journey, including onboarding the senior lead consultant, covering the expenses of consultative workshops, layout design and printing of the guideline.

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A handwritten signature in blue ink, appearing to be 'Zelalem Tadesse', written in a cursive style.

EXECUTIVE SUMMARY

Newborn mortality continues to be the leading cause of under-5 deaths globally and accounted for 47% of all these deaths in 2021. Of these deaths, preterm-related complications accounted for 34% of under-5 deaths. Preterm and low birth weight (LBW) infants have a 15 times higher risk of death than those born term and appropriate for gestational age. In Ethiopia neonatal mortality is unacceptably high with 33 deaths per 1,000 live births based on the 2019 Ethiopia mini-Demographic and Health Survey, preterm related complication is among the leading of causes of mortality.

Several evidence-based interventions are known to improve survival among preterm or LBW infants. Kangaroo mother care (KMC) is one of the effective interventions that play a significant role in reducing mortality and morbidity, thus improving survival of preterm and LBW infants. Based on the new evidence, it is estimated that about 150,000 neonatal lives could be saved every year globally. For Ethiopia, this translates to saving 20,000 neonatal lives each year. Furthermore, a community initiated KMC in low birth weight infants (2,000-2,500g) reduced mortality by 30% at the 28th and 180th days of life.

The Ministry of Health of Ethiopia has included KMC as one of the neonatal survival interventions in its successive child survival strategies. The Health Sector Transformation Plan II (HSP-II) aims to increase the KMC coverage to at least 70% of eligible newborns by 2025. However, despite the inclusion of the intervention in the national strategies since 2005 the progress made in implementation of the interventions and increasing coverage of quality KMC was unimpressive. KMC implementation was mainly limited to referral hospitals.

There is a lack of both technical and implementation guidance to providers and program manager for KMC to be established as a safe and effective method for LBW babies at all levels of care, including the community level. Studies on KMC practice and actual visits to KMC sites at different levels of the healthcare system in Ethiopian found low levels of appropriate KMC initiation, inadequate infrastructure and staffing, poor record keeping, poor data quality, and poor survival among LBW babies. There is no standardized KMC implementation guideline in this country.

This guideline has been prepared to facilitate implementation of KMC practice at hospital, health center, and community levels of the health system. The guideline also aims to provide guidance to the MOH, RHBs, zonal health departments, woreda health offices, hospitals, health centers, and Health Extension workers (HEWs) on the health system resources and supports needed to implement KMC at different health system levels.

KMC is recommended as routine care of all preterm and or LBW newborns. KMC can be initiated in facilities or at home and should be given for 8-24 hours per day (as many hours as possible). KMC should be initiated as soon as possible after birth for both stable and unstable preterm and or LBW neonates. At facilities, immediate KMC should be initiated before the baby is clinically stable unless the baby is unable to breathe spontaneously after resuscitation, is in shock, or requires mechanical ventilation. At home, immediate KMC can be provided for babies who have no danger signs. Whenever possible the mother should provide skin-to-skin care (SSC); if the mother is not available, fathers and other family members can also provide SSC

ACRONYMS AND ABBREVIATION

ANC	Antenatal Care
BCC	Behavioral Change Communication
BEmONC	Basic Emergency Obstetrics Neonatal Care
BFHI	Baby-Friendly Health Facility Initiative
BW	Birth weight
CPAP	Continuous Positive Airway Pressure
CSO	Civil Society Organization
DHIS2	District Health Information System 2
ECD	Early Childhood Development
EMwA	Ethiopian Midwife Association
ENA	Ethiopian Nursing Association
ENAP	Every Newborn Action Plan
EPS	Ethiopian Pediatric Society
ESOG	Ethiopian Society of Obstetrics and Gynecology
FMOH	Federal Ministry of Health
g	gram
GMP	Good Manufacturing Practice
HEWs	Health Extension Workers
HMIS	Health Management and Information System
HSTP-II	Health Sector Transformation Plan-II

IESO	Integrated Emergency Surgery and Obstetrics
IMNCI	Integrated Management of Neonatal and Childhood Illness
KMC	Kangaroo Mother Care
LBW	Low Birth Weight
M&E	Monitoring and Evaluation
MNCAHN	Maternal Newborn, Child, and Adolescent Health and Nutrition
MNCH	Maternal, Newborn, and Child Health
MOH	Ministry of Health
NGO	Non-Governmental Organization
NNCSDS	National Newborn and Child Health and Development Strategy
NICU	Neonatal Intensive Care Unit
PSBI	Possible Severe Bacterial Infection
RHB	Regional Health Bureau
RMNCAH	Reproductive, Maternal, Newborn, Child and Adolescent Health
SSC	Skin-to-skin Care
SSNC	Small and Sick Newborn Care
VHL	Village Health Leader
WDA	Women Development Army
WHO	World Health Organization

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1. INTRODUCTION

1.1. Background

Newborn mortality continues to be the leading cause of under-5 deaths globally and accounted for 47% of all these deaths in 2021.¹ Of these deaths, preterm-related complications accounted for 34% of under-5 deaths.² Preterm and low birth weight (LBW) infants have a 15 times higher risk of death than those born term and appropriate for gestational age.³ Additionally, these infants are at greater risk for infections and other acute morbidities such as hypoglycemia, respiratory distress syndrome, and negative long-term outcomes like growth failure, short- and long-term neurodevelopmental delays, poor academic performance, and behavioral problems in later life. This contributes substantially to the burden of non-communicable diseases as well as a loss of human capital. In Ethiopia neonatal mortality is unacceptably high with 33 deaths per 1,000 live births based on the 2019 Ethiopia mini-Demographic and Health Survey.⁴ The three common causes of neonatal mortality in Ethiopia are preterm-related complications (36%), intrapartum-related complications (26%), and neonatal infections (23%).⁵ A multicenter prospective study conducted in Ethiopia found a 29% of preterm death rate among admitted preterm neonates with respiratory distress syndrome, infection, and asphyxia, accounting for 45%, 30%, and 13% of deaths, respectively; hypothermia was also a contributory factor to preterm death.⁶

Several evidence-based interventions are known to improve survival among preterm or LBW infants. Kangaroo mother care (KMC) is one of the effective interventions that play a significant role in reducing mortality and morbidity, thus improving survival of preterm and LBW infants. When initiated with stable newborns, KMC reduces mortality by about 40% among the preterm neonates.⁷ A recent randomized controlled trial reported that KMC initiated within 2 hours immediately after birth for 1,000–1,799g infants stabilization reduced mortality among these infants by 25% when compared to those neonates who received KMC after being stabilized in an incubator or under a radiant warmer.⁸

Based on the new evidence, it is estimated that about 150,000 neonatal lives could be saved every year globally. For Ethiopia, this translates to saving 20,000 neonatal lives each year. Furthermore, a community initiated KMC randomized controlled trial conducted in India showed that, compared to LBW newborns who received routine community-based care, LBW newborns (including those weighing 2,000–2,250g) in the community-initiated group had a 30% lower mortality at the 28th and 180th days of life.⁹ Despite these evidence of KMC's impact on improving the survival and development of neonates and preventing the long-term adverse outcomes of preterm and LBW infants, KMC practice still remains low both in developed and developing countries.

1.2. History of KMC in Ethiopia

Globally, KMC evidence, policy and implementation have evolved over the past four decades. KMC was first introduced in the San Juan de Dios Hospital by Drs Edgar Rey Sanabria and Hector Martinez Gomez of the Instituto Materno-Infantil in Bogota, Colombia in 1978. Their aim was to address the scarcity of incubators, and the high rates of newborn infection and parental abandonment in their hospital.¹⁰ In 2003, the World Health Organization (WHO) published a KMC practical guide for healthcare providers.¹¹ Subsequently, the WHO and partners made KMC a critical milestone in the Every Newborn Action Plan (ENAP) and published evidence-based recommendations on KMC to accelerate global KMC implementation in 2014.¹²

In Ethiopia, KMC was first introduced in 1996 at TikurAnbessa Specialized Hospital. Thereafter, KMC has expanded to other hospitals and health facilities.¹³ Since 2005 KMC was included in a series of policy documents issued by the Federal Ministry of Health (FMOH): the National Child Survival Strategy 2005–2015; the Newborn and Child Survival Strategy 2015/16–2019/20; the Health Sector Transformation Plan-I; the Ethiopian National Health Care Quality Strategy; and

the newborn intensive care nurse training participant manual.¹⁴ In 2016, the FMOH, regional health bureaus (RHBs), and the FMOH’s partners raised awareness about KMC during World Prematurity Day under the motto “Kangaroo Mother Care is an effective method of treating premature babies.” In 2017, a KMC indicator was included in the health management and information system (HMIS) to track the proportion of preterm and or LBW babies for whom KMC was initiated.

More recently, KMC was included in a series of policy documents issued by the Ethiopian MOH: the Newborn and Child Survival Strategy 2021–2025; the Health Sector Transformation Plan-II; and the Ethiopian National Health Care Quality Strategy. The KMC target set to be reached in the national newborn and child survival and development strategy is 70% of preterm babies by 2025.¹⁵ Despite the inclusion of the intervention in the national strategies since 2005, progress made in implementation of the interventions and increasing coverage of quality KMC has been unimpressive. KMC implementation was mainly limited to referral hospitals.

2. Rationale for the KMC Technical and Implementation Guideline

There is a lack of both technical and implementation guidance to providers and program manager for KMC to be established as a safe and effective method for LBW babies at all levels of care, including the community level. Studies on KMC practice and actual visits to KMC sites at different levels of the healthcare system in Ethiopian found low levels of appropriate KMC initiation, inadequate infrastructure and staffing, poor record keeping, poor data quality, and poor survival among LBW babies. There is no standalone KMC implementation guideline in this country.¹⁶

Despite a strong, long-standing evidence base and existing World Health Organization (WHO) guidelines that promote the utility and positive impact of KMC on maternal and newborn health outcomes, achieving high coverage of KMC at scale has been a persistent challenge and only a few countries have successfully implemented it in program settings. The range of implementation challenges and bottlenecks have been identified, including: gaps in training,

mentoring, support and over all scale-up of KMC; lack of funds partly because KMC is considered as requiring no additional cost; and gaps in education and mentoring of healthcare providers on KMC practice and its benefits.^{22,17} Although KMC was introduced in Ethiopia in 1996, incorporated in the national child survival strategies since 2005, and became part of the newborn intensive care national guideline in 2014, KMC coverage and implementation progress are still poor.¹⁶

This guideline has been prepared to facilitate implementation of KMC practice at hospital, health center, and community levels of the health system. The guideline also aims to provide guidance to the MOH, RHBs, zonal health departments, woreda health offices, hospitals, health centers, and Health Extension workers (HEWs) on the health system resources and supports needed to implement KMC at different health system levels.

3. Objective of the KMC Technical and Implementation Guideline

The aim of the KMC implementation guideline is to provide pertinent guidance for managers and implementers of maternal and newborn health programs on implementation of KMC at all levels of the healthcare system. It also provides evidence-based technical guidance on the design, implementation, monitoring and evaluation of KMC services for small and sick newborns at health facility and community levels.

Specific objectives:

1. Synthesize and present the latest evidence on the effect of KMC on neonatal and maternal health and wellbeing and on KMC implementation, and monitoring and evaluation (M&E) approaches.
2. Provide guidance on effective design and integration of KMC implementation at health facility and community levels.
3. Propose strategies to achieve high-quality universal KMC coverage at population level to significantly reduce neonatal mortality.
4. Provide guidance on contextually sound tools and approaches to monitor and evaluate the coverage and quality of KMC at facility and community levels.
5. Facilitate collaboration among key maternal, newborn and child healthcare (MNCH) stakeholders, communities, and families to support KMC implementation and M&E at facility and community levels.

