EVALUATION OF KANGAROO MOTHER CARE SERVICES IN MALAWI

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Report compiled by

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EXECUTIVE SUMMARY

Introduction

Malawi has experience with the implementation of kangaroo mother care (KMC) since 1999 and developed national KMC guidelines in 2005. After a slow start up to 2007 when the first retrospective evaluation of KMC implementation was done, the scale up process was accelerated in the period 2008 to 2011, with 121 health care facilities providing KMC services by September 2011. In 2012 Malawi was one of four countries selected for an in-depth evaluation, using standard measurement tools, to systematically measure the scope and institutionalisation of KMC services and describe the barriers and facilitators to sustainable implementation.

Methodology

A convenience sample of 14 health care facilities was selected, including one central hospital, nine district hospitals, one hospital of the Christian Health Association of Malawi (CHAM), one rural hospital and two community health centres (CHCs). The facilities were visited by two teams of locally trained assessors under the guidance of a consultant. The teams interviewed key informants and KMC focal persons and observed the KMC services.

Results were interpreted by means of a model with six stages of change and facilities received a score out of 30. Facilities scoring above 10 out of 30 demonstrate implementation of KMC or evidence of KMC practice; those scoring above 17 out of 30 demonstrate the integration of KMC into routine practice; and those with more than 24 out of 30 show sustainable KMC practice.

Results

All 14 health care facilities visited scored more than 10 out of 30, with an average score of 16.33. Five facilities reached the level of integration of KMC into routine practice, with scores between 19 and 20 out of 30. No facilities have yet demonstrated sustainable practice.

KMC facilities. Nine (9) of the 14 facilities visited were designated as baby-friendly, with most obtaining their status between 2004 and 2008 and no subsequent re-assessments. In most facilities KMC was part of the maternity unit and linked to care in the postnatal ward. Eleven (11) facilities had a separate KMC unit or side room, with the rest practising KMC in the postnatal ward. The number of dedicated beds ranged between 1 and 10 (mostly 3-7) and the environment ranged from pleasant to cramped or looking unattractive. Public hospitals provided food for mothers, but not the CHAM hospital and the CHCs. Almost all facilities had educational materials available in the form of posters provided by donors or own posters or murals. Only 6 facilities indicated that KMC was included in antenatal care and education.

Types of KMC practised. There still appears to be many missed opportunities where KMC is not practised optimally, intermittently and continuously. According to self-reports by facility staff, 9 hospitals practised intermittent KMC, but none could provide any records to verify it. Although all facilities claimed to practise continuous KMC, only 11 facilities followed the principle of having the baby in the skin-to-skin position for at least 20 hours per day for some of

the babies. Decisions regarding babies' readiness for KMC were mostly made by nurses, whereas 4 facilities indicated that it was a joint decision between nurses and clinical officers. Health workers appeared to be less confident or less consistent with regard to admission criteria for intermittent KMC. Babies were observed in the KMC position in 8 facilities. Local cloth was mostly used for tying the baby. Mothers' guardians or companions played an important role in the psychological support and motivation of the mother, carrying the baby in KMC to relieve the mother after a caesarean section or in case of maternal illness, feeding expressed breastmilk (EBM), changing nappies, collecting medication, and bringing food.

Record keeping and documentation. Three (3) facilities had a written feeding policy, whereas all 11 hospitals had a job aid for calculating volumes of feeds. Only 3 facilities recorded each feed. Eleven (11) facilities weighed babies regularly. Weight was recorded in a variety of documents, including the baby's observation sheet, on a feeding chart, in the KMC register, on the labour chart and in the mothers' health passport. Ten (10) facilities used a collective KMC register, although this was not completed diligently in all facilities. Other documents with KMC evidence included the baby's health passport, the baby's observation sheet, nurses' and doctors' notes. According to the assessors, 4 facilities could provide good quality data, whereas the data in another 4 facilities were considered to be of poor quality. Nine (9) facilities had guidelines for the practice of KMC, 4 had criteria for admission and re-admission and 2 for discharge. The gaps with regards to documentation and record keeping made it impossible to assess the extent and quality of KMC practice in most of the facilities. Because none of the facilities could provide evidence of the survival rates before and after the introduction of KMC, the effect of the introduction of KMC on neonatal mortality could not be assessed.

Discharge and follow-up. In all 14 facilities nurses decided when a baby was ready for discharge, with some input from clinical officers in 5 facilities. Discharge criteria were found to be consistent and according to the criteria for facility-based, ambulatory and community KMC as set out in the revised national KMC guidelines. Ten (10) facilities kept a register in which the date of follow-up and weight of the baby were recorded. Special follow-up ended mostly when the baby reached a weight of 2,500 g. Home visits were only done where health surveillance assistants (HSAs) (government employed community health workers) had been trained in KMC and were linked with a health centre. The follow-up of KMC babies is one of the main challenges identified in this study. In only 3 facilities was evidence of a good follow-up system after discharge found, with 2 facilities providing no follow-up review. The linkages in the follow-up system between district hospitals and health centres were not clear and there did not seem to be a 'seamless' transition between facility-based, ambulatory and community KMC.

Staffing issues. Exact numbers of staff trained in KMC were hard to obtain, as orientation in KMC is included in integrated training packages and is also provided as a stand-alone module in some instances. Although 8 facilities indicated they had a long-term plan for KMC training, only 3 could provide written evidence of the plan. In all hospitals, except the CHCs and the rural hospital, nursing staff rotated between different departments, mostly on an annual basis. Poor supervision in KMC services was observed in a number of facilities. In most district hospitals,

KMC mothers and babies were reported to be the first to be dropped from routine supervision when the maternity became too busy. Clinical officers did not do regular ward rounds for KMC mothers and babies in at least 4 of the hospitals visited.

Community involvement. Although it was not the focus of the evaluation, community involvement was observed in some districts where a large number of HSAs had been trained in newborn care. There appeared to be a higher follow-up rate for babies in these communities. Influential leaders in the community also contributed to KMC awareness in some districts.

Recommendations

- Balance rapid expansion of services with the need to sustain existing KMC practices and improve quality of care.
- Strengthen pre-service training in KMC for all health worker categories, especially for medical and clinical officers and medical assistants.
- Ensure commitment by district health management teams for the inclusion of KMC training and services in the budget of district implementation plans.
- Conduct more in-service and on-the-job training in KMC as part of normal service delivery focusing more on mentorship.
- KMC should be part of routine clinical care and not optional.
- Use existing meetings and forums to report on KMC and advocate for more support.
- Use existing channels for regularly reporting on the provision of KMC services.
- Improve linkages between district hospitals, community heath centres and health surveillance assistants in order to enable more low birth weight babies to be reviewed regularly in a well organised follow-up system.
- Strengthen the practice of intermittent and continuous KMC by encouraging KMC for longer periods of time.
- Include information on KMC in the counselling of mothers during antenatal care.
- Manage staff rotations mindfully and do 'succession planning' in order to have sufficient staff skilled in KMC at all times.
- Pay more attention to documentation and record keeping and improve reporting to a higher level.
- Sustain support for KMC in any future programmes that include newborn care.
- Consider other strategies that may be beneficial for increasing community awareness of the importance and benefits of KMC.
- Continue further research into the acceptability of KMC for mothers and families, as well as service providers at all health care levels, and ways of improving compliance.

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ACRONYMS

AKMC	Ambulatory kangaroo mother care
ACCESS	Access to Clinical and Community Maternal, Neonatal and Women's Health Services
BEmONC	Basic Emergency Obstetric and Newborn Care
CBMNC	Community-Based Maternal and Newborn Care
CHAM	Christian Health Association of Malawi
CHC	Community Health Centre
CKMC	Community kangaroo mother care
CSHGP	Child Survival and Health Grant Program
DHMT	District Health Management Team
DIP	District Implementation Plan
EBM	Expressed breastmilk
ENC	Essential Newborn Care
HMIS	Health Management Information System
HSA	Health Surveillance Assistant
IMNC	Integrated Maternal and Newborn Care
KCN	Kamuzu College of Nursing
KMC	Kangaroo Mother Care
LBW	Low birth weight
MCHIP	Maternal and Child Health Integrated Program
MCHS	Malawi College of Health Sciences
MCM	Malawi College of Medicine
MoH	Ministry of Health
MSF	Médecines sans Frontières (Doctors without Borders)
NMT	Nurse-midwife technician
RHU	Reproductive Health Unit
RNM	Registered Nurse Midwife
SC	Save the Children
SNL	Saving Newborn Lives
SSDI	Support for Service Delivery Integration

1. GENERAL BACKGROUND

Preterm birth is estimated to be a risk factor in at least 50% of all neonatal deaths (Lawn et al, 2010) and preterm birth complications is the leading direct cause of 35% of the world's 3 million neonatal deaths each year (Liu et al, 2012). Neonatal infection is the dominant risk factor for babies born preterm (Lawn et al, 2005), whereas preterm birth is also the second most common cause of under-5 deaths after pneumonia (Liu et al, 2012).