4. Guiding Principles for the National KMC Guideline

The implementation of KMC service is guided by the principles and common values of the national health policy and HSTP-II. The key guiding principles include:

4.1 Good Leadership and Governance

Health structures at all levels have the primary ownership and responsibility of ensuring that effective and good-quality KMC service is provided to all preterm and LBW newborns at facility and community levels.

4.2 Accountability

All relevant implementing bodies are accountable to provide effective, accessible, inclusive and transparent KMC service and monitor the coverage and impact. They are also responsible for the implementation of independent reviews of KMC service and take action to ensure equitable coverage, quality of care, and optimal use of resources.

4.3 Community Engagement, Empowerment and Ownership

Communities' engagement in the identification of the major problems, priority setting, planning, implementation, and monitoring of KMC practice is a central feature of leadership and one of the most effective transformational mechanisms for action and accountability for KMC service. The main objective is to achieve universal KMC service coverage with community-based interventions and to strengthen the capacity of health extension workers (HEWs), village health leader (VHL) networks, and healthcare providers.

4.4 Respects for Human Rights and Gender Equality

Newborns' and mothers' right to life, human dignity, equality, and freedom from discrimination on the basis of gender, age, disability, health status, and social and geographic status should be respected to enable equitable access to high-quality KMC service.

4.5 Excellence in Quality Improvement and Assurance

Quality and safety have been recognized as key issues in establishing and delivering accessible, effective and responsive healthcare services. Thus, health facilities should continuously seek to make improvements in all dimensions of quality related to KMC practice: delivering effective, efficient, acceptable/patient-centered, equitable, safe and timely KMC services.

4.6 Competent, Committed and Compassionate Health Workforce

The relationship of mothers and their preterm infants with healthcare providers and the health system should be characterized by caring, empathy, trust, and an enabling environment for informed decision-making. This also will contribute to guaranteeing quality KMC services.

4.7 Integration

To implement KMC in our country, it needs integration and alignment with existing guidelines and programs targeting preterm or LBW infants, including essential interventions for these babies as part of a comprehensive package of care for small or sick newborns. These include: the delivery unit; postnatal care; the integrated management of neonatal and childhood illness (IMNCI); immunization; the baby-friendly health facility initiative (BFHI); NICU nurse training manual ; Basic emergency Obstetrics Neonatal Care (BEmONC); infant and young child feeding (IYCF); and good manufacturing practice (GMP). Moreover, KMC also needs to be integrated with the health extension program in order for properly trained HEWs to successfully educate and support mothers in initiating and continuing KMC at home.

4.8 Recognizing the Role of the Mother as a Primary Care Provider and Meeting her Needs

Respecting, empowering and supporting mothers (and family members) as primary care providers are critical to ensure successful KMC implementation. Respectful care is an

essential prerequisite for quality newborn care. Ensuring that mothers have trust in healthcare providers and engaging them in the care of their infants is vital. A key component of respectful care is keeping infants and mothers together, which is essential for the implementation of immediate KMC. Healthcare providers should take time to listen and provide support in a respectful and sensitive manner. With the mother as the center of KMC provision, addressing her own needs is critical. KMC provides benefits to the mother, but her needs should also be addressed directly by healthcare providers within a conducive service delivery model.

4.9 Multisectoral Collaboration

All relevant stakeholders (government, development partners, NGOs, CSOs, private sector, the community, etc.) need to have active roles in the design, implementation, monitoring, and evaluation of KMC across different levels of the health system.

5. What is Kangaroo Mother Care (KMC)?

5.1 Definition of Kangaroo Mother Care

Kangaroo Mother Care is the early, prolonged (8-24hrs), continuous skin-to-skin contact between the mother (or substitute) and her LBW and or preterm baby or babies, at hospital, health center and in the community, with support for correct positioning and exclusive breastfeeding.¹⁸

5.2 Benefits of KMC

The benefits of KMC and its underlying mechanisms are numerous for babies, mothers, fathers, family members, and the healthcare care system.

5.2.1 Benefits for Preterm and LBW Babies

- Thermal synchrony between mother and baby promotes thermal regulation, lactation and positive facilitation of beneficial physiological, behavioral, psychosocial, and neurodevelopmental processes in the infant.^{19,20}
- Enhanced food absorption by the infant, reduced infant crying, enhanced infant sleep patterns, and increased newborn heart and lung function.²¹
- Improved immunity and infection prevention through exposure to the maternal microbiome, less stress, and protection through breast milk.
- Less stress with reduced cortisol levels, which improve the physiological stabilization of the infant and brain maturation.

- Improved brain maturation with regard to memory, intelligence, attention and coordination.
- Facilitation of neuroendocrine mechanisms, which leads to better neurodevelopment.²⁰
- Improved cognitive and motor development functioning, and enhanced long-term social and behavioral outcomes.

5.2.2 Benefits for the Mother

- KMC promotes mothers' confidence and comfort in caring for their infants.
- Enhances satisfaction on the quality of care provided to mother and baby.
- Improves bonding and attachment between mother and newborn.
- Reduces moderate to severe depressive symptoms by 25%.²²
- Reduces postpartum hemorrhage, anxiety and depression among new mothers.

5.2.3 Benefit for the Father and Families

- KMC empowers caregivers to be directly involved in protecting and nurturing their infants.
- Increases bonding and attachment with their infants and empathy for the newborn.
- Increases caregiver's confidence and enhances mental health and well-being.

5.2.4 Parental Experiences

A recent systematic review indicated that parents wanted to be involved in delivering care to their infants (including KMC), as well as taking an active role in deciding what interventions are provided.²³ Important drivers of family perceptions, practices, attitudes, and values surrounding KMC include buy-in, caregiver-infant attachment, support to practice KMC, time to perform KMC and other duties, concerns about the infant's health, confidence and experience of caregivers, access to care, perceived quality of care, and cultural norms.

5.2.5 Benefits for the Community

- Lower likelihood of mortality at 28 days of life.
- Decrease in re-admission rates to the health facilities.
- Improvement in the home environment for the infants.
- More income for both parents due to less work missed and reduced funeral cost.

5.2.6 Benefits for Healthcare Facilities

- KMC has lower implementation costs for the hospital than conventional neonatal intensive care.
- Decrease in the burden of care for health workers since the mother is the primary caretaker of the preterm and LBW infant at the KMC unit.
- Decrease in the length of stay in the hospital and decrease in medical costs for stay in the neonatal intensive care unit (NICU).²⁴

5.2.7 Benefits for the Government (Country)

- Decrease cost to care for preterm and LBW, so that the government can redirect the funds to services.
- Improved productivity of the population.
- Decreased neonatal morbidity and mortality rates, contributing to achieving the sustainable developmental goals.

5.2.8 Cost-effectiveness of KMC

It is known that KMC is more cost-effective than conventional care in improving preterm and LBW newborn outcomes.²⁵ Therefore, from the perspective of global scale-up, it is important to know the costs of scaling up KMC to achieve high population-/community-level coverage to allow the countries to plan for programmatic implementation. In a recent scale-up study, the total incremental cost of scaling up KMC per newborn with a birth weight (BW) < 2000g ranged between US \$56 to \$72 in Ethiopian sites and US \$54 to \$98 in Indian sites.²⁶ Another randomized control trial to compare cost effectiveness of 'Kangaroo Ward Care' with 'Intermediate intensive care' in stable very low birth weight infants showed there was a saving of nearly 512 USD for each patient in the Kangaroo ward care group.²⁷ While these costs may be considered affordable to the health system, governments must budget these costs as part of small and sick newborn care (SSNC) in MNCH programs for successful scale-up of KMC.

6. Evidence and recommendation for Kangaroo Mother Care

6.1 Evidence for Impacts of KMC

The Cochrane systematic review in 2016 showed that KMC initiated in health facilities after clinical stabilization of the LBW infant reduced newborn mortality by 40% at discharge and by 33% at latest follow-up when compared to conventional care.⁷ A recent systematic review in 2021 that included preterm and LBW infants and both facility- and community-based studies suggests that KMC, compared to conventional newborn care, is associated with a 32% reduction in mortality at discharge and a 25% reduction at six months of age. KMC was also associated with a 15% reduction in the risk of severe infection, a 68% risk reduction of hypothermia by 28 days of life and a 48% increment in exclusive breastfeeding at discharge.⁹

The 2021 systematic review included four studies that compared early KMC initiation (within 24hrs) including unstable preterm babies with late KMC initiation (after 24hrs). The pooled effect suggests a 23% reduction in neonatal mortality, a 15% reduction in nosocomial infection, a 26% reduction in hypothermia at discharge and a 12% increment in exclusive breast feeding at discharge for the early KMC group.⁹

KMC practices for a prolonged period of time has better outcomes for the newborn than KMC provided for a shorter period. The

duration of KMC has been found to have a direct impact on the association between KMC and growth. The longer the KMC duration, the better the weight gain of the preterm and LBW infant.²⁸

6.2 WHO's recommendation on KMC

KMC is recommended as routine care of all preterm and or LBW newborns. KMC can be initiated in facilities or at home and should be given for 8-24 hours per day (as many hours as possible). KMC should be initiated as soon as possible after birth for both stable and unstable preterm and or LBW neonates.⁸

At facilities, immediate KMC should be initiated before the baby is clinically stable unless the baby is unable to breathe spontaneously after resuscitation, is in shock, or requires mechanical ventilation. The baby's clinical condition (including heart rate, breathing, color, temperature, and oxygen saturation, where possible) must be monitored.

Preterm or LBW infants born at **home** should receive immediate KMC if they do not have danger signs, and should be transferred to a health-care facility if needed.

Whenever possible the mother should provide skin-to-skin care (SSC); when it is not possible for the mother to provide KMC, other family members should provide it. To prepare for this situation, family members should be identified before delivery, counselled and allowed access to maternity and newborn care areas.

**WHO recommendation on family involvement and support
KMC practice are:**

- Family involvement in the routine care of preterm or low-birth-weight infants in health-care facilities.
- Families of preterm or low-birth-weight infants should be given extra support to care for their infants, starting in health-care facilities from birth, and continued during follow-up post-discharge. The support may include education, counseling and discharge preparation by health workers, and peer support.
- Home visits by trained health workers are recommended to support families to care for their preterm or low-birth-weight infant.²⁹

7. How to Provide KMC

KMC should be given to all preterm and LBW neonates regardless of their clinical condition. Only a very small proportion of neonates who may have a clinical contraindication for SSC will be cared for in an incubator or under a radiant warmer like mother with active skin lesion.

7.1 Facility Level KMC

7.1.1 KMC in the Postnatal Ward

After initial stabilization and weight measurement, if the newborn weighs 2,000-2,500g and is clinically stable and able to breastfeed, the birth attendant should initiate KMC in the postnatal ward and continue the care for at least 24 hours before discharge. At discharge from the postnatal ward the mother and family should be adequately counseled to continue KMC at home and to visit the nearest health facility if she observed any of the neonatal danger signs. **(See danger sign below)**

Danger sign

The following danger signs should be assessed during the postnatal care contact, and the newborn should be referred for further evaluation if any of the signs is present: not feeding well, history of convulsions, fast breathing (breathing rate >60 per minute), severe chest in-drawing, no spontaneous movement, fever (temperature >37.5 °C), low body temperature (temperature <35.5 °C), any jaundice in the first 24 hours after birth, or yellow palms and soles at any age. The parents and family should be encouraged to seek healthcare early if they identify any of the above danger signs between postnatal care visits.

7.1.2 KMC in the NICU

Initiation of KMC as early as possible after birth increases neonatal survival and wellbeing and improves maternal wellbeing. Both stable and unstable preterm and LBW infants should receive KMC immediately after birth and should continue receiving the care until they outgrow KMC.

The NICU will have two KMC sections: 1) KMC for unstable preterm neonates; and 2) KMC for stabilized preterm newborns. All preterm neonates who fulfill admission criteria to the NICU should be immediately admitted to one of the two KMC sections, except baby is unable to breathe spontaneously after resuscitation, is in shock, or requires mechanical ventilation. **(Tables 7.1 and 7.2)**

7.1.2.1 KMC for unstable preterm neonates

In the room for unstable preterm neonates, KMC should be started immediately for all neonates along with provision of additional care, including medication, CPAP or oxygen. The unit should be redesigned to provide beds for mothers in the unit to ensure that the mother, father or surrogate provides SSC for 8-24 hours per day. In addition, whilst providing continuous SSC for the newborn in the NICU, the maternity ward staff should check the mother's health and provide her with the appropriate care.

Presents the space, staff, and supplies requirements for NICUs of different levels of hospitals to provide KMC for unstable preterm neonates. Additional staff, equipment and supplies required to provide care for small and sick neonates in the NICU should be fulfilled based on the national NICU guideline. **(Table 7.1)**

7.1.2.2 KMC for stable preterm neonates

Once the infants are stabilized after receiving the required care in the KMC section for unstable preterm neonates the mother-baby dyad should be transferred to KMC section for stable preterm to continue with KMC until the baby meets the discharge criteria from hospitals.

Table 7.2 presents the space, staff, and supplies requirements for NICUs of different level of hospitals to provide KMC for stable preterm neonates. In addition, the unit needs to post the names of nurses responsible for provision of care in the KMC room as well as the name of the physician on duty daily.

Table 7.1: Space, staff, and supplies requirements to provide KMC for UNSTABLE preterm neonates in the NICU at hospital level

	Standards	Referral hospital	General hospital	Primary hospital
Space				
1	Number of KMC beds or reclining chairs next to each neonatal bed in the NICU	10	8	4
2	Number of functional toilets /showers	2	2	2
3	Number of functional hand washing stations in the NICU	2	2	1
Staff				
4	Number of porters in the NICU	1 per shift	1 per shift	1 per shift
5	Number of neonatal or clinical nurses trained in newborn intensive care	4	3	2
6	Number of nursing professionals trained in lactation support	1 per shift	1 per shift	1 per shift
7	Number of security staff	1 per shift	1 per shift	1 per shift
Supplies				
8	Food for mothers with newborns admitted to the NICU (three times per day)	For each mother	For each mother	For each mother
9	Curtains/screens around each bed	For each bed	For each bed	For each bed
10	Number of bedside storage cabinets for mothers	10	8	6
11	Number of preterm care registers	1	1	1
12	Number of preterm care counseling chart booklets	2	2	1
13	Number of preterm care posters	2	1	1

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14	Number of pajamas for mothers	20	16	8
15	Number of comfortable KMC chairs	10	8	4
16	Number of refrigerators for storing expressed breast milk	1	1	1
17	Room thermometer	1	1	1
18	Caps/hats for small babies	1 for each baby	1 for each baby	1 for each baby
19	Number of room warmers	2	2	2
20	Flow charts/patient monitoring charts (used to record baby feeding, weight, etc.)	For each baby	For each baby	For each baby
21	Number of feeding cups	20	16	8
22	Utensil cleaning and sterilization area for cups and bottles	1	1	1
23	Waste segregating buckets	3 types	3 types	3 types
24	Room thermometer	1	1	1
25	Digital weighing scale	1	1	1
26	KMC wraps (embracer) for use in the NICU	1 for each mother	1 for each mother	1 for each mother

Table 7.2: Space, staff, and supplies requirements to provide KMC for STABLE preterm infants in the NICU at hospital level

	Standards	Referral hospital	General hospital	Primary hospital
Space				
1	Number of KMC beds	10	8	4
2	Number of functional toilets /showers separately dedicated for clinicians and care providers	2	2	2
3	Number of times the KMC rooms get cleaned per day	3	3	3
4	Number of functional hand washing stations in the KMC rooms	2	2	2
Staff				
5	Number of porters needed for KMC room	1per shift	1per shift	1per shift
6	Number of nursing professionals trained in lactation support	1per shift	1per shift	1per shift
7	Number of security staff	1	1	1
Supplies				
8	Food for mothers (three times per day)	For each mother	For each mother	For each mother
9	Curtains/screens around each bed	For each bed	For each bed	For each bed
10	Functional TVs for health education	1 per room	1 per room	1 per room
11	Number of beds for mothers (lateral position) with curtains for privacy	1 per room	1 per room	1 per room
12	Number of bedside storage cabinets for mothers	10	8	4

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13	Number of preterm care registers	1	1	1
14	Number of preterm care counseling chart booklets	2	2	1
15	Number of preterm care posters	2	1	1
16	Number of pajamas for mothers	20	16	8
17	Number of comfortable KMC chairs	10	8	4
18	Number of refrigerators	1	1	1
19	Caps/hats for small babies, socks, diapers	1set per baby	1 set per baby	1 set per baby
20	Number of room warmers per room	4	4	4
21	Flow charts/patient monitoring charts (to record feeding, weight, thermometer, etc.)	1 per baby	1per baby	1per baby
22	Number of feeding cups	20	16	8
23	Utensil cleaning and sterilization area for cups and bottles	1	1	1
24	Waste segregating buckets	3 types	3 types	3 types
25	Room thermometer	1	1	1
27	Digital weighing scale	1	1	1
26	Number of KMC wraps (embracer)	1 per mother	1 per mother	1 per mother

NB: Food provision for KMC practicing mothers is recommended; 3 times per day and health centers need to have a room with 2 KMC beds.

NB: KMC Services provision should be strengthen at different level of private health care sectors.

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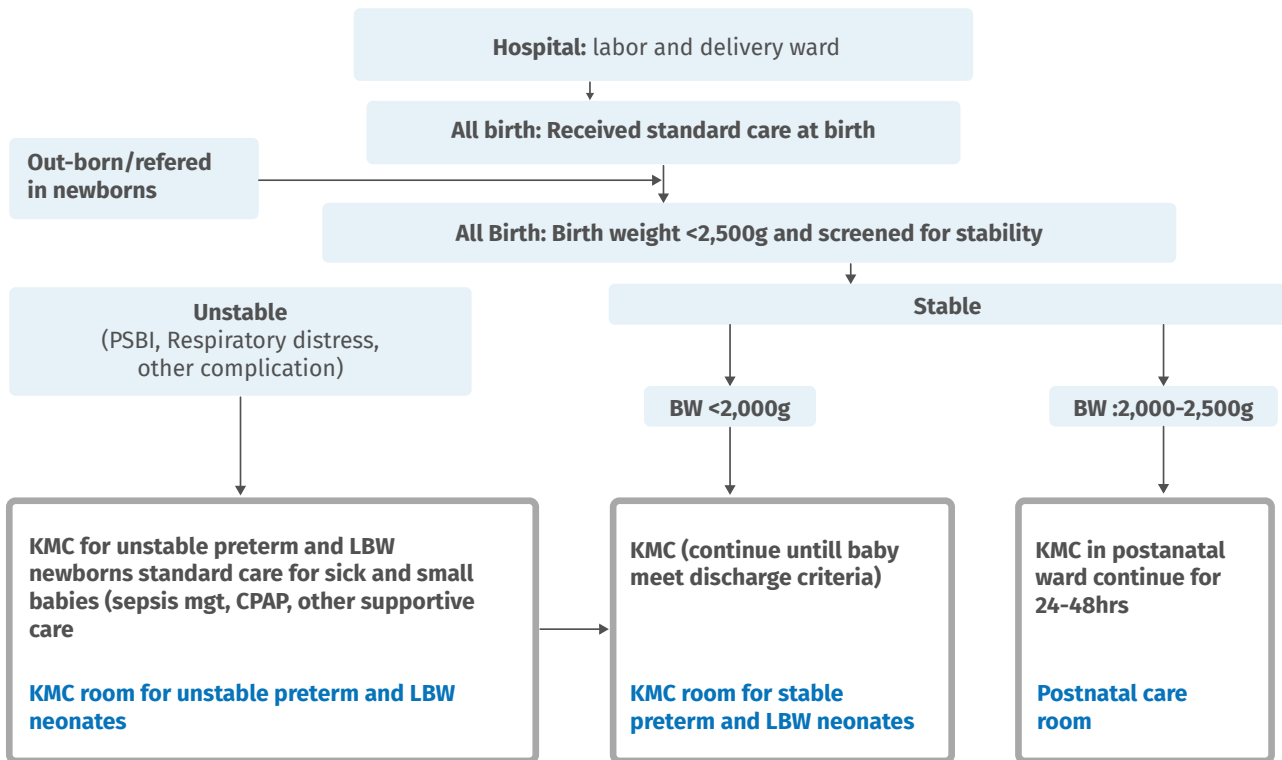


Figure 7.1: Flow of care to improve survival and wellbeing of preterm and low birth weight babies at hospital level

7.1.2.3 KMC at Health Center level

After initial stabilization and weight measurement, if the newborn weighs 2,000-2,500g and is clinically stable and able to breastfeed, the birth attendant should initiate KMC in the postnatal room and continue the care for at least 24 hours before discharge. At discharge from the postnatal room the mother and family should be adequately counseled to continue KMC at home and to visit the nearest health facility if she observed any of the neonatal danger signs. Low birth weight infant with any danger sign should be referred to hospital immediately (Figure 7.2). Post natal room at health center need to have at least 2 KMC bed.

NB: In order to have more space in the KMC for stable babies, LBW infants weighing more than 1500g/Gestational age \geq 32weeks can be discharged home from facilities after properly counseled the mother and family on KMC, danger signs and breast feeding to continue KMC at home.