Many of these deaths are preventable – some studies have found that kangaroo mother care (KMC) can prevent up to half of all deaths in babies weighing less than 2000g (Lawn et al, 2010; see also Conde-Agudelo et al, 2011). KMC has also been promoted as one of the methods for improving infant survival necessary for achieving Millennium Development Goal (MDG) 4 (Kinney et al, 2009). Compared with incubator care, KMC has furthermore been found to reduce severe infection/sepsis, nosocomial infections, hypothermia, lower respiratory tract disease, and length of hospital stay. Babies cared for in KMC also show improved weight, length, head circumference, breastfeeding, and mother-infant bonding compared to babies in incubator care (Conde-Agudelo et al, 2011; Ludington-Hoe et al, 2008; Ruiz, et al, 2007). KMC is currently viewed as the highest impact intervention in preterm care and is considered to be highly feasible to scale up in low-resources settings (March of Dimes et al, 2012).

A key component of program activities within Save the Children's Saving Newborn Lives (SNL) program and the Maternal and Child Health Integrated Program (MCHIP) has been working together with governments, development partners and health professionals to systematically introduce and promote scale up of facility-based Kangaroo Mother Care. SNL and MCHIP have engaged government and development partners to train over 1300 health workers and initiate KMC services across 20 countries (Save the Children, 2011). KMC appears to be a successful example of catalytic program inputs from Saving Newborn Lives and MCHIP resulting in wide scale behaviour change and implementation.

This report forms part of an evaluation of the implementation of KMC as method of care and the provision of KMC services in four countries in Africa, namely Malawi, Mali, Rwanda and Uganda. It is envisaged that the results of this evaluation will help with advocacy for improved service delivery and management, the improvement of monitoring and evaluation of KMC activities, influencing policy change, increased scale-up efforts, and adding to the global evidence and knowledge base for KMC.

2. BACKGROUND TO MALAWI AND ITS HEALTH SERVICES

Malawi is a land-locked country of about 118,484 square kilometres situated in Southern Africa. About 80% of the country is land and the rest is taken up by the water surface of Lake Malawi (see map in Figure 4). It is bordered by Tanzania (to the north and northeast), Mozambique (to the east, south and southwest) and Zambia (to the west and northwest). The United Nations' estimate of its population was 14,901,000 million inhabitants for 2010, with a population density of 128.8 inhabitants per square kilometre. About 83 per cent of Malawians live in rural areas (MoH, 2010; NSO & ICF Macro, 2011; Wikipedia, 2012).

Administratively the country is divided into three regions: North, Central and South. The regions are divided into 28 districts clustered into five health zones. The districts are subdivided into traditional authorities (TAs) composed of villages as the smallest administrative units. The decentralised health system is also modelled along these divisions. At the central level the Ministry of Health (MoH) takes charge of policy formulation, policy enforcement, regulation, establishment of standards, training and curriculum development and international representation on Malawi's health issues. The main service providers are the Ministry of Health (MoH) and the Christian Health Association of Malawi (CHAM). Districts are the basic operational unit responsible for coordinating public service delivery, which includes the delivery of health services in the district hospitals and health centres. The health system has three levels of care. The primary level comprises health centres, health posts, dispensaries, and community hospitals. District and CHAM hospitals function at the secondary level. The tertiary level includes central hospitals and two private hospitals with specialist services. At the community level the health system is organised around health centres and health surveillance assistant (HSAs) serving the heath care needs of villages (MoH, 2010; Munk et al, 2011).

3. KANGAROO MOTHER CARE IN MALAWI

Malawi has a history of 13 years in the implementation of KMC at various levels. The Reproductive Health Unit (RHU) of the MoH was instrumental in this process undertaken in collaboration with a number of partners, including Save the Children, USAID, UNICEF and the World Health Organization (WHO). Malawi is one of a few countries in sub-Saharan Africa that are on track with the attainment of MDG4 (WHO & UNICEF, 2012). There are different estimates of the neonatal mortality rate, available from different sources. The 2010 Demographic and Heath Survey gives a figure of 31/1,000 live births (NSO & ICF Macro, 2011), whereas the UNICEF figure for 2010 is a somewhat lower estimate of 27/1,000 live births (UNICEF, 2012). The 2012 low birth weight rate was estimated at 13% (UNICEF, 2012) and neonatal deaths due to preterm complications at 36% (Liu et al, 2012).

3.1 History of KMC implementation

Figure 1 gives an overview of KMC implementation in Malawi. KMC was introduced in the country in 1999 at the Zomba Central Hospital, which later served as a KMC training facility for health workers from six other hospitals. This initiative was supported through the Save the Children/US – Saving Newborn Lives Program (funded by the Bill & Melinda Gates Foundation) and several partners (Project HOPE, Ekwendeni Mission Hospital – CHAM, and Kamuzu College of Nursing) in collaboration with the Reproductive Health Unit (RHU) of the Ministry of Health over the period 2001 to 2005. Initially 12 KMC district trainers from different hospitals received five-day trainings conducted by the Zomba KMC master trainer. Subsequently a total of 253 health providers were trained in KMC. Facilities included in this phase of training and who implemented KMC were: Ekwendeni Mission Hospital (December 2003); Queen Elizabeth Central Hospital (November 2003); Bottom (Bwaila) Maternity of Lilongwe Central Hospital (2004); St Luke's Mission Hospital (September 2003); Mangochi District Hospital (2004); Mulanje Mission Hospital (2005) (Bergh et al, 2007; Save the Children, 2005). In 2005/6 a large new KMC unit opened at Queen Elizabeth Central Hospital (QECH) in Blantyre. It was

funded by UNICEF and linked to the SNL training network. This site evaluated the use of patient attendants for KMC (Blencowe & Molyneux, 2005). Ekwendeni district is well known for its *agogo* approach, which uses grandparents as agents of change for improved maternal and newborn care, facilitating the introduction of KMC (Van Zyl, 2010).

During a retrospective evaluation of KMC in Malawi in 2007 it was found that five of the seven hospitals supported were successfully implementing KMC, while two struggled with sustainability. It was also found that health care facilities supported with training around 2006 did not initiate KMC, whereas others had introduced KMC along another route. For example Nkhoma Mission Hospital (2006) had two Dutch nursing students who were instrumental in commencing KMC (Bergh at al. 2007). According to a personal communication, an expatriate doctor had also introduced KMC at the Holy Family Mission Hospital (Phalombe district) in the period 2003-2005, but the services petered out and were restarted in 2009/10. The main health systems planning recommendations included in the 2007 retrospective evaluation of the report for the next phase of KMC scale-up pertained to a number of crucial shifts related to locally grown leadership at all levels of the health system, the inclusion of more health care facilities, and new approaches to training and tracking. Recommendations with regard to health care delivery included greater flexibility, the empowerment of women, practising KMC with more babies, and more attention to the feeding of premature infants (Bergh et al, 2007).

In February 2005 the Malawi National Guidelines on KMC were adopted (MoH, 2005) and KMC was incorporated into the MoH workplan for 2005/6. The guidelines were revised in March 2009 to incorporate guidelines for ambulatory and community KMC (MoH, 2009). A KMC training manual (SNL, 2005) and visual materials were published in 2005 and Essential Newborn Care, which included KMC, was incorporated in the Registered Nurse Midwifery (RNM) curriculum in February 2005.

3.2 New initiatives since 2008

Following the 2007 retrospective study on KMC, Save the Children has continued working with the Ministry of Health of Malawi, development partners and health professionals in the further scale-up of KMC, especially in district hospitals and community health centres. Although all districts were targeted for KMC implementation, districts were supported by different partners and in different manners.

Through the Access to Clinical and Community Maternal, Neonatal and Women's Health Services (ACCESS), SNL programmes, Maternal and Integrated and Child Health Program (MCHIP) and a USAID-funded Child Survival and Health Grant Program (CSHGP) Expanded Impact Project (Cooperative Agreement No.: GHS-A-00-06-00016), Save the Children took leadership in rolling out KMC to six learning districts in January 2008 (i.e. Dowa, Chitipa, Thyolo, Nkhotakota, Rumphi, Machinga and later in Phalombe district. In the ACCESS learning districts (Nkhotakota, Rumphi, and Machinga) a feasibility study was done in March/April 2008 looking at whether it would be necessary to establish KMC in those sites but also to determine existing opportunities and barriers to the implementation of KMC. This study found that the three

Activity	1999	2000-2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Establishment KMC unit in Zomba Central hospital												
KMC training (SNL Partners-Project Hope, Ekwendeni Hospital, KCN, MOH-RHU)												
7 hospitals implemented KMC												
Adoption KMC national guidelines and update												
Publication KMC training manual and visual materials and review of training manual												
Incorporation of ENC in the RNM curriculum												
KMC incorporated into MoH workplan												
Individual hospitals implementing KMC through other routes												
Retrospective KMC evaluation												
CBMNC integrated learning program in 3 districts (RHU, SC and UNICEF)												
ACCESS/MCHIP roll out												
KMC content integrated in IMNC and CBMNC) training manuals respectively												
Other districts receiving training and support for KMC implementation												
Endline survey 3 SNL learning districts												
Initiation of the SSDI project												

Figure 1. Timeline of KMC implementation activities

hospitals in the ACCESS learning districts had the capacity of providing neonatal resuscitation services in emergencies and that KMC should be established in these hospitals. Other facilities would also be capable of providing KMC for babies of more that 1500 g. Facilities could be adapted for KMC services with minimal restructuring. Other requirements were training for service providers, proper support for mothers with breastfeeding, and the establishment of well documented follow-up systems (Luhanga, 2008).

The KMC training manual was also reviewed in 2008 to 2009 to incorporate suggestions from the retrospective study but also to add KMC content in the Integrated Maternal and Neonatal Care (IMNC) training manual. The latter was a requirement of the Malawi Ministry of Health (MoH) to have all trainings related to reproductive health integrated into one training document. KMC registers and monitoring tools were also reviewed and updated.

The scale-up of KMC followed a stepwise process. At first national trainers were trained in IMNC, which included a KMC module. The initial focus was on facility-based KMC, starting with KMC in the hospitals in the learning districts. This is in line with international suggestions on the importance of having sufficiently skilled health workers in facilities before expanding into the community (March of Dimes et al, 2012; Lawn et al 2010). The activities described above were followed by further scale-up efforts coordinated under Save the Children within the MCHIP, CSHGP, and SNL programmes from October 2009 to April 2011. A total of 15 tutors from 13 nursing colleges were trained in February 2009 and they subsequently developed action plans for implementing KMC training.

After establishing facility-based KMC, the facilitators moved on to ambulatory and community KMC in one of the ACCESS/MCHIP focus districts where some community health workers (HSAs) were also trained in KMC in a stand-alone fashion. In other learning districts, providers were being trained in the whole IMNC package. In 2009, the Community Based Maternal and Neonatal Care (CBMNC) Training Manual for HSAs was also revised to incorporate Ambulatory and Community KMC in order to enable HSAs to continue with the follow-up of babies in the community after discharge from hospital and to initiate KMC and to continue with it in the community in the case of babies with a birth weight of between 2000 g and 2499 g. In both ACCESS/MCHIP and SNL districts, HSAs were trained in CBMNC including KMC, and for those trained in CBMNC before KMC was incorporated a stand-alone KMC training was provided in the MCHIP districts and in SNL districts they were just oriented on KMC. With the introduction of ambulatory and community KMC, scale up took place to all peripheral health facilities in the focus SNL districts but remained isolated in MCHIP districts.

Some districts outside the SNL and MCHIP learning districts (Lilongwe, Mwanza, Chiradzulu, Karonga, Nsanje, Mzimba, Mchinji, Mulanje had an opportunity to conduct some training sessions in KMC or in newborn care with support from Save the Children, WHO, UNICEF, the Child Survival Fund and others. In these districts HSAs were not trained in KMC or CBMNC except for a few. For districts not directly supported by Save the Children the scale-up entailed reaching sites through the Basic Emergency Obstetric and Newborn Care (BEmONC) programmes in which health workers were being trained in the integrated MNC, including KMC. More information on these other initiatives could not be provided during the visit. With funding

from the Newman's Own Foundation, mission teaching hospitals were targeted for KMC training (St John's, Nkhoma, St Luke's, St Joseph, Holy Family, Trinity and Malamulo), as well as a number of mission hospitals without a training function (Nkhamenya, Daeyang Lukes, Likuni, Mulibwanji, Mlale, Mua, Confort, Mlambe). These hospitals were reported to provide KMC services at the time of the evaluation.

The systematic training programme was supported by supervision visits and monitoring and evaluation processes in certain districts and targeted facilities. In the MCHIP districts the visits took place quarterly and focused on successes, current challenges, previous challenges and recommendations. Core indicators for which information was collected for facility-based KMC included: proportion of facilities where KMC was operational; proportion of targeted facilities where KMC was operational; number of health facility staff oriented in KMC; proportion of health care providers trained in KMC; proportion of LBW babies on admission who had received KMC and survived to discharge; and proportion of LBW babies on admission who had received KMC lost to follow up after discharge.

Save the Children did a survey in the three SNL/CSHGP learning districts in 2011, comparing 2007 baseline and 2011 endline results of their CBMNC programme (Save the Children, 2012a). The public hospitals in two of the districts were also included in the current evaluation.

4. METHODOLOGY

4.1 Scope and objectives of current evaluation

The overall objective of the 2012 evaluation in Malawi was to evaluate and document the process towards the introduction and expansion of KMC services in the country. Some of the specific objectives included:

1. A systematic measurement of the scope and institutionalisation of KMC services
2. A description of barriers and facilitators to sustainable scale-up
3. Description of outstanding implementation research questions and gaps
4. Review of KMC materials
5. Description of the process of initiating KMC services and the 'models' used for KMC training and scale-up

In order to realise the above objectives, approval for doing the evaluation was obtained from the Malawi Ministry of Health (Appendix A). A study proposal was submitted to the Institutional Review Board of the Johns Hopkins School of Public Health for approval (Appendix B). Three consent documents were developed: written consent signed by the head of facility (Appendix C); verbal consent by the key informant(s) (Appendix D); and consent from mothers for taking pictures of them and their babies (Appendix E). One of the limitations of this study is that the views of mothers doing KMC were not solicited on their acceptance of KMC practice and the treatment they received from the services. This omission was for pragmatic reasons, as the time line did not allow for the development and translation of informed consent documents in all the local languages.

4.2 Evaluation approach

The evaluation approach included two distinct groups of role-players:

- Stakeholders and partners operating more at national level (and sometimes regional or district level) were invited to a meeting to solicit their views and perceptions of KMC and their expectations of the evaluation. The meeting started with an introductory presentation by a representative of Save the Children is attached as Appendix H. The scheduled feedback meeting with stakeholders did not materialise due to other meetings, but the PowerPoint presentation that the monitors had prepared was left with the Reproductive Health Unit (RHU) (Appendix I).
- Health care providers working in the districts targeted for a personal visit during the evaluation provided the necessary 'grass roots' information needed for measuring progress in KMC implementation.

A team of local assessors or monitors were identified to be trained by the external consultant in the use of the evaluation tools. They were required to be able to demonstrate the following after the initial training:

- Familiarity with the evaluation approach (progress monitoring) to be used during the evaluation exercise
- A clear understanding of the content of the progress-monitoring tool
- The ability to conduct all the activities that formed part of a facility visit
- A clear understanding of their roles and responsibilities with regard to the facility visits and the subsequent feedback activities

The notion built into the district-level visits was that any evaluation exercise should rather be seen as an opportunity to monitor KMC implementation progress of a health facility rather than doing an end-of-project summative evaluation and to use the contact visit as a capacity building and a learning experience for providers. For this purpose a written feedback report form (Appendix F), including the main aspects of KMC implementation as well as qualitative feedback on impressions and recommendations for consideration, was completed and left with the facility at the end of the visit, after giving verbal feedback to the key informants and other important role-players.

4.3 Conceptualisation of kangaroo mother care

Kangaroo mother care is conceptualised as a "total health-care strategy" (Nyqvist et al, 20120b), which is applied within a supportive environment where the mother of the low birth weight or premature infant is supported by health care workers in the health care facility and by members of the family and in the community at home. KMC is often built conceptualised around three components, which is graphically depicted in Figure 2:

- *Skin-to-skin position:* The baby is secured upright in a skin-to-skin position against the mother's chest.
- *Nutrition:* Exclusive breastfeeding (which includes the feeding of expressed breast milk) is the preferred choice of feeding whenever possible.

- *Discharge and follow-up:* The baby is discharged home in the skin-to-skin position as soon as breastfeeding has been established, the infant gains weight and the mother is competent in the handling of her all baby and receives ambulatory care with regular follow-up/review visits to a health care facility (Charpak & Ruiz, 2006; Charpak et al, 2005; Nyqvist et al, 2010a&b; Ruiz et al, 2007).

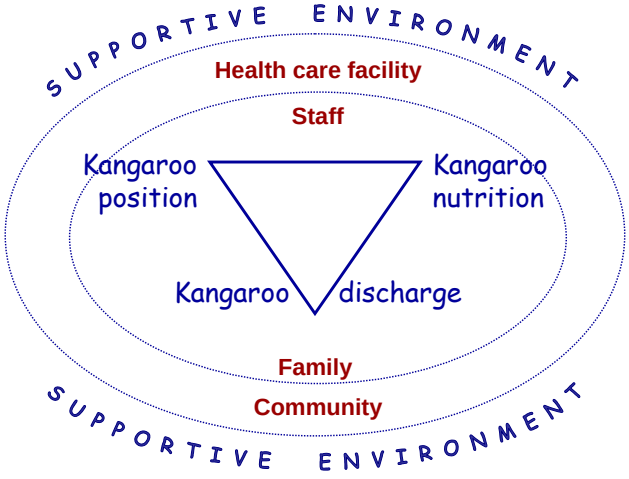


Figure 2. The components of kangaroo mother care
(Bergh, 2002)

There are two main modalities of KMC practice – intermittent and continuous. The practice of skin-to-skin care for 24 hours per day is known as continuous KMC and is recommended as the preferred method where possible. When skin-to-skin care is practised for a few hours per day it is called intermittent KMC (Nyqvist et al, 20120a; Charpak & Ruiz, 2006; Charpak et al, 2005). Systems of KMC provision are sometimes divided between facility-based KMC, ambulatory KMC as an extension of facility-based KMC after discharge and community KMC, where the newborn services are provided by community health workers (either to LBW babies born at home or after discharge from ambulatory care). The community-based maternal and newborn care manual for health surveillance assistants makes the following distinction between ambulatory and community KMC services:

- Ambulatory KMC (AKMC) "is the KMC provided to relatively LBW babies with a birth weight of 1800g to 2000g, characterized by short hospitalization period and more frequent follow up checks at a health facility" (p 85).
- Community KMC (CKMC) "is the KMC provided to LBW babies with a birth weight of 2000g and above that can be initiated and continued at home" (p 85). (MoH, date unknown)

4.4 A stages-of-change model

The model used for measuring change or measuring progress in the implementation of KMC had been developed, tested and used before in other countries (Bergh et al, 2005; Pattinson et al, 2005; Bergh et al, 2007; Bergh et al, 2008; Bergh et al, 2012). Figure 3 depicts the latest version of this model (Bélizan et al, 2011). The model provides for three phases: pre-implementation, implementation and institutionalisation. Each phase has two stages or 'steps', starting with creation

of awareness and commitment to implementation (pre-implementation phase), followed by preparation to implementation and initial implementation (implementation phase) and ending with integration into routine practice and sustaining practice (institutionalisation phase).