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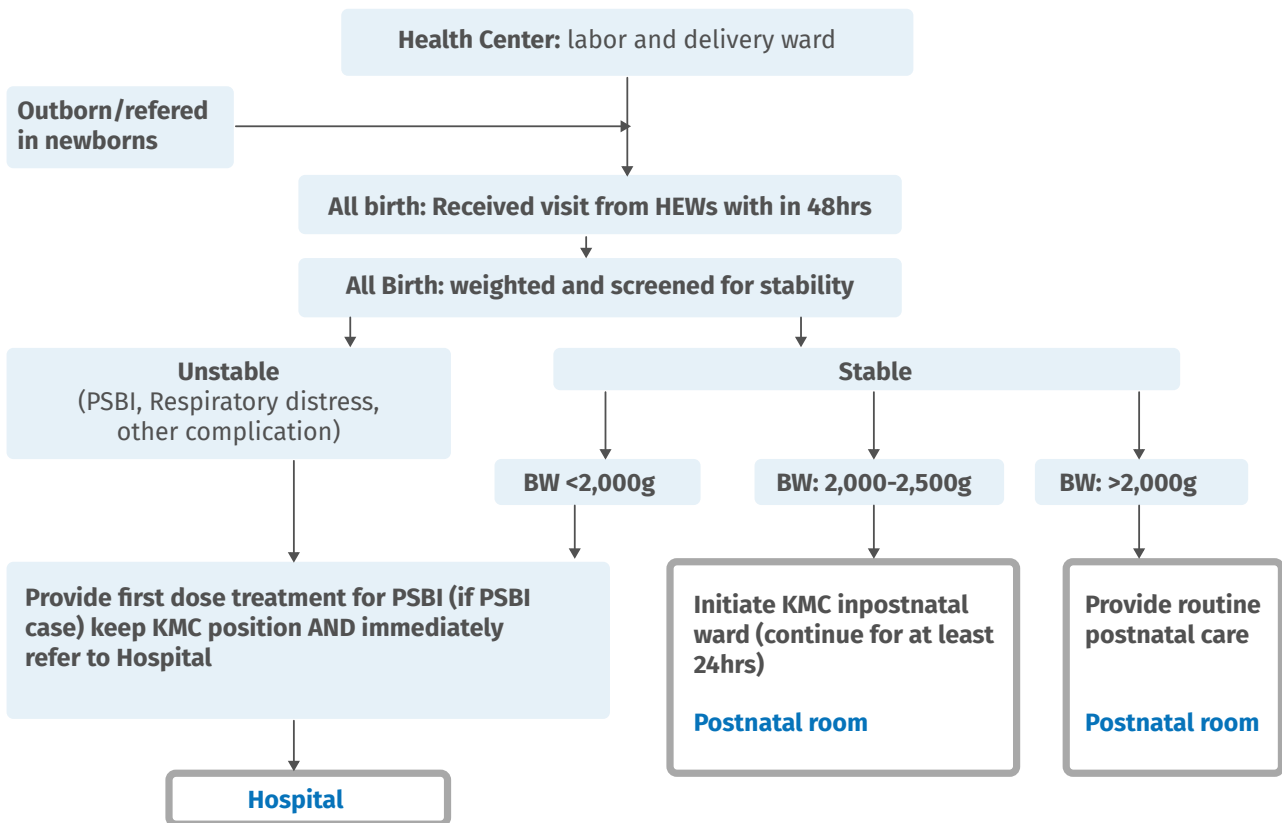


Figure 7.2: Flow of care to improve survival and wellbeing of preterm and low birth weight babies at health center level

7.2 Community Level KMC

Initiation and/or continuation of KMC at home is crucial for the survival and wellbeing of neonates. For neonates weighing between 2,000–2,500g and are stable at birth and able to breastfeed, KMC should be initiated at home and continued until the baby shows signs of discomfort when in the KMC position. For mother-baby dyads who initiated KMC at facility level, KMC should be continued at home after discharge from the health facility. Mothers should be supported by families, the health facility and CHWs to initiate and continue KMC provision at home. **Figure 3** is a flow diagram for the care of preterm and LBW babies in the community.

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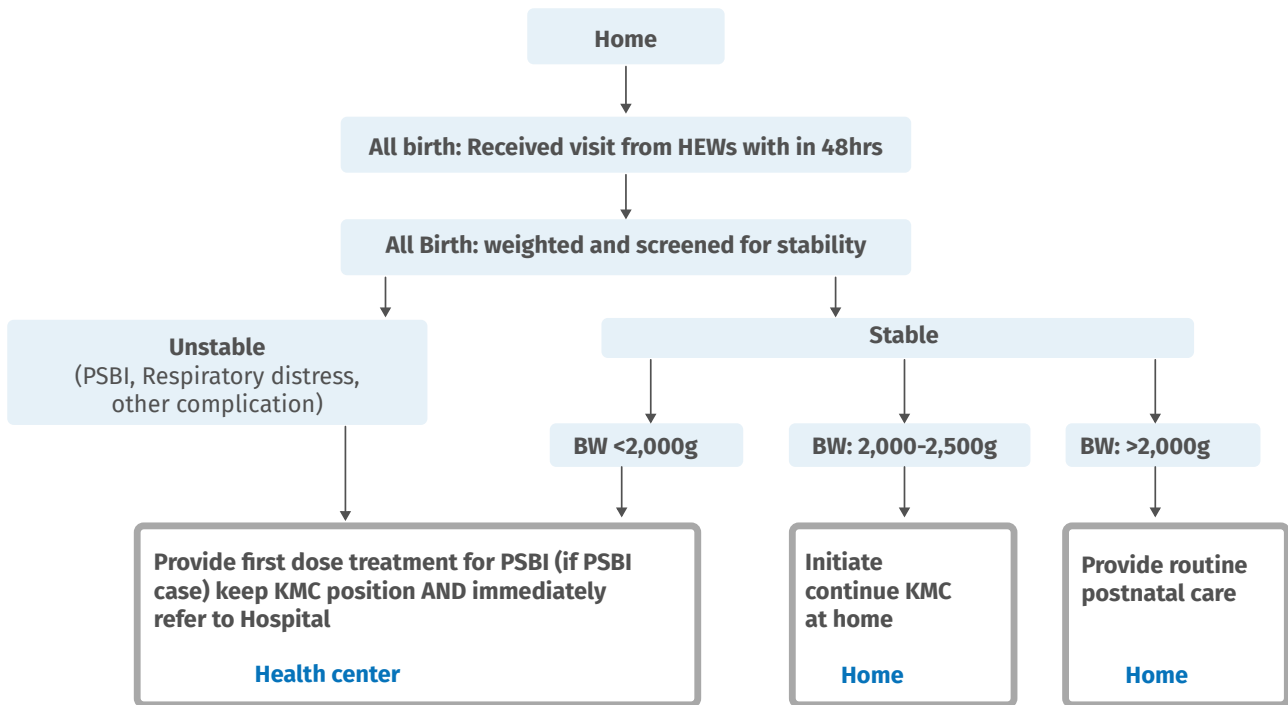


Figure 7.3: Flow of care to improve survival and wellbeing of preterm and low birth weight babies at home and health post

7.3 Which infants should receive KMC?

Since all LBW infants benefit from receiving KMC it should be provided to all eligible infants. In settings where there are serious resource limits, including space to admit mothers, priority must be given to unstable and stable infants with a BW of <1,500g in the NICU and intermittent KMC can be considered for the rest. Healthcare providers must work to ensure zero separation of the mothers and infants at all times starting from birth until discharge from the health facility. To maximize the benefits of KMC for both mothers and newborns, it needs to be initiated immediately or soon after birth wherever the mother and infants are in

situations where mothers are unable to put the baby skin to skin, fathers or surrogates should be coached to provide KMC.

7.4 Who can provide KMC?

Skin-to-skin care and tube or cup feeding can be provided by mothers, fathers and other adult family members. The KMC provider should be willing, in good health, free from serious illness and should be supported and coached to maintain basic standards of hygiene such as hand washing and personal hygiene.

8. KMC Practice

8.1 Counseling

Neonatal healthcare providers in the postnatal ward and in the NICU's KMC rooms for unstable and stable babies need to be trained and capacitated to enable mothers to initiate KMC as early as possible and continue the practice as long as the baby tolerates the care. Particular attention needs to be focused on building the healthcare providers' counseling and coaching skills. Effective counseling for the initiation of KMC is crucial to overcome socio-cultural barriers and anxiety of the mother and other caretakers to handle LBW and preterm infants. The first few counseling sessions are critical and may require extended interaction to develop a rapport with the mother and to alleviate any fear.

The KMC procedure should be demonstrated to the caretakers, explaining the correct position in a caring, gentle manner and with patience. Caretakers' queries should be answered to relieve their concerns and anxieties. During the counseling session it is important to encourage the mother to bring her husband or any other family member who helps her in carrying the newborn in the KMC position. This helps to create a positive attitude in the family and enhance family support to the mother, a crucial element in the provision of continued KMC at the facility and at home after discharge. It is helpful to allow newer mothers and family members to interact with other mothers in the KMC rooms who are already practicing KMC.

8.2 Clothing

Mother: KMC can be provided using any front-open, light dress as per the local culture. A suitable wrapper or binder that helps to hold the infants in the skin-to-skin position for an extended period can be adapted locally (e.g. kangaroo bag, baby sling, gabi, netela).

Infant: When in the KMC position the infant should be dressed in a hat, socks, and a diaper only.

8.3 KMC position

The infant 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 to keep the airway open and allow eye-to-eye contact between mother and infant. The hips should be flexed and abducted in a "frog"-like position; the arms should also be flexed. **(Figure 8.1)** The infant's abdomen should be at the level of the mother's epigastrium. The mother's breathing stimulates the infant, thus reducing the occurrence of apnea. The infant should be supported underneath the bottom and securely tied with a sling or binder. The edge of the wrap or binder should cross over the ear of the baby to keep the head stable. Feet should not dangle below the binder.

The healthcare provider should help the mother to initiate KMC by assisting in positioning the infant and explaining how to handle the infant during KMC. Repeated

training and reinforcement help the mother to master the skill of handling her newborn in the KMC position. (Figures 8.2 and 8.3)

For prolonged and continued KMC the mother or caretaker will be comfortable to sleep in a semi-reclining position (40°-45°). This can be achieved with the help of 3-4 pillows on the hospital bed or special semi-reclining chairs. (Figure 8.4)



Figure 8.1: KMC position



Figure 8.2: Securely wrap the baby in KMC position



Figure 8.3: Put on loose clothing over the wrap



Figure 8.4: Mother sleeping while practicing KMC

8.4 Duration of KMC

Mothers, fathers or surrogates should be supported to provide KMC for 8-24 hours per day (for as many hours as possible). At facility or at home, KMC should be provided continuously without interruption. The infants in KMC need to be removed from the skin-to-skin position only for changing diapers and some clinical assessments according to hospital schedules.

The total duration in days of KMC the neonate should receive depends on the how soon the baby was born or what weight the baby had at birth. KMC should be continued at facility and at home as long as the baby tolerates it or reaches a weight around 2,500g or an age of 40 weeks gestation.

8.5 Monitoring of the Infant while in KMC

Infants receiving KMC should be monitored carefully, especially during the initial stages to ensure that

- The infant's airway is clear;
- Breathing is regular;
- Color is pink
- Infant is maintaining a normal temperature

NB: Monitoring for unstable infants need to follow the protocol of monitoring of critical sick newborn in the unit.

All the above clinical observations and duration of KMC should be recorded in the newborn follow-up sheet of the unit. Mothers should be orientated or trained to observe their infants for danger signs (e.g. hypothermia, respiratory problems, feeding difficulty, and change in color), so that appropriate care can be provided based on the clinical signs. She should also be counseled to continue monitoring the child at home and to promptly seek care if she observes any problem.

8.6 Feeding during KMC

Feeding and using appropriate nutrition strategies during the postnatal period are very important for ensuring optimum growth and development of LBW and preterm infants. Initially, breastfeeding is given at fixed intervals of 2-3hours and not on demand, to ensure an adequate and assured minimal intake. The mother should be explained how to breastfeed while the infant is in the KMC position. Holding the infant near the breast stimulates milk production. Mothers should be coached and supported on how to express breast milk while the infant is still in KMC position.

Preterm and LBW infants who are able to breastfeed should be put to the breast as soon as possible after birth, and should be exclusively breastfed until six months of age.

For babies born after 34 weeks of gestation the mother should be encouraged to breastfeed whenever the baby shows signs/cues of readiness to feed (open eyes, the baby's head slightly back, moving tongue down and forward, and opens mouth, licking movements).

Breast milk expression

Mothers should express milk from their breasts to feed babies who are unable to feed from the breast. Also, some mothers may express milk to relieve breast engorgement. Milk should be expressed at approximately the same frequency as breastfeeding. Breast milk (colostrum) may be produced in small amounts initially, but production typically increases after 2-3 days.