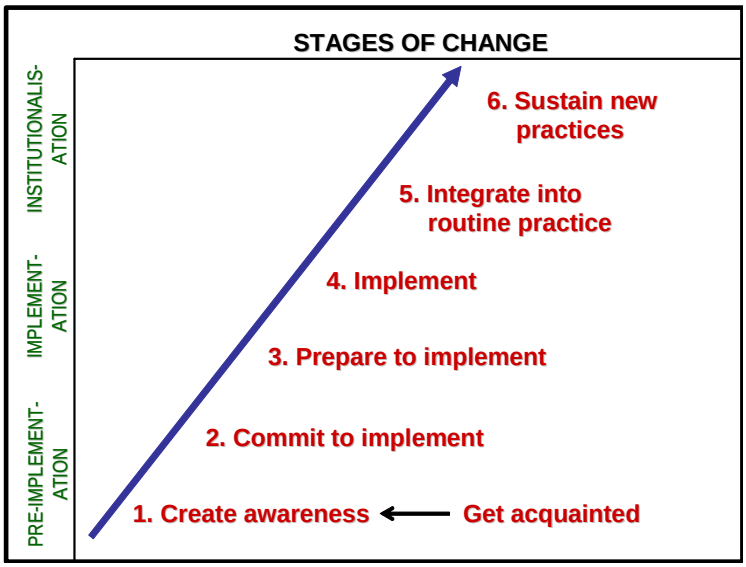


Figure 3. Stages of progress in implementation
(Bélizan et al, 2011)

The existing evaluation or progress-monitoring tool that accompanies the model described above was used for the evaluation, except for the section pertaining to mother' experiences of KMC (Appendix K). The tool is divided into 17 different topics covering the following aspect of KMC implementation:

1 Health care facility
2 Neonatal and kangaroo mother care
3 Skin-to-skin practices
4 History of KMC implementation
5 Involvement of role-players
6 Resources
7 Kangaroo mother care space: continuous KMC
8 Neonatal unit or nursery: intermittent KMC
9 Feeding and weight monitoring
10 Records in use for KMC information
11 KMC education
12 Documents
13 Referrals, discharge and follow-up
14 Staff orientation and training
15 Staff rotations
16 Strengths and challenges
17 General observations and impressions

Both quantitative and qualitative information are collected with the progress-monitoring tool. Some of the quantitative items contribute to the implementations score of a facility; the rest is used for generating descriptive statistics. The qualitative feedback assists with the understanding of the performance of a particular health facility and also provides an overview of the trends in KMC implementation and strengths and challenges that are widespread.
The scoring of health care facilities is done out of 30 points, with a cumulative score for each of the six stages depicted in the progress-monitoring model (Table 1). An adapted scoring mechanism was used in the case of health centres and rural hospitals where one would not expect intermittent KMC.

Table 1. Scoring of facilities

(adapted from Bergh et al, 2005)

Stages and phases		Points per stage	Cumulative points
Pre-implementation phase			
Stage 1	Creating awareness	2	2
Stage 2	Commit to implement	2	4
Implementation phase			
Stage 3	Prepare to implement	6	10
Stage 4	Implement	7	17
Institutionalisation phase			
Stage 5	Integrate into routine practice	7	24
Stage 6	Sustain practice	6	30
TOTAL		**30 points**	

The above scoring can also be divided into a more refined breakdown that reflects more accurately the point at which a health care facility finds itself (Bergh et al, 2005). This is depicted in Table 2.

Table 2. Refinement of the breakdown of progress scores

(adapted from Bergh et al, 2005)

Score	Interpretation
0	No implementation of KMC
1-2	Awareness of KMC
3-4	'Political will' to implement KMC
5-9	In the process of taking ownership of the concept of KMC
10	Some ownership of the concept of KMC
11-14	On the road to KMC practice
15-17	Evidence of KMC practice
18-19	On the road to institutionalised KMC practice
20-23	Evidence of institutionalised practice
24	Institutionalised KMC practice
25-27	On the road to sustainable KMC practice
28-30	Sustainable KMC practice

4.5 Sampling

Because of the large number of health care facilities embarking on the implementation of KMC it was not possible to visit all 121 facilities reported to have KMC services by September 2011, as this would have been too labour intensive and costly. It was therefore decided to take a 'snapshot' of KMC activities on the ground by visiting a convenience sample of facilities that could be covered in one week. Distances between facilities also played a role in the final selection of facilities.

Fourteen (14) facilities were visited, which covered all three regions and all levels of facilities. The facilities visited included one central hospital, nine district hospitals, one mission hospital, one rural hospital and two community health centres. The map in Figure 4 gives an indication of the distribution of these facilities.

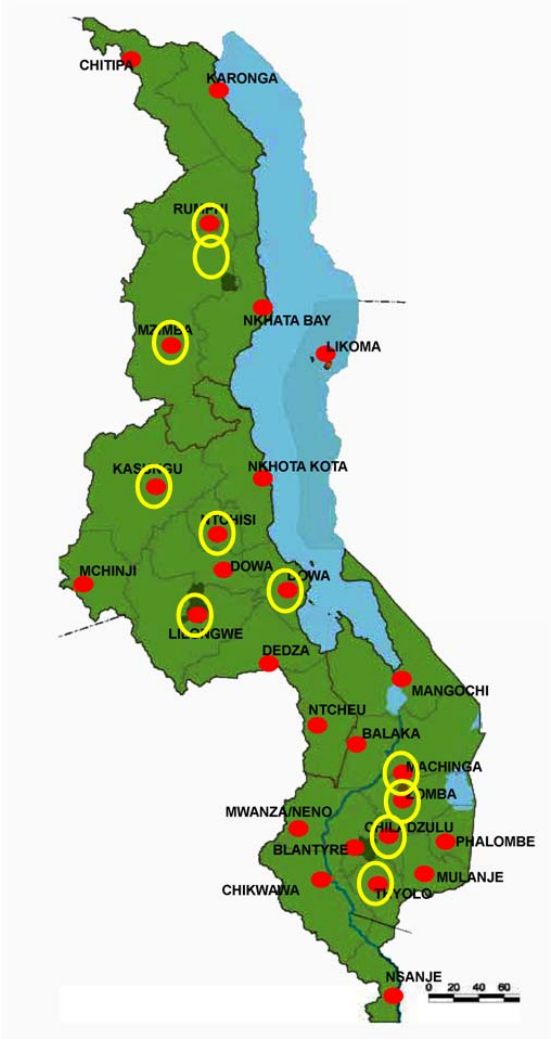


Figure 4. Map with distribution of facilities visited

4.6 Preparation for evaluation

A specific process was followed for the preparation of the facility visits. District offices were contacted about the date of the visit and were provided with guidelines of what to prepare for the facility visits, which could be in the form of a presentation (Appendix G). All the necessary documents were duplicated for training and use in the field work.

The monitors were trained in the application of the evaluation tool. This entailed a theoretical training in the approach to the evaluation or progress monitoring and the items contained in the progress-monitoring tool. This was followed by practical training in two of the local hospitals. After the training the monitors were divided into two teams, each team visiting six more health care facilities.

4.7 Format of an evaluation visit

Most of the evaluation visits followed a particular format and sequence. After the introduction by the Save the Children/MCHIP representative accompanying the monitors and obtaining the necessary consent from the facility director and key informants, the facility was provided the opportunity to present the information that was requested in the communication to the district office prior to the visit. Some facilities prepared PowerPoint presentations, whereas others had either printed or written reports or had completed the information on the template provided for this purpose (Appendix G). A few facilities did not receive any information from their district office on the planned visit. After the presentation of facility information an interview of KMC

focal persons and other key informants was conducted. This was followed by a visit to the KMC unit or room or space, where further observations were made and pictures taken of documents and other relevant artefacts. Where mothers were present with their babies in the KMC position their consent for taking pictures was sought. After these observations the monitoring team requested a private space for compiling their report for the facility. The visit ended with verbal feedback to the facility representatives and the written report was left behind.

4.8 Limitations of the study

As only 14 (11.5%) of the 121 facilities reported to provide some form of KMC were visited, this study merely aimed at providing some information on what was happening in terms of KMC at these facilities on the day of the visit. No claims with regard to the generalisability of the findings are therefore made. Some of the information collected was based on the self-report by the informants interviewed at each facility and the feedback they provided could have to some extent depended on who was available to interview at the particular day of the visit. Some of the views expressed may not necessarily reflect those of other health care staff.

The views of mothers on KMC and their acceptance of the practice were also not a primary assessment outcome of the research proposal. Views of mothers were largely as they were reported by the health care workers interviewed and by some informal observations in KMC wards/rooms/units that did have KMC mothers and babies at the time of the visit.

5. MAIN FINDINGS

The main findings are divided into two main parts. The first three sections (5.1 to 5.3) give a more general overview of the progress with KMC implementation, whereas the fourth section (5.4 and sub-sections) provides a detailed description on KMC services, facilities and practices in the 14 facilities that were visited.

5.1 Scaling up of KMC services by facility numbers

According to a summary table provided by Save the Children (updated September 2011), 121 health care facilities ranging from central hospitals to health centres provided some form of KMC services. A breakdown of facilities with KMC services is given in Table 3. Figure 5 provides a graphic presentation of the cumulative scaling up of KMC in facilities in Malawi by year. In the period 2004 and 2007 the numbers were low. In 2008 the number of facilities more than doubled, from seven to 18 (157% increase). In 2009 there was a further 77% increase in the number of facilities implementing KMC since 2008, from 18 to 32. In 2010 the increase went up to 86 facilities (169%), with another 40 being added in 2011 (41% increase).

Table 3. Summary of facilities providing KMC services by September 2011

Government facilities	No.	CHAM ("mission") facilities	No.	TOTAL
Health centres	67	Health centres	1	**68**
Rural hospitals	6	Rural hospitals	3	**3**
District hospitals	27	Mission hospitals	13	**40**
Central hospitals	4			**4**
Total	**104**	**Total**	**17**	**121**

(Source: Save the Children, Malawi. Summary table of KMC facilities in Malawi, September 2011)

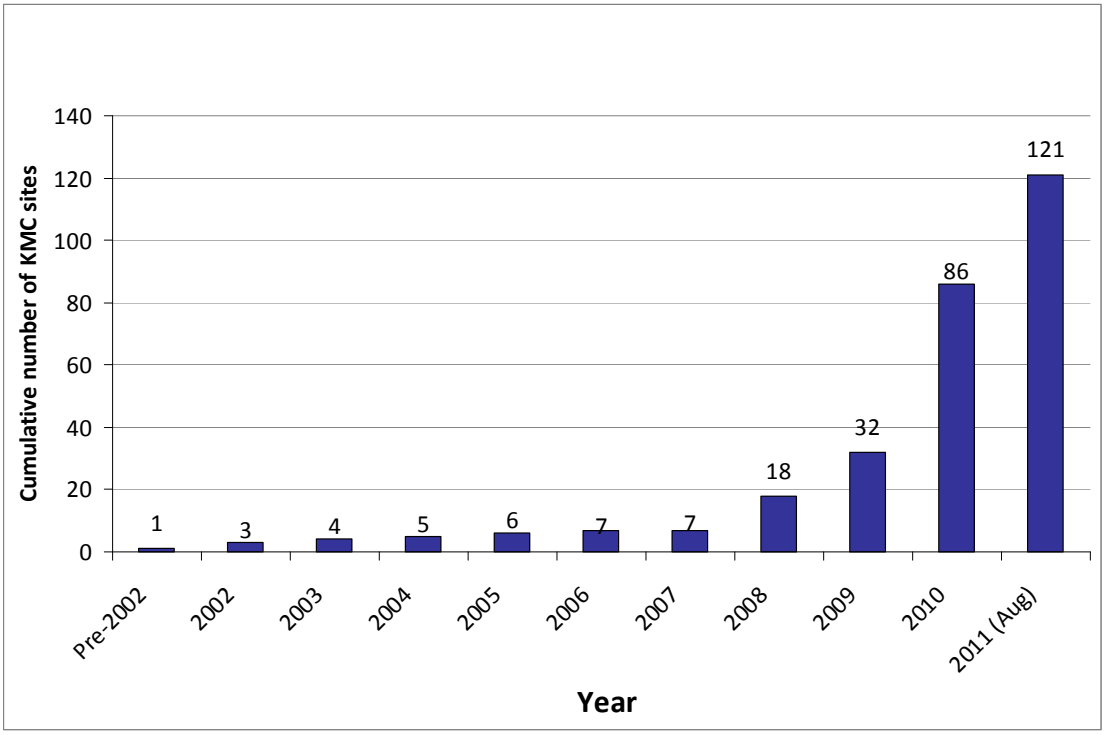


Figure 5. Scaling up of KMC facilities in Malawi by year

(Source: Save the Children, Malawi. Summary table of KMC facilities in Malawi, September 2011)

5.2 Progress with KMC implementation

The facilities visited scored between 10.34 and 20.07 out of the possible 30 points of the scoring system that was applied. The mean score of the total of facilities was 16.33 and the median score 16.68. For community health centres and rural hospitals that do not provide intermittent KMC the score was adapted to compensate for the points allocated to the practice of intermittent KMC. If the interpretation of Table 2 is applied to the Malawi facility scores, two facilities showed some ownership of the concept of KMC (scores 10.34 and 10.48) and one facility was on the road to KMC practice (score of 12.88). Six facilities demonstrated evidence of KMC practice (scores between 15.00 and 17.07). Three facilities were on the road to institutionalised practice (scores between 19.14 and 19.40) and two facilities showed evidence of institutionalised practice

(scores 19.91 and 20.07). (See Table 4.) The facility with the highest score was a community health centre that started KMC in 2008 and at which 27 of the 30 health surveillance assistants (HSAs) had been trained in KMC and a mother and a guardian were observed caring for twin babies in the KMC position. The three facilities with the next highest scores were those that have been implementing KMC for at least eight years. One may have expected higher scores for them but there were some aspects of KMC implementation that were problematic (e.g. record keeping and staff rotations). This is discussed in more detail further on.

Figure 6 gives a graphic depiction of the position of each facility on the progress-monitoring scale.

Table 4. Facility scores and interpretation of the scores

Facility scores	Interpretation	Number & type of facility
10.34	Some ownership of the concept of KMC	1 district hospital 1 rural hospital
10.48		
12.88	On the road to KMC practice	1 CHC
15.00	Evidence of KMC practice	6 district hospitals
15.78		
16.03		
16.55		
16.81		
17.07		
19.14	On the road to institutionalised KMC practice	2 district hospitals 1 central hospital
19.14		
19.40		
19.91	Evidence of institutionalised practice	1 mission hospital 1 CHC
20.07		
TOTAL:		**14 facilities**

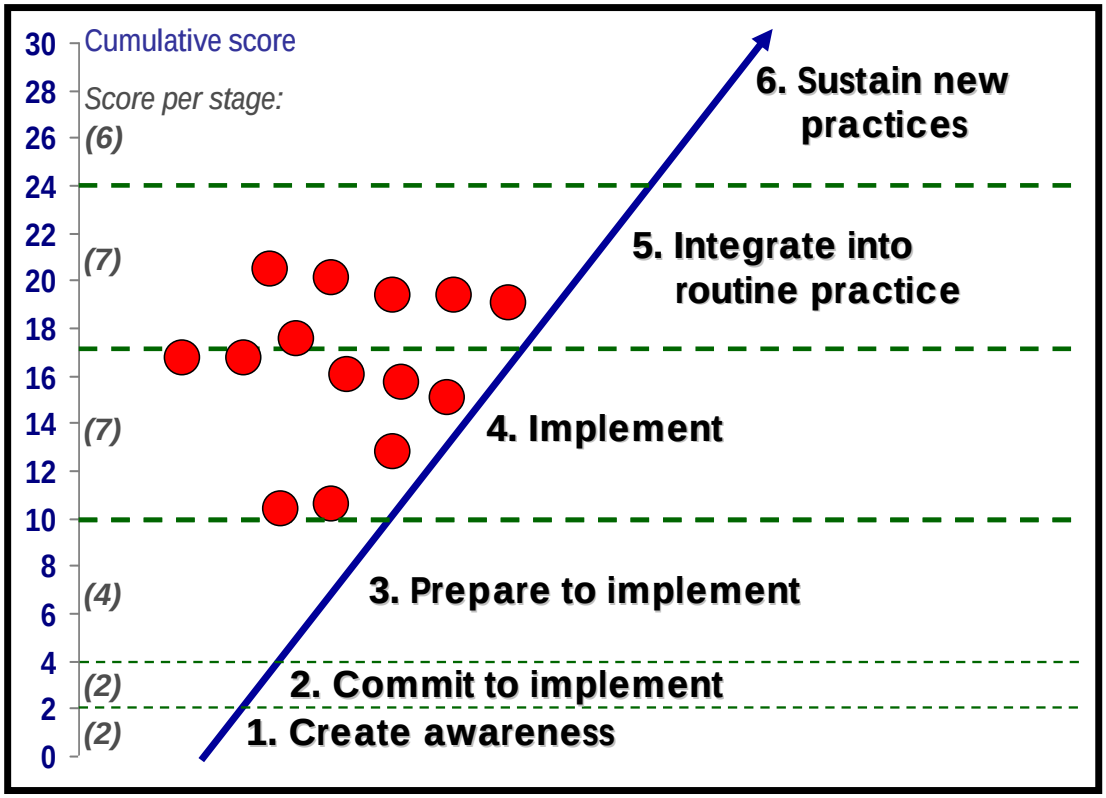


Figure 6. Plotting of selected hospitals according to score

5.3 Resources for implementation

As part of the scale-up process resources were provided to most of the districts and to some health care facilities. Table 5 gives an overview of partners and the districts they supported. The role of Save the Children and MCHIP was mainly to provide equipment and supervision to their learning districts and to assist with the training in other districts. UNICEF and WHO were mainly involved in supporting districts with training (6 and 13 districts respectively). The NGO MaiKhanda was involved in three districts.