Before expressing milk

- Mothers should clean their hands with soap and water, and clean their breasts with water but not soap.
- Collect breast milk in a clean container with a cover if it is to be stored.
- Keep in a cool place for up to 6 hours, or up to 24 hours if refrigerated.
- Use freshly expressed milk whenever possible.
- Consider nipple stimulation, massage of breasts and use of warm compresses prior to or during expression to improve milk flow.

A baby who is able to cup feed will

- Take the full desired amount.
- Not cough, choke or turn blue with feeding.
- Be awake and able to feed every 2-3 hours.
- Cup feedings may be combined with breastfeeding or gastric tube feeding.
- Assess the baby's readiness to breastfeed daily.
- The baby who cannot cup feed adequately will need gastric tube feeding.

Naso-gastric or oro-gastric tube feeding should be used for a baby who cannot feed well by mouth and

- is unable to swallow without choking or
- has early inadequate intake by breast or cup with low urine output (<6 wet diapers a day) or
- Cannot take enough breast milk by breast or cup to grow properly.

Feeding volume is determined by the age and weight of a baby (Table 8.1). Begin naso-gastric or oro-gastric feedings at low volumes, increase gradually, and adjust volumes for amounts taken by mouth. Evaluate tolerance with every feeding to identify problems promptly.

Table 8.1: Recommendation for initiation and advancement of preterm feeding using expressed breast milk

Gestational age	Weight(grams)	Initial feeds	Progression of feeds/ advance till reach 150ml/kg/day
<28 weeks	<1,000	10 -20ml/kg/day	10-20 ml/kg/day
28 – 32weeks	1,000– 1,500	20-30 ml/kg/day	Increase by 20-30 ml/kg/day
32 – 34 weeks	1,500 – 1,800	30ml/kg/day by GT or cup	Increase by 30 ml/kg/day
> 34 weeks	>1,800	30-60ml/kg/day	Increase by 35 ml/kg/day to attain full feeds

GT, gastric tube (naso- or oro-gastric)

N.B: For birth weight <1,000g if feeds well accepted after 3 to 4 days the progression of feeds can be increased to 30ml/kg/day

8.7 Practicing KMC at Home

- KMC can be initiated and continued at home for infants weighing 2,000-2,500g and who have no danger signs.(see above section 7.1.1)
- Newborns initiated on KMC at the health facility and should be continued on KMC at home.
- To practice KMC at home the mother should be cooperative, the family willing to allow mother to practice KMC and support the mother in doing KMC.
- CHWs should pay multiple home visits on a regular basis to guide and supervise KMC families. They should have received additional training in home-based KMC (including for KMC position, technique of breastfeeding, expressed breast milk

collection and feeding, hand washing and detection of early signs of danger and immediate referral to the health facility). (see above section 7.1.1)

- Infant feeding should be given by direct breastfeeding or cup feeding while mother practices KMC at home.

8.8 Transports for Preterm and LBW Infants

- The best method to keep a preterm/LBW infant warm during transport after initial stabilization is by continuous skin-to-skin contact with the mother/family member. A health worker should accompany the mother and the newborn and do frequent observations.

- If a family member is unavailable to accompany the baby in the KMC position or KMC could not be initiated:
 - Ensure the baby is kept warm with a plastic wrap and adequately covered with a warm cloth during transport.
- Mothers of preterm or LBW newborns should be provided with transport service (ambulance) from facility to their home when they are discharged from the health facility. Mothers or family members should keep the baby in KMC position during transport back home.

8.9 Discharges from Hospital and Follow-up

The standard policy of the unit for discharge from the hospital should be followed. Generally, the following criteria are accepted at most centers.

The infant has:

- Completed parenteral medication; and
- No report of hypothermia for 3 consecutive days ;and
- Weight gain of 15-20g/kg/day for at least 3 consecutive days; and
- No report of apnea for 3 days after while in KMC position; and
- Accepting feeds directly from breast (preferable) or by spoon or cup; and
- Mother is confident to take small baby at home

If the infant fulfills the above criteria, discharge can be done at infant weight of about 1,500g (this may vary depending on the

availability of resources and adequate space to provide KMC in the health facility). Infants, who are above 2,000g at birth, do not require admission into a nursery/NICU, are given KMC soon after birth and can be sent home after 24 hours once the mother is comfortable to continue KMC at home and adequacy of breastfeeding is established.

Mothers' social support should be assessed and discussed with the family for continuation of KMC at home.

At discharge, the mother and family members must also be taught how to practice KMC at home. This will ensure that KMC will continue at home, that the infant is nursed in a warm room, and is adequately fed on breast milk directly from the breast or by means of expressed milk in a cup. Mothers and families should be adequately informed about hygiene, danger signs, follow-up visits, immunization and prompt care seeking at the nearest health facility when any of the danger signs are observed.

KMC should be continued as long as required and baby and mother should not be discharged in a hurry. At the time of discharge, the infant should be taken home in the KMC position by the mother or relatives so as to encourage continued KMC at home. At the time of discharge, the family should be counseled and linked to the health extension worker of the village who shall provide home-based care and follow the baby up according to the community-based newborn care guideline.

8.10 Follow-up

- Close follow-up of all preterm and LBW infants receiving KMC is crucial. Regular assessment of growth, sensory functions, behavior and neurodevelopment should be made.
- During the follow-up visits developmental milestones and anthropometric measurements (e.g., weight, length, head circumference) of the infant should be recorded to monitor the growth and development.
- More frequent visits should be made if the infant is not growing well or if her/his condition demands closer monitoring.
- Following discharge, HEWs should continue to provide care to the infant as per the community-based newborn care guideline.
- The first follow-up should be at one week, followed by fortnightly follow-ups till next two visits.
- If an infant is receiving immunization at a facility where KMC services are available, a follow-up must be ensured.

8.10.1 Location of Follow-up

If feasible for families, follow-up should be done by the discharging facility or the facility which has done the initial care. If not, follow-up can be done by the nearby health facility. For those who are initiated KMC at home, follow-up can be done by the HEWs.

8.10.2 Frequency of Follow-up

- First visit at 1 week of discharge.
- Second visit every 2 weeks till 40 weeks gestation or weight of 2,500g.
- Then based on the preterm follow-up protocol,

8.10.3 Goals of Follow-up and What to Check

- Growth assessment using preterm growth chart till 40 weeks; after that use the WHO growth chart. **(Appendix-D)**
- Developmental assessment.
- Nutrition assessment and support, breastfeeding status, maternal nutritional status.
- KMC practice at home.

8.11 When should KMC be discontinued?

Ideally an infant graduates from KMC when gestation reaches 40 weeks or the weight is around 2,500g. By this time the infant starts wriggling to show that he or she is uncomfortable, pulls out the limbs from the kangaroo garment and cries and fusses every time the mother tries to put the infant back in the skin-to-skin position. This is the time to wean the infant from KMC.

9. KMC Guideline Implementation Strategy

The KMC implementation and technical guideline aims to ensure availability of standardized KMC care at all levels of the health system. The guideline also aims to ensure every preterm and LBW baby has access to quality KMC without financial hardship, regardless of the region or community in which the babies are born. In addition, families and communities will be empowered to improve demand and utilize the services.

9.1 Integration of the KMC Intervention

The implementation, monitoring and evaluation of this strategy will be harmonized, aligned and integrated across all relevant MNCH programs and service delivery strategies.

9.2 Engage the Health System and Political Leaders

Long-term vision, political commitment and leadership at all levels are central to the successful implementation of KMC. Recognition and engagement by the health system and political leadership with KMC as an impactful newborn health intervention are critical to promoting KMC uptake in the country and achieving the long-term benefits of effective implementation. Achieving the national target of 70% KMC coverage by 2025 requires strong leadership and ownership of the health system and political leaders at all levels.

9.3 Ensure Adequate and Sustainable Financing

Leadership and political commitment need to be translated into financial commitment reflected in national and subnational budgets for RMNCAH programs by including a dedicated budget for the implementation of KMC as part of SSNC. The budget item should include cost for the redesign of infrastructure (including the establishment of new or renovated KMC units and facilities), human resource capability building, and procurement of the required equipment and supplies. Resources for KMC implementation should be allocated to all levels of care. In addition to allocating domestic financing support for KMC implementation to ensure the sustainable national scale-up of KMC, health development partners should also be called upon to mobilize resources for the expansion of KMC as part of the SSNC service.

9.4 Increase Availability, Capacity, and Motivation of Health Providers

Healthcare providers are central to the successful implementation of KMC in both facility and community settings. Therefore, the national plan and budget for KMC implementation must provide for sufficient numbers of healthcare providers, including doctors, nurses, midwives, and CHWs to achieve high-quality coverage of KMC at facility and community levels. Adequate capability building, mentorship and supportive supervision should be part of both

pre-service and in-service education, training and support. There should be emphasis on counseling and communication skills covering lactation management, supporting mothers and families, promoting family participation, and supporting maternal mental health. Besides increasing workforce numbers and capacity development, it is vital to motivate healthcare providers to accept, promote and practice KMC as the standard care for all small or sick newborns.

It is recommended that a good motivational mechanism be designed and provided for the health facilities with the best performance of KMC and for health workers who regularly perform better at different stakeholder levels:

- **Professional organizations** (EPS, ESOG, EMwA, ENA) should be engaged to accept, endorse, promote and implement KMC as the standard of care for all small or sick newborns and their mothers in both public and private sectors. Professional organizations, along with KMC champions, should lead by example through demonstrations of the change in practice, and help develop and sustain the motivation and momentum of the health workforce through evidence sharing, continuing medical education, and other mechanisms.
- **At the facility level** an inter-professional team engaged in continuing educational development, hands-on training with supportive supervision, and the management of staff rotations are

essential to providing adequate coverage with skilled care. Creating a conducive working environment in healthcare facilities that will have a positive impact on improving the competence of the health workers is also important.

- **Health extension workers** should receive regular orientation in supporting SSC, lactation management and counseling, with hands-on practice to help mothers initiate and continue KMC at home. A network of newborn healthcare professionals and HEWs can also promote cross-learning and capacity building

9.5 Upgrade/Renovate Infrastructure and Design to Create a Conducive Environment for KMC

All levels of the health system should provide infrastructure, environment and service delivery design that will enable mothers and babies to remain together. There should be dedicated space for KMC provision for all preterm newborns across all levels of health facilities where basic needs of mother and newborn can be met. This includes medical care for mothers and newborns, food for mothers, toilets and showers for mothers, and hand washing facilities (also inside the newborn care unit). Low-cost commodities such as KMC beds, chairs, refrigerators, feeding cups, KMC wraps, and gowns for mothers can be purchased from the local market. These should be of good quality to maximize the mothers' and babies' comfort

and safety. Adequate commodities and supplies should be available to ensure uninterrupted provision of care. To realize zero separation between mother and baby, the KMC service provision arrangement should be family centered. At facility level, implementation of zero separation may require policy changes in terms of redesigning the layout of the preterm newborn care unit, visitation policies, and the integration of care of mothers and newborns

9.6 Develop Robust Data System and Use Data for Quality Improvement

Accurate recording of KMC service data and the analysis and use of the data for quality improvement as part of the routine health management systems is vital to improve KMC practice and track the coverage and quality of KMC. Whether paper-based or digital or a combination of both, the collection of facility-level data and its use to identify problems early, trigger corrective actions, and support decision making to improving implementation is fundamental. At facility and community levels health facility managers, newborn care providers, and CHWs should integrate the use of KMC service data as part of their quality improvement initiatives.