In the facilities visited, some seemed to have been able to manage their resources more efficiently than others, such as procuring feeding cups and feeding tubes, batteries for scales, stationary, printed official registers, and wrappers. More general challenges to sustaining resources may be the procurement of continuous supplies of consumables, especially those that had been provided as part of the KMC scale-up projects. Where wrappers were not provided by the facility, obtaining more than one *chitenje* for tying the baby was a challenge for some mothers and families. The fact that mission hospitals do not provide food for mothers placed a further burden on families providing for a mother and KMC baby in these facilities.

Table 5. Allocation of resources

Region	District	SC/SNL	MCHIP	Newman's Fund	UNICEF	WHO	Mai-Khanda	No. health workers trained[1]
CENTRAL	Dedza			Y		Y		20
	Dowa	Y						62
	Kasungu			Y		Y	Y	6
	Lilongwe			Y	Y	Y	Y	50
	Mchinji							17
	Nkhotakota		Y					44
	Ntcheu				Y	Y		30
	Ntchisi							4
	Salima						Y	2
Sub-total								**235**
NORTH	Chitipa	Y			Y			62
	Karonga				Y	Y		32
	Likoma							0
	Mzimba North			Y		Y		53
	Mzimba South					Y		
	Nkhata Bay					Y		18
	Rumphi		Y					45
Sub-total								**210**
SOUTH	Balaka			Y		Y		31
	Blantyre			Y				6
	Chikwawa							4
	Chiradzulu			Y		Y		24
	Machinga		Y					53
	Mangochi			Y	Y			6
	Mulanje							17
	Mwanza							17
	Neno							0
	Nsanje			Y		Y		29
	Phalombe		Y	Y		Y		34
	Thyolo	Y		Y	Y			92
	Zomba			Y		Y		22
Sub-total								**335**
TOTAL								**780**

(Source: Save the Children Malawi. Personal communication, May 2012)

[1] Save the Children, Malawi. Summary table of KMC facilities in Malawi, September 2011

No support received with regard to equipment and physical improvements in the current scale-up cycle

Self-reported support for the implementation of KMC varied a lot between facilities. Seven facilities reported to have received an allocation from the hospital or district budget (50%). The allocations were for training, the renovation of the KMC room, and the provision of beds, mattresses, heaters and feeding cups. One hospital provided a cooker, video recorder and fridge, whereas in another hospital the KMC focal person was invited to the budget session to give inputs.

Different forms of encouragement and material support in the implementation of KMC were also received from different role-players in the health facility. According to the impressions of the assessors, there was a lot of involvement of senior management (facility managers, heads department and unit managers) in the implementation of KMC in the case of 9 facilities (64%), with some involvement in the other 5 facilities (36%). District directors, in collaboration with matrons (who played an advocacy role), were reported to have supported facilities with resources, the identification and allocation of a space for KMC, transport (inter alia for attending training), heaters, nasogastric tubes and feeding cups, buckets, linen, baby hats and boots. The contribution of facility nursing service managers (matrons) were furthermore supervision, allocating staff for the KMC services and releasing staff to attend training. In-charges of maternity or the neonatal unit were responsible for supervision of implementation activities and the provision of KMC and ensuring the functioning of equipment. In some facilities there was no support from clinical officers (n=3), whereas in others they did ward rounds for babies in KMC (n = 8). Although the KMC/newborn care training was open for clinical officers, they rotate regularly with the result that many working in KMC at the time of the progress-monitoring visits had not been trained. The maintenance department repairs of wards and electricity matters were mentioned by 5 informants. Other support persons or department mentioned were laundry (n=1), patient attendants and auxiliary nurses (n=6), social workers (n=1), watchmen (n=1) and ward clerks (n=1).

Thirteen (13) facilities reported having received support from external sponsors (93%). The role of Save the Children was mentioned prominently by many informants in facilities that had started with KMC after 2008. Different formats of training (integrated and stand-alone) and supervision/support / review visits were highlighted, as well as the acquisition of specific equipment, i.e. digital weighing scales, calibrated feeding cups, baby hats and booties. The provision of building materials for the repairs and renovation of the KMC room was also mentioned. The facilities with a longer history of providing KMC services (before 2005) mentioned churches and individuals from the community and expatriate doctors in particular, who provided scales, materials, baby clothes and hats. Churches donated soap, sugar and baby clothes for 1 hospital and another hospital had received a vehicle and motor cycle from Save the Children in the past.

5.4 KMC services, facilities and practices

In this section a summary of the overall results for the health facilities visited is given. Table 7 at the end of this section contains a detailed breakdown of KMC services, facilities and practices. "Facilities" refer to all 14 facilities visited, whereas the term "hospitals" is used for all (MoH and mission) facilities that are not a health centre or a rural hospital.

5.4.1 Newborn services provided by facilities

None of the hospitals visited provided fully-fledged intensive neonatal care. Nine (9) of the 11 hospitals had incubators, but in one third of these hospitals (n=3) none of the incubators were in use. Altogether the hospitals had a total of 20 incubators available, of which 12 (60%) were in use. Reasons cited for the non-use were the non-functioning of equipment (n=4), shortage of staff to do observations of babies in incubators (n=1) and a flat battery (n=1).

From the reports given it appears as if skin-to-skin practice at birth is well established in most facilities. Informants at all 14 facilities mentioned the skin-to-skin placement and early initiation after birth spontaneously when probed about delivery practices in the facility.

5.4.2 History of KMC implementation

Table 6 gives an overview of when KMC was started in the facilities visited and illustrates the increased scale-up of KMC after the previous evaluation report in 2007 (Bergh et al, 2007), which included recommendations on how scaling-up could possibly be approached. Figure 7 demonstrates the distribution of facilities visited according to implementation year compared to the implementation dates of all facilities reported to have KMC services. This indicates that a greater number of facilities with a longer period of KMC implementation were visited in relation to the total sample of facilities.

Table 6. Start of KMC in the facilities visited

	1999	2003	2004	2007	2008	2009	2010	2011	Total
Number of facilities	1	1	1	1	4	3	2	1	14

In 2 of the 3 facilities with a longer history of KMC the informants had not been present when KMC was initiated. In 7 of the remaining 11 facilities (64%) informants reported that the decision to introduce KMC was taken at a specific meeting. None of the facilities could recall whether the decision was in the form of written minutes of meetings or some kind of written report or agreement. Only 1 of the facilities that started KMC after 2008 could recall the district director signing an official agreement to implement KMC, although a few indicated that there was a verbal agreement. Three (3) of the facilities reported that a baseline survey had been done before KMC started (21%), but none could provide any evidence of the results of such a survey. The assessors were of the view that informants in 11 of the facilities could provide a good history of the implementation of KMC. Although 10 facilities (71%) indicated that they reported on KMC regularly through official channels such as the quarterly reports to the Health Management Information System (HMIS) or the Safe Motherhood coordinator it appears as if these reports do not include any records on babies receiving KMC per month/quarter, but merely the number of LBW babies in different weight categories.

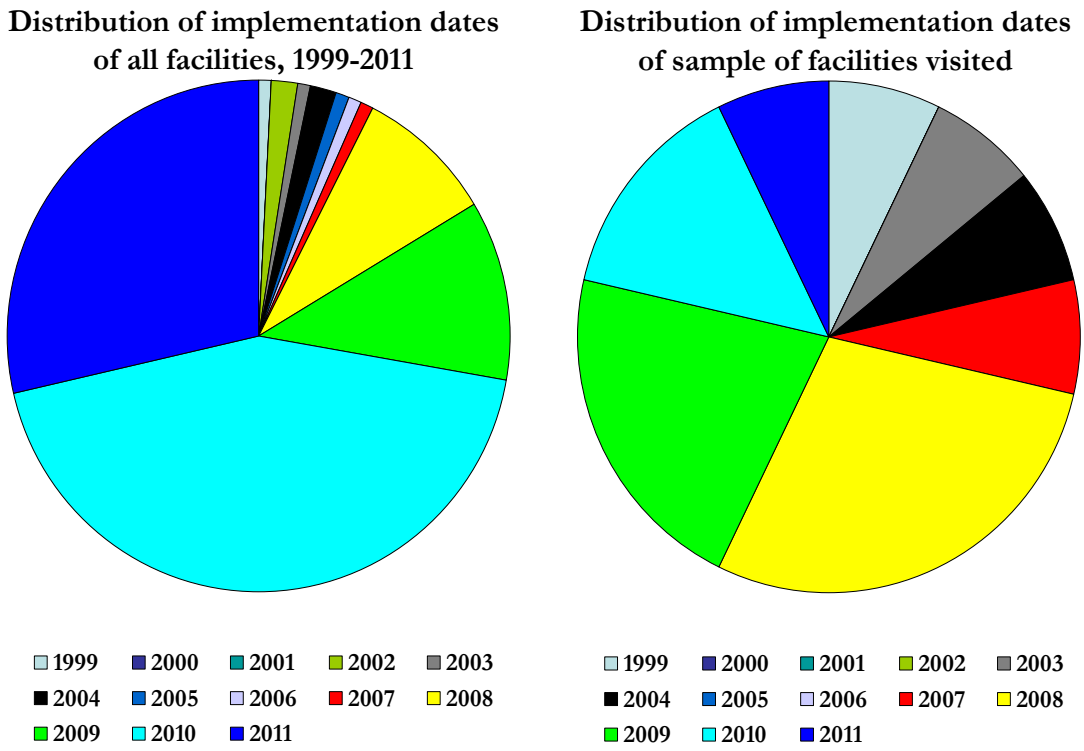


Figure 7. Sample of facilities compared to total number of facilities, according to date of implementation

5.4.3 KMC facilities

Three (3) district hospitals had their vision and mission statements prominently displayed, but no neonatal or maternity section had its own vision and mission statement, which should ideally also include a statement on KMC.

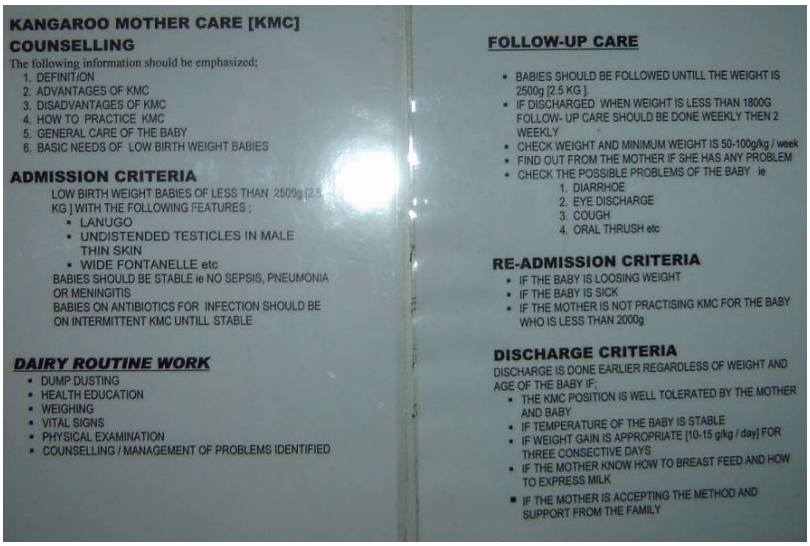
The 11 hospitals had a separate KMC ward or side room that formed part of either maternity or the postnatal ward. The space provided for KMC varied from pleasant to cramped. The two health centres and the rural hospital used beds in the postnatal ward. The number of KMC beds varied from 1 to 10 per facility, with most district hospitals having between 3 and 7 beds. Some effort to make the environment comfortable for mothers and babies was visible – 7 facilities had low beds 50%) and 4 had comfortable chairs (29%). In 12 facilities some form of back rest was available on the bed, mostly the top end of surgical beds that could be lifted (86%). In 1 facility narrow paediatric beds with rails and a woven reed back rest were used. Other equipment to create a more homely atmosphere included a radio (n=2) and TV (n=1). In some facilities the TV screen or DVD equipment was not functional. None of the KMC spaces had cribs – this assists in preventing women to believe that KMC babies should be in cribs for some of the time.

Eleven (11) facilities had the poster developed by SNL displayed (69%), with four facilities having made their own wall displays (29%). Two (2) of the hospitals with a longer history of KMC had murals on the wall; 1 had put up photocopies of mothers and fathers holding the baby in the KMC position and 1 had a display of a PowerPoint presentation on the wall. Only the mission hospital had KMC leaflets. Three (3) facilities used the SNL counselling cards (21%). None used DVDs, as very few hospitals had DVD equipment and where it was available it was out of order. Only 3 facilities had a weekly educational or recreational programme for mothers doing KMC (21%).

5.4.4 KMC practice

All 14 facilities reported that it was the nurses who decided on when a baby was ready for intermittent or continuous KMC, with 4 facilities indicating that the decision was a joint one between the clinical officer on duty and the nurses (29%). In 4 facilities admission criteria were posted on the wall. [Informants of all facilities also indicated that they provided verbal education to mothers on KMC after delivery and/or during transfer to KMC, although this was not possible to verify. Six (6) facilities also indicated that KMC was included in health education in antenatal care (43%).

Informants in 9 of the 11 hospitals that were visited reported that they were practising intermittent KMC (82% of hospitals) after a caesarean section or if the mother or baby was sick. All 14 facilities reported doing continuous KMC. In 11 of the facilities mothers were said to be practising KMC for 20 hours or more per day (79%), which could be considered as continuous KMC. In 1 facility informants could not estimate the number of hours babies were normally in the KMC position, whereas in the remaining 2 (14%) between 10 and 12 hours per day was mentioned, which would be considered as intermittent and not continuous KMC. On the question on when babies were not in the KMC position the most common response was when the baby was (cup) fed or its nappies were changed and when the mother had meals or went to the toilet or baths/showers. At 1 hospital the informants also added that the baby was placed on the bed when *"the mother is tired"* and there was no guardian to take the baby in KMC position. In two facilities informants mentioned that not all mothers were willing to practise KMC or were compliant. As mothers were not included as participants in the study, immediate pre-counselling of mothers and families could not really be probed.



KANGAROO MOTHER CARE [KMC]

COUNSELLING

The following information should be emphasized;

1. DEFINITION
2. ADVANTAGES OF KMC
3. DISADVANTAGES OF KMC
4. HOW TO PRACTICE KMC
5. GENERAL CARE OF THE BABY
6. BASIC NEEDS OF LOW BIRTH WEIGHT BABIES

ADMISSION CRITERIA

LOW BIRTH WEIGHT BABIES OF LESS THAN 2500g [2.5 KG] WITH THE FOLLOWING FEATURES ;

- LANUGO
- UNDISTENDED TESTICLES IN MALE
- THIN SKIN
- WIDE FONTANELLE etc

BABIES SHOULD BE STABLE ie NO SEPSIS, PNEUMONIA OR MENINGITIS

BABIES ON ANTIBIOTICS FOR INFECTION SHOULD BE ON INTERMITTENT KMC UNTILL STABLE

DAIRY ROUTINE WORK

- DUMP DUSTING
- HEALTH EDUCATION
- WEIGHING
- VITAL SIGNS
- PHYSICAL EXAMINATION
- COUNSELLING / MANAGEMENT OF PROBLEMS IDENTIFIED

FOLLOW-UP CARE

- BABIES SHOULD BE FOLLOWED UNTILL THE WEIGHT IS 2500g [2.5 KG].
- IF DISCHARGED WHEN WEIGHT IS LESS THAN 1800G FOLLOW- UP CARE SHOULD BE DONE WEEKLY THEN 2 WEEKLY
- CHECK WEIGHT AND MINIMUM WEIGHT IS 50-100g/kg / week
- FIND OUT FROM THE MOTHER IF SHE HAS ANY PROBLEM
- CHECK THE POSSIBLE PROBLEMS OF THE BABY ie
  1. DIARRHOE
  2. EYE DISCHARGE
  3. COUGH
  4. ORAL THRUSH etc

RE-ADMISSION CRITERIA

- IF THE BABY IS LOOSING WEIGHT
- IF THE BABY IS SICK
- IF THE MOTHER IS NOT PRACTISING KMC FOR THE BABY WHO IS LESS THAN 2000g

DISCHARGE CRITERIA

DISCHARGE IS DONE EARLIER REGARDLESS OF WEIGHT AND AGE OF THE BABY IF;

- THE KMC POSITION IS WELL TOLERATED BY THE MOTHER AND BABY
- IF TEMPERATURE OF THE BABY IS STABLE
- IF WEIGHT GAIN IS APPROPRIATE [10-15 g/kg / day] FOR THREE CONSECTIVE DAYS
- IF THE MOTHER KNOW HOW TO BREAST FEED AND HOW TO EXPRESS MILK
- IF THE MOTHER IS ACCEPTING THE METHOD AND SUPPORT FROM THE FAMILY

Some facilities had not been practising KMC long enough to be able to give accurate information on whether babies were transported in the skin-to-skin position for and from the facility. Informants from 3 facilities reported not having ever seen a baby transported to their facility in the skin-to-skin position, whereas those from 3 other facilities reported that it had always happened. In the case of 7 facilities babies were sometimes transported in the KMC position. Some informants related individual experiences of babies who had not survived because of delayed referral and not being provided the warmth of skin-to-skin care. With regard to transport from their own facility to another facility, 11 facilities indicated that the skin-to-skin position was always used and 1 that it was sometimes used. The informants of 1 facility had not had any experience of such a transfer yet.