9.7 Ensure Availability of Functional Network of Care and Improve Referral System

KMC cannot be implemented in isolation and optimal outcomes for preterm or LBW babies would require that essential services for SSNC are available at all levels of care

with a functional referral system. A functional referral system and network of care help to meet clients' needs with a health system providing appropriate services without overburdening referral health facilities with provision of care that could be managed at lower-level facilities closer to a client's home. The referral system along with its feedback system must be strengthened to ensure that the network of care becomes and remains functional. Furthermore, the linkage between facilities and communities should be strengthened to ensure follow-up and support for KMC at home after discharge from a health facility.

9.8 Promote Family Centered Care and Community Engagement

Mothers, fathers, and families of newborns are central to the provision of care for preterm newborns at the health facility or at home. In addition to improving KMC practice, the involvement of parents in the care of their newborns has been associated with improved neonatal developmental outcomes. It also prepares the family to assume full care of their infant after discharge.

Enhancing community engagement is vital to facilitate acceptance of KMC as a norm, improving community support for mothers and families who practice KMC, and engaging families and communities in the planning and evaluation of KMC services. Community ownership of KMC can facilitate promotion of maternal healthcare utilization, including facility delivery, early notification of home deliveries, and identification and referral of

preterm and LBW newborns in the community. Promoting family and community engagement has to take the early childhood development (ECD) principle of the country into account to leverage outcomes through KMC.

- Utilize innovative outreach techniques to educate the community about KMC practice through an integrated media campaign, in different local languages.
- Involve religious leaders, clan leaders, community leaders, VHLs, and members of the Women Development Army (WDAs) to improve KMC practice at the community level.
- Promote awareness creation and education about the importance of KMC practice for preterm and LBW infants in the community through the existing community platforms.
- Awareness promotion of KMC and education at the antenatal clinics that pregnant women visit while mothers are waiting for their turn at the clinic.

9.9 Contextualize KMC Service for Pastoralist and Cross-Border Mobile Communities and during Humanitarian Crises

Whilst maintaining the core elements of the intervention, the implementation of KMC should be contextualized to different settings considering the health system contexts in pastoralist, and cross-border mobile communities and in humanitarian settings. In these settings the MOH and RHBs need to strengthen partnership with health development partners, stakeholders, and

communities to support health facilities and communities to provide quality KMC for preterm and LBW neonates.

9.10 Strengthen Resource Mobilization for KMC Service Implementation

The WHO recommends that SSC is a key component of facility-based KMC and should be included with the routine warm chain for all newborns. However, SSC is not widely practiced in maternity and postnatal wards, nor is it a common practice at home or within the community. Policymakers, program managers, politicians, service providers, community leaders, families, mothers and caretakers must all be sensitized to this type of care to make it an acceptable practice. It is imperative to ensuring that all facility-based KMC programs are accompanied by appropriate behavioral change communication (BCC) and community mobilization strategies through local communication platforms like edir, mahiber, pregnant women's forum, etc.

9.10.1 National/Regional Level Sensitization and Mobilization

Key sensitization and mobilization actions to take place at the national level (apart from the national stakeholders' meeting) include:

- Integrate KMC service coordination and monitoring in the existing maternal and newborn health national task force or technical working group.

- Share periodic reports on service coverage and KMC success stories regularly with the MOH and other governmental and non-governmental stakeholders.
- Engage the media to report on the burden of the problem and what is being done to improve it.
 - Reports can include testimonies by mothers or relatives of LBW/preterm babies who survived with KMC.
 - A discussion on LBW/preterm babies and KMC on public radios and televisions could also be organized.
 - Invite the high level leaders or other prominent politicians or celebrities to visit KMC service sites—which is another effective way of creating awareness of and mobilizing resources for the expansion of KMC services.
- Identify a “champion” who can advocate and support the cause.
- Engage existing national advocacy groups to put care and survival of LBW/preterm infants on their agenda.

9.10.2 Health Facility Level Sensitization and Mobilization

The impact of KMC on the survival and improved outcome of the preterm and LBW infant can be addressed through multiple channels:

- Onsite KMC orientations: prepare standard contents and provide orientation for the whole health workforce at health facility level. Identify KMC champions in the facility and consider engaging them in the national stakeholders’ meeting to

share the practical concerns of health professionals emanating from their experience. Identifying major concerns before arranging a site visit is important to ensure that the visit is tailored to these specific concerns.

- If KMC services are to take hold in the facility, orient facility managers to the effectiveness; when the mother is the primary care giver of her baby the quality of care improves a lot, compared to conventional care where the nurses have to do all the care, and benefits of KMC services (including a reduction in overcrowded wards, lowered cost due to decrease length of stay and improved survival rates for LBW/preterm babies).
- Discussions on institutional policies that need to be revised to permit successful KMC implementation in the facility (and the possible rearrangement of various wards) should happen before training staff in KMC.

9.10.3 Community Level Sensitization and Mobilization

Activities for community sensitization and mobilization ensure that mothers and caregivers have the community support needed to practice KMC. These activities include:

- Group and individualized counseling at the health facility during antenatal care, on admission, during facility stay and at discharge time.
- Testimonies from mothers, fathers or relatives who have successfully cared for LBW/preterm babies using KMC.

- Celebration at health facilities or within communities at the graduation of a LBW/preterm baby from KMC.
- Awareness making during international days such as the Breastfeeding Week, World Prematurity and International KMC awareness day each year.
- Radio, newspaper and other public forum discussions on KMC.
- Discussion on the magnitude of the problem and appropriate care for LBW/preterm infants integrated with existing community activities (e.g., religious leaders, WDA, village health committees and village development committees).

9.11 Achieving and Maintaining Quality of Care with Mentoring and Supportive Supervision

9.11.1 Clinical Mentorship and Supportive Supervision

Clinical mentorship is a system of practical training and consultation that fosters ongoing professional development to yield sustainable and high-quality clinical care outcomes. Clinical mentors need to be experienced, practicing clinicians in their own site, with strong teaching skills.

The mentor in KMC practice is a clinical expert with mentorship skill training (pediatrician/neonatologist, medical doctor, health officer, neonatal nurse specialists, senior NICU nurses, senior midwives, the Integrated Emergency

Surgery and Obstetrics (IESO) association and other health professionals). Experts in KMC services should provide on-going mentoring to less-experienced clinical service providers by responding to questions, reviewing clinical cases and providing constructive feedback based on the national RMNCAH catchment-based clinical mentorship guideline.

The mentee is a midwife/nurse/HEW or other professional engaged in KMC service provision but with limited knowledge and skill in KMC practice. After initial didactic coursework, which imparts knowledge on KMC practice, the clinician responsible for providing quality care and treatment is provided mentoring at facility level to implement KMC guidelines, addressing knowledge, attitudes, and behavior and thereby competency. The role of the mentee should also be in accordance with national RMNCAH catchment-based clinical mentorship guideline.

9.11.2 Supportive Supervision

Supportive supervision conducted in a team from national, zone and woreda program expert by using KMC supervision checklist (**Appendix-A**)

10. Roles and responsibilities

The following are roles and responsibilities at different levels of the health system to improve the implementation of KMC.

10.1 Ministry of Health/Regional Health Bureau

- Prepare and create KMC supportive policies and guidelines.
- Allocate budget to implement KMC and monitor implementation of KMC practice.
- Expand and ensure the inclusion of
 - health insurance to support for small and sick infants services ; and
 - costs of establishing KMC in neonatal wards, human resources and running costs included in national plans and budgets.
- Engage professional organizations, KMC “champions” and maternal-neonatal staff collaboration
- Conduct research in order to fill the gaps identified during the implementation process and challenges encountered.
- Prepare and disseminate standard job aids and messages on KMC.
- Organize and lead high level advocacy using events like World Prematurity Day, World Pneumonia Day, Safe Motherhood, Breastfeeding Week, etc.
- Ensure the KMC implementation guideline is integrated in other RMNCAH documents related to ANC, intrapartum and postnatal care, ECD, etc.

10.2 Zone/Sub-city/Woreda Health Office Role

- Assign a responsible focal person to coordinate the implementation of KMC.
- Facilitate and support the equipment and arrangement of postnatal rooms to accommodate delivered mothers and their neonates to provide KMC.
- Ensure all MNCH staffs are trained in KMC.
- Ensure KMC service is recorded and reported as per the DHIS2 data tracking system.
- Do periodic supportive supervision.
- Ensure adequate staffing.
- Conduct review meeting.
- Allocate budget.
- Facilitate and manage the referral system starting from the community.
- Lead, monitor and evaluate community-based health care to strengthen KMC.

10.3 Health Facility Level

- Assign a responsible focal person, preferably a senior NICU nurse/midwife, to coordinate the implementation of KMC.
- Ensure the availability of adequate human resources to provide KMC and availability of culturally appropriate food and practices that promote the physical, emotional and social wellbeing of women and newborns.

- Work closely with catchment facilities and cluster health posts, kebele(ward) leaders, religious leaders and others in the community to ensure sustainability of the program.
- Ensure that KMC service is recorded and reported as per the DHIS2 data tracking system.
- Create a KMC room and a conducive environment in the NICU to support immediate KMC in the labor rooms and operation theaters.
- Provide adequate nursing staff with strengthened competency and motivation to support KMC.
- Integrate RMNCAH departments in KMC implementation, for example, the labor and delivery unit, the PMTCT unit, the expanded program on immunization (EPI) and IMNCI.
- Ensure that the KMC room is conducive to the practice of KMC.
- Identify LBW babies early and facilitate referral.
- Record KMC in the clinical registers and use KMC-specific indicator(s) in routine data systems.
- Make KMC beds, chairs, garments and food for mothers available.

10.4 Health Post and Communities

- Support continued community KMC after discharge from the facility and the initiation of KMC at home when access and referral to an appropriate facility is impossible, care is not available or referral is not possible or feasible.
- Engage the community to promote KMC by actively involving the elderly and the WDA.
- Identify LBW babies early and facilitate referral.
- Record KMC in the clinical registers and use KMC-specific indicator(s) in routine data systems.
- In case of home delivery, provide the first postnatal care within the first 24 hours and allow the initiation of KMC for eligible newborns.
- Create community awareness through existing platforms and opportunities such as ANC visits, pregnant women conferences and VHLs.

10.5 Professional Bodies

Lead by example through demonstration of the change in practice. Accept, endorse, and implement KMC as the standard of care for all preterm infants and their mothers in both public and private sectors. Develop

the capacity and sustain the motivation and momentum of the health workforce through evidence sharing, continuous medical education and other mechanisms.

10.6 Parent Organizations/ Civil Society

Increase the demand for KMC among parents/families by educating families and communities that KMC is a basic patient right. Encourage fathers and families to empower and support mothers in providing KMC inside the hospital and at home after discharge. Engage with the health system to support quality improvement. Help abolish cultural myths and misconceptions around preterm birth and KMC.

10.7 Multilateral/ Bilateral Development Partners

Development partners should assist national government in their endeavor to implement and scale up KMC as part of mother-small/sick newborn couplet care by providing technical and financial assistance (e.g., loans, grants or credits) and promoting foreign and private sector investments.

10.8 Other External Funders/ Donors

Provide funding for implementation and research on KMC for better care outcomes and the establishment of new or enhanced KMC units and facilities (e.g., maternal-newborn special care units/maternal-newborn intensive care units).

10.9 Academics

Promote continued learning through research and documentation of experiences with KMC implementation. Evaluate economic and societal perspectives and reinforce KMC as a standard of care in teaching and training in maternal peripartum and newborn care in both pre-service and in-service curricula.

10.10 Private Sector

Acknowledge and practice KMC as standard of care for preterm and LBW infants. Engage in the creation of KMC awareness among parents and families to help them see its benefits as an integral aspect of the provision of high-quality newborn care.

11. Monitoring, Evaluation and Documentation of KMC Services

11.1 Monitoring and Evaluation

An M&E plan for KMC practice is designed to continuously monitor the implementation practice against the standards in the national guideline and delivery system targets.

11.2 Monitoring and Evaluation Indicators

Indicators for measuring performance of the KMC programs are meant to specifically measure resource allocation and implementation of KMC. Indicators are markers of progress towards the program's intended goal. Key indicators comprise output and outcome indicators.

Output/process indicators:

- Number of health providers trained in KMC
- Number /percentage of community health workers oriented in KMC
- Number /percentage of newborns who died before discharge
- Number / percentage of newborns who died after discharge
- Percentage of newborns weighed at birth
- Percentage of newborns identified in the following categories: <1,500g; 1,500–<2000g; 2,000–<2,500g; >/=2,500g

- Percentage of newborns initiated on facility-based KMC
- Percentage of newborns initiated on community-based KMC
- Percentage of newborns who received KMC follow-up after discharge or at home
- Percentage of newborns who initiated facility-based KMC and left the facility in the following ways: discharged according to criteria; left against medical advice; referred out; died before discharge.
- Number / percentage of facilities with an active/ functional KMC service
- Average length of stay in KMC services (days)
- Proportion of LBW babies on admission who “graduated” from KMC

Outcome indicators:

- Facility-based neonatal mortality rate disaggregated by birth weight <1,500g, 1,500 - <2000gm, 2,000 – <2,500g, >/=2,500g

11.3 Monitoring and Evaluation Tools

KMC indicators are collected from a variety of M&E tools, including:

- List/database of health providers trained in KMC

- List/database of KMC facilities established
- Patient charts/forms
- KMC registration form (for facility and community)
- Monthly/quarterly KMC summary forms to summarize key data
- Research and surveys

A national-level M&E framework needs to be developed. The already-developed core indicators could comprise the KMC implementation measurement framework at the national level and improve the national data to action at all levels.

- KMC service readiness (national policy recommends KMC for LBW newborns; national HMIS/DHIS2 includes the number of newborns who received KMC; costed national implementation plans for maternal and newborn health including KMC; number and percentage of facilities with inpatient maternity services with an operational KMC service.)
- Identification of small newborns (percentage of newborns weighed at birth; percentage of newborns identified with a BW of <2000g).

- KMC continuation and discharge (percentage of newborn receiving facility-based KMC who are discharged according to criteria or referred out, who left against medical advice or died before discharge).
- Follow-up of KMC babies and graduation from KMC (percentage of newborns discharged from facility-based KMC and followed up per protocol until 40 weeks gestation age or 2,500g).

11.4 Documentation and Use Evidence

Documentation focuses on the generation of quality evidence, research and innovations, culture of evidence-based decision-making, and development and use of technology. This can be done through:

- Strengthening the linkage between MOH, universities and RHB to conduct RMNCAH-related research; and
- Improving utilization of available KMC implementation research findings for decision making.

ANNEXES

APPENDIX A: KMC PRACTICE ASSESSMENT TOOL

The purpose of this assessment tool is to evaluate how KMC is being implemented by the health worker (on a mother or through simulation) or during supervisory visits (on a mother in a facility). Additionally it can be used during training of health workers

Directions - Rate the performance of each step or task using the following rating scale:

1 = Step performed correctly

2 = Step not performed correctly

N/A (not applicable) = Step was not needed in a particular situation

STEP	Rating				
Date					
Points for skill/activity					
Placement of the baby (5 points)	1	2	3	4	5
1. The baby is in an upright, vertical position.					
2. The baby is in direct skin-to-skin contact on the mother's chest.					
3. The legs are flexed in a frog position.					
4. The neck slightly extended in the "sniffing position The cheek is in contact with the chest of the mother.					
5. The edge of the cloth/binder/wrap cross the baby's ear to secure the head and ensure that the head does not fall forwards or backwards.					
Clothing for the baby (3 points)					

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6. Diaper/napkin					
7.Hat/bonnet					
8. The wrapper, binder or cloth (netela/gabi)for tying the baby is clean					
Feeding the baby (3 points)					
9. The baby is breastfed/receiving breast milk					
10. Health worker washes hands before touching the baby and mother					
11.Mother washed her hands before breast feeding or express breast milk and feeding baby					
A: Total points for the cases observed =					
B: Total points that were not applicable (N/A) =					
C: Total possible points for the case observed (11 – B) =					
Score (percentage): A divided by C multiplied by 100 =					
Facilitator’s or supervisor’s signature/initials					

APPENDIX B: SUPERVISORY CHECKLIST FOR KANGAROO MOTHER CARE UNIT

ITEMS/ELEMENTS	Yes	No
Policies, Guidelines and Checklists Available Related to:		
■ Criteria for and actions and counseling at admission		
■ Criteria for and actions and counseling at discharge		
■ Handwashing		
■ Handling of linen		
□ Disinfection		
□ Washing		
□ Sterilization		
■ Handling of feeding utensils		
□ Disinfection		
□ Cleaning		
□ High-level disinfection/sterilization		
■ Feeding of the LBW/preterm babies		
□ Direct breastfeeding		
□ Expression and handling of expressed breast milk		
□ Gastric tube feeding in the KMC position		
□ Cup feeding with baby cuddled on mother's lap		
■ Cleaning of floors and surfaces (ideally per shift)		
■ Counseling of mother on KMC and follow-care of the baby		
□ On admission/initiation of KMC		
□ During stay at facility		

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<input type="checkbox"/> At discharge		
<input type="checkbox"/> At follow-up visits		
Availability and Functionality of Equipment/Supplies		
■ Baby weighing scales		
■ Measuring tape to measure head circumference and length		
■ Room thermometer		
■ Feeding tubes [#4 [preferable], #6]		
■ Cups/suitable devices for feeding small babies		
■ Resources to note volume of milk (graduated cups or 10 ml syringes)		
■ Registers that record key information about LBW babies		
■ Growth charts available to check satisfactory weight gain		
■ Room heaters for centers in areas requiring room heating		
■ Thermometer for checking body temperature		
■ Emergency kit(ambu bag and small size face mask, oxygen source, manual suction device)(laryngoscope and McGill forceps for UNSTABLE babies in the NICU)		
Records for Individual Babies, Including at Least:		
■ Baby's periodic changes in weight, increment in head circumference on weekly basis		
■ Body temperature (at least per nursing shift for LBW babies)		
■ Recording of all feeds and any related problems such as vomiting		
■ Recording passage of urine and stools daily		
■ Feeding instructions recorded(Volume ,frequency, methods of feeding)		
■ Daily notes on physical examination findings and tests and treatment ordered		

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■ Notes of treatment given with timings		
■ Notes on whether KMC is continuous or intermittent		
Registers to Collect the Following Information:		
■ Number of LBW/preterm babies		
■ Number of LBW/preterm babies receiving KMC		
■ Types of feeding method received by the babies(tube, cup, breast)		
■ Weight categories of the babies		
■ Gestational age categories of the babies		
■ Weight on admission		
■ Weights at discharge		
■ Status at discharge (numbers alive, referred, dead, against medical advice)		
■ Causes of death where babies have died		
Availability and Functionality of Maternal Support Components		
■ Room for mothers implementing KMC		
■ Beds available for mothers to sleep in a suitable position with the babies		
■ Privacy for mothers such as the presence of curtains		
■ Facilities and supplies for handwashing		
■ Facilities for expression of breast milk		
■ Food provided for the mother		
■ Recreational facilities available(television, KMC poster, KMC video)		

APPENDIX C: DATA SUMMARY SHEET FOR LOW BIRTH WEIGHT BABIES

Name of Unit _____

Month(s) _____ Year _____

Table 1: Numbers of admissions, babies discharged and deaths

VARIABLE	FREQUENCY
Number of LBW admissions(BW <2,500g)	
Total number of LBW babies admitted	
Number of LBW babies referred in	
Numbers of new KMC admissions	
Numbers of Continuing KMC cases	
Number of LBW babies discharged	
Normal discharged improved	
Discharged against medical advice	
Number of cases referred out	
Number of preterm and/or LBW newborn deaths	

Table 2: Weight gain in grams for those discharged from the unit

VARIABLE	VALUE(grams)
Weight gain for those with positive gain (n =)	
Average weight gain(Discharge wt-Admission wt/numbers of days)	
Weight loss for those with negative gain (n =)	

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Table 3: KMC death audit (death by background characteristic)

CHARACTERISTIC	NO. IN THE CATEGORY (N)	NO. DIED (B)	CASE FATALITY RATE (B/N*100)	PERCENTAGE (B/T*100)
Weight (grams)				
<1,000				
1,000-1,499				
1,500-1,999				
2,000-2,500				
Total numbers of deaths				

N = Number in category, B = Number who have died in that category, T = Total number of deaths

Table 4: Length of stay of babies under KMC practice for those discharged in the period (in days)

Variable	Measure(days)
Length of stay of baby in the KMC unit for those discharged alive (n =)	
Length of stay of baby in the KMC unit for those discharged against medical advice (n =)	
Length of stay of baby in the KMC unit for those who died (n =)	

Table 5: Follow-up after discharge from the KMC unit until baby has reached 40weeks gestation or >2.500g

VISIT	No. Expected for follow-up	No. who came for scheduled follow-up	No. who came later than scheduled	No. of dropouts	Dropout visit at home by HEW	Dropouts known to have died	Comments
First visit							
Second visit							
Third visit							
Fourth visit							

APPENDIX D. GROWTH CHART FOR PRETERM INFANTS

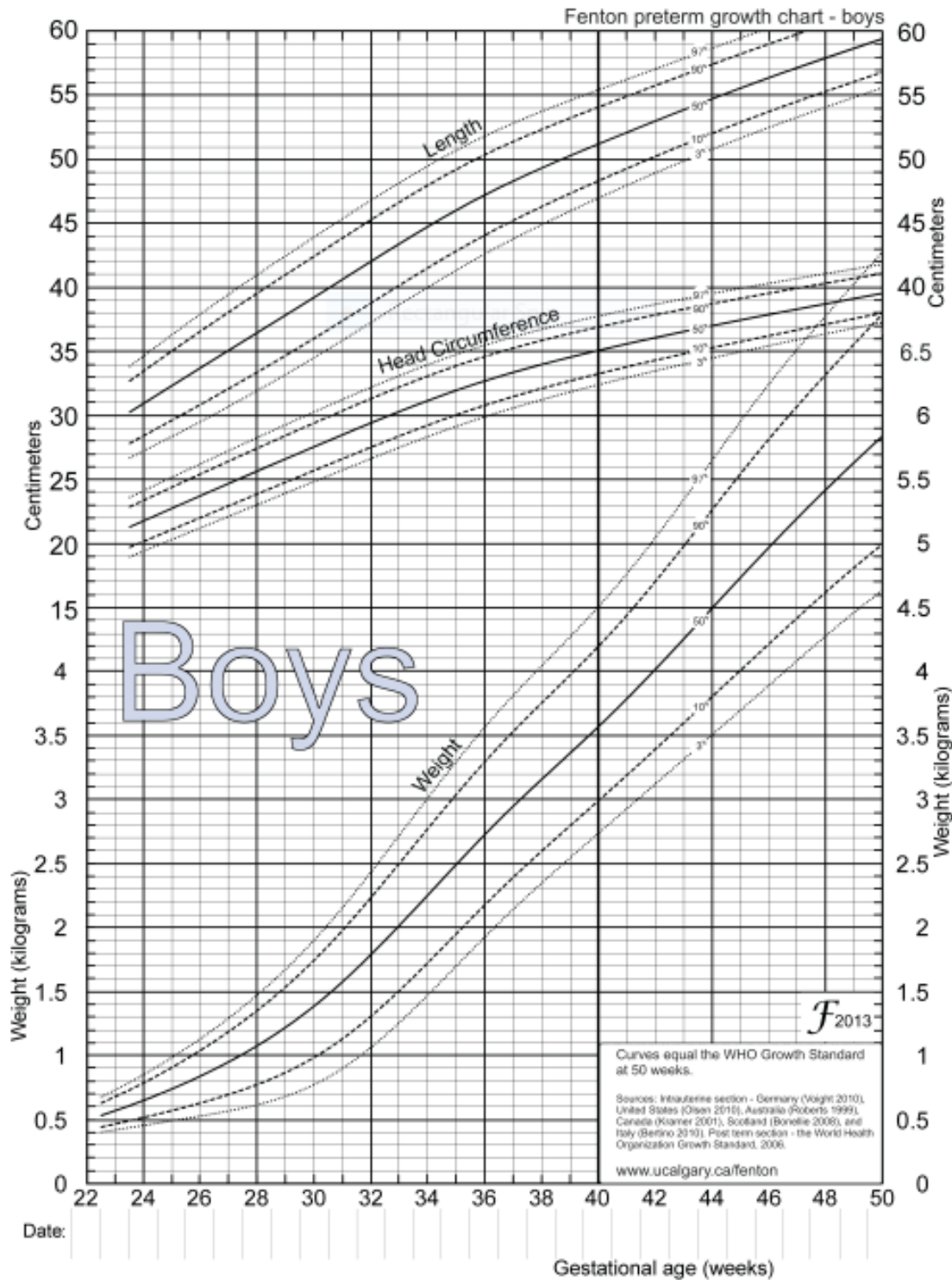


Figure 1: Fenton Preterm Growth Chart for Boys

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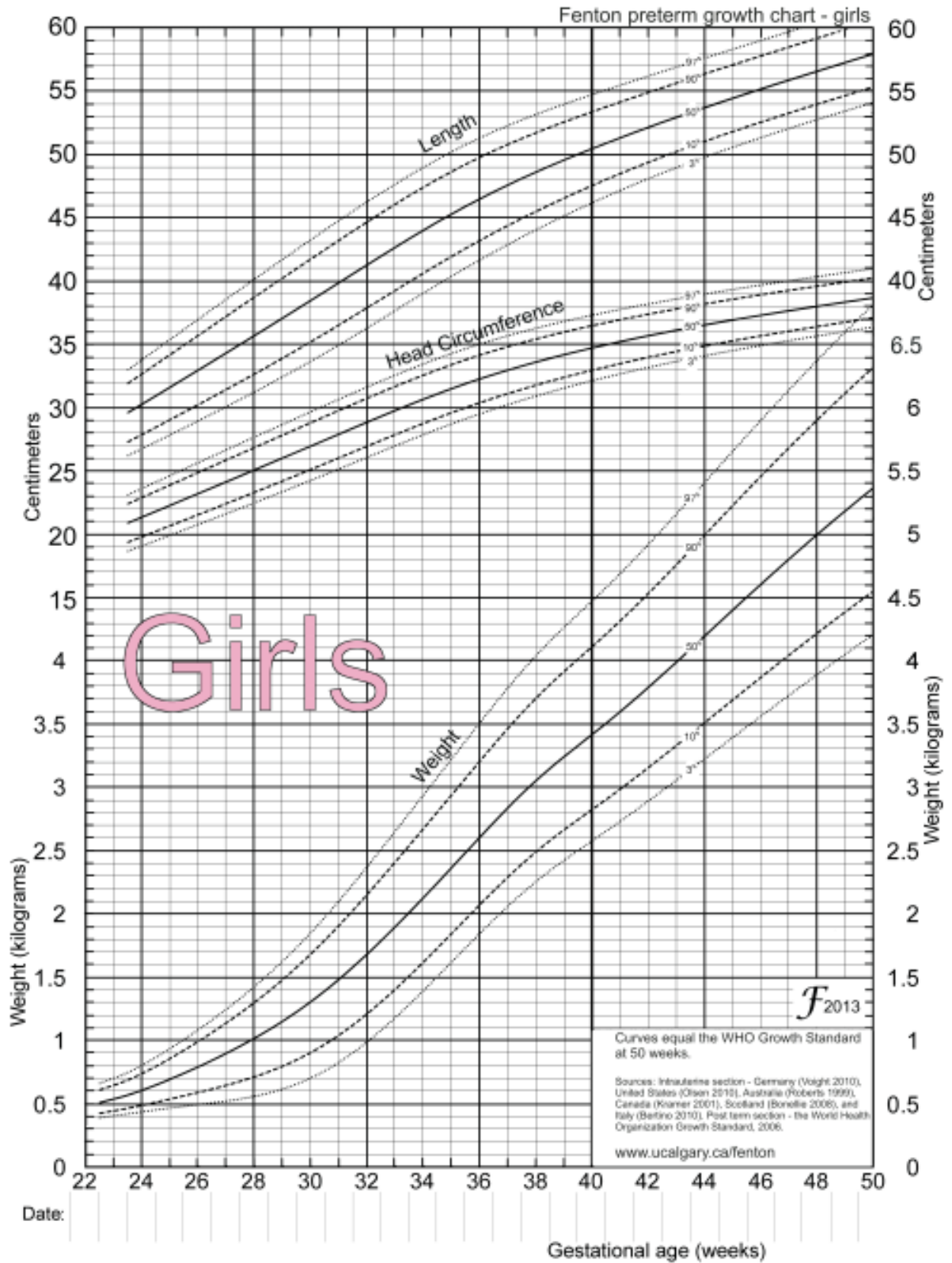
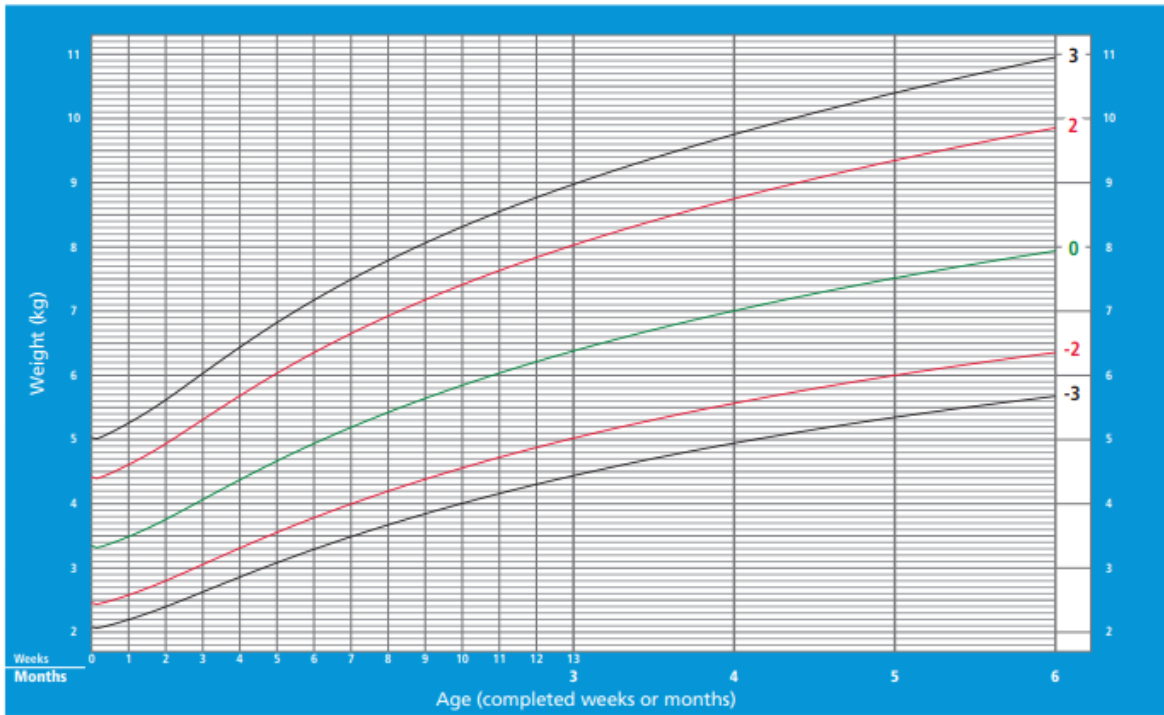


Figure 2: Fenton Preterm Growth Chart for Girls

Weight-for-age BOYS

Birth to 6 months (z-scores)

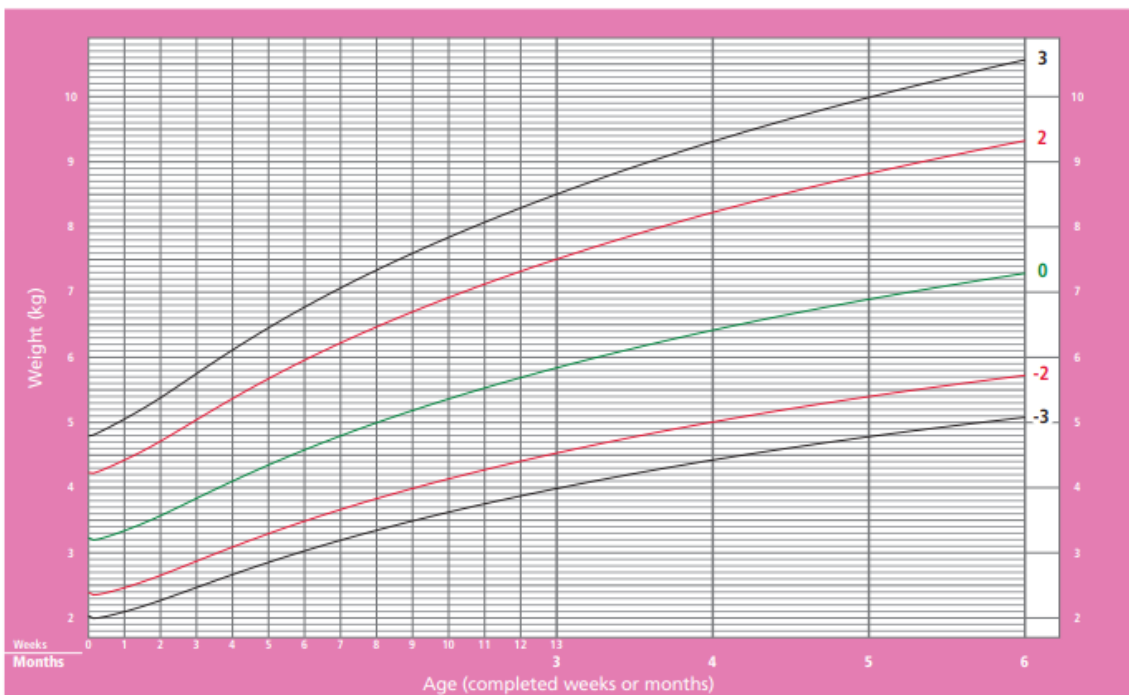


WHO Child Growth Standards

Figure 3. WHO growth Chart for Boys Birth to 6 months

Weight-for-age GIRLS

Birth to 6 months (z-scores)



WHO Child Growth Standards

Figure 4. WHO growth Chart for Girls Birth to 6 months

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MINISTRY OF HEALTH, ETHIOPIA

Kangaroo Mother Care Technical and Implementation Guideline

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Addis Ababa, Ethiopia**