5.4.5 KMC position (skin-to-skin care)

During the progress-monitoring visit babies were observed in the KMC position in 8 facilities with continuous KMC (57%) (including the central hospital and 1 community health centre). In 4 district hospitals it was reported that there were babies in KMC but none were observed. Only 2 babies in intermittent KMC were observed at 1 hospital and at another hospital where it was claimed that 15 babies were receiving intermittent KMC none were observed. No facility claiming to practise intermittent KMC kept any records of when and/or for how long babies were kept in KMC per day or for the period of the hospital stay or before continuing with continuous KMC. None had neither some form of schedule for practising intermittent KMC nor any written guidelines for new staff or for mothers on what an intermittent KMC programme should look like or how it should be practised.

According to the assessors' impressions, mothers in 7 facilities were diligent in practising KMC (50%), in another 3 facilities KMC was practised some of the time (21%) and in 2 facilities there was little evidence of any KMC (14%). For the 2 facilities it was not possible to probe mothers' compliance (14%).

All 14 facilities indicated that they used the local *chitentje* to tie the babies in the KMC position, whereas the 4 facilities (29%) with a longer history of KMC also had the material triangle with a special blouse on top that used to be promoted in the early days of KMC.

On the question on where the mother may move around with her baby in the KMC position, most informants indicated that mothers were allowed to walk around in the unit. Some restricted the baby to the KMC space or room only (n=2; 14%), whereas others were more flexible. Two (2) hospitals indicated that the mother was allowed to walk around with the baby inside the hospital premises but was not allowed outside the hospital gates (14%).

In 8 facilities (57%) mothers were allowed to have a guardian or companion, especially for psychological support. One of the reasons given in by 2 hospitals for not allowing guardians was infection prevention. One of these facilities was spacious. Three (3) facilities allowed unrestricted access of the guardian to assist the mother with KMC duties such as feeding EBM, changing nappies or carrying the baby when the mother goes to the toilet or bathroom. Three (3) other facilities allowed a guardian as a substitute to carry the baby in the KMC position if the mother had had twins or if she was not available (e.g. illness or after a caesarean section). The rest of the facilities indicated that guardians were only allowed at specific times (e.g. *"6am, 9am, 12, 3 pm, 6pm"*) or during visiting hours. Guardians also assisted with collecting medication, bringing food, and washing the mother's clothes. In some facilities the staff also taught the guardians on the importance of KMC, good nutrition and the importance of rest and used them to motivate mothers to continue with KMC. Informants at 2 district hospitals mentioned that at least some guardians also discouraged mothers from doing KMC. In addition to the distances between the hospital and home in some instances, one hospital also indicated that during the rainy season the guardians wanted the mothers to come home to do farm work. One facility referred to the difficulty of motivating primigravida mothers to do KMC. In another district hospital the support of a guardian was highlighted with reference to the success of counselling husbands, who would subsequently also accompany the mother on follow up, where he saw the baby was *"very tiny, now growing"*.

5.4.6 KMC nutrition and weight monitoring

Of the 14 facilities visited, 9 were designated as baby-friendly (64%). One of the health centres was planning to become baby-friendly and 1 district hospital was unsure of future plans in this regard. Most of the facilities obtained their baby-friendly status for the first time between 2004 and 2008 (3 in 2006), with 1 already accredited in 2000. It does however not appear as if any re-assessments had since been done.

Although all baby-friendly facilities are expected to have a written feeding policy as one of the 10 steps

to successful breastfeeding, only 3 of the 9 facilities claiming to be baby friendly indicated having such a policy (33%%). Two (2) could provide a printed copy for assessment, with 1 having it displayed in English and the local language in the hospital corridors

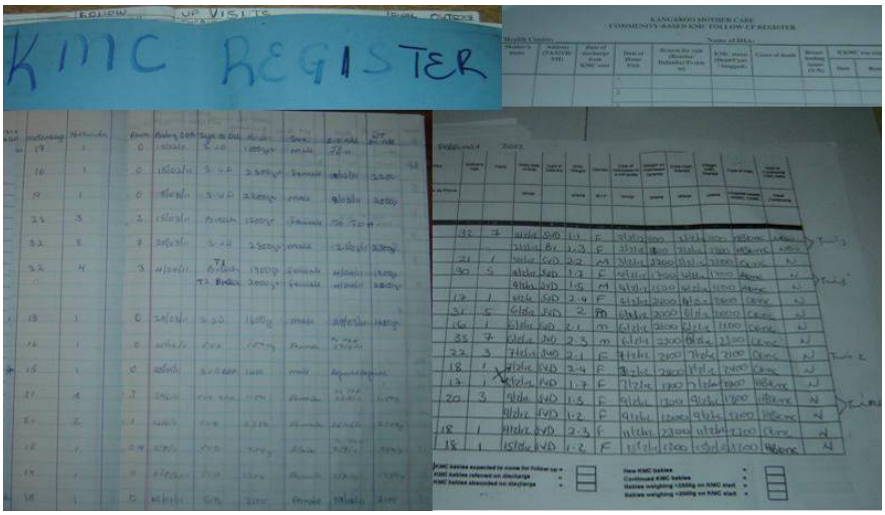
In all 14 facilities visited mothers were enabled to breastfeed their babies day and night by being with or near their baby. In all 9 hospitals where intermittent KMC was practised some overnight facility was provided or made available that enabled mothers to feed the baby at every feeding time. In 3 of these hospitals the mother stayed in a postnatal ward next door or nearby to the nursery and in 5 of the hospitals there was a bed or a sleeping space on the floor in the nursery for the mother. Exclusive breastfeeding was promoted at all facilities and, where necessary, mothers used expressed breastmilk (EBM) that was fed by cup or nasogastric tube. All 11 hospitals where one could expect EBM to be used for certain babies had a job aid for feeding volumes according to a baby's weight and age. It could not be established whether the job aid was really used or only displayed on the wall, as only 3 facilities (21%) had records where feeds were charted for each baby.

Eleven (11) facilities indicated that they weighed the babies regularly, 10 once per day and 1 twice per week. In 5 facilities weighing scales with increments of 50 grams were used, which makes it inappropriate and a waste of time to weigh LBW babies daily. In some facilities that had received digital scales the scales went out of use once the batteries were finished. Regular weights and/or admission or discharge weights were reported to be recorded on a variety of documents, some of which could not be verified. The baby's treatment sheet/monitoring chart (n=6) was mostly mentioned, but ward registers (n=3), feeding chart (n=1), labour chart (n=1), the mother's health passport (n =1) and the baby's file (n=1) were also reported.

5.4.7 KMC documentation and recordkeeping

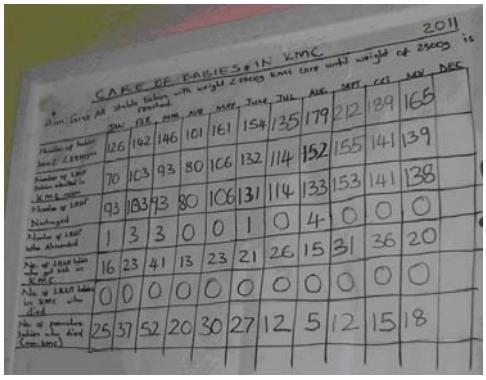
The absence of individual feeding charts and records noting position and feeding in most facilities has already been mentioned and the record keeping for follow-up will be discussed in section 5.4.9. According to the assessors' impression 4 facilities had good quality data in their records (29%). In the case of 6 facilities the quality was average (43%) and in the case of 4 it was poor (29%).

Ten (10) facilities used a special register or collective record for babies receiving KMC (71%). The MCHIP-supported districts used printed registers that were provided as part of the project, whereas the others improvised a similar one in an ordinary A4 hardcover note book. These special registers are useful for recording a basic summary of information, but do not make provision for daily records. In some of these registers weight columns are provided for follow-up visits. Three (3) facilities improvised the admission format of the official MoH register (21%). In 3 facilities daily KMC practice was recorded on the baby's treatment sheet (21%) and case notes with evidence of KMC practice were found in 4 facilities (29%). Informants from 10 facilities also reported recording KMC practice in the baby's health passport for follow-up purposes, although no occasion presented itself for observing this in practice. In 1 health centre the HSAs used a special follow-up form.



Thirteen (13) facilities could provide figures of the number of babies receiving KMC, although none made a breakdown between intermittent and continuous KMC on the special form provided for reporting on LBW infants. One district hospital had its 2011 statistics for KMC babies displayed on the wall, although the month of December was not completed.

Documentation that contributes to the potential of sustainable KMC practice was absent in most facilities. No facility had a written checklist for procedures on admission to the KMC space, whereas 9 facilities could provide some form of guidelines or protocols for the practice of KMC (although some may pertain more to LBW babies in general rather than to KMC in particular) (64%). Guidelines found related to discharge criteria (n=2), criteria for admission and re-admission (n=4), follow-up assessment (n=2), caring for the baby in KMC (n=1), daily monitoring (n=1) and daily counselling (n=1). In at least 4 facilities the guidelines had been taken over directly from the training materials. One district hospital indicated that it had adapted the training materials and another hospital indicated that it had developed its own guidelines.



5.4.8 KMC staff

The total number of health workers trained in KMC, essential newborn care (ENC) or integrated maternal and newborn care (IMNC) has been summarised in Table 5. Two of the facilities visited had no staff trained in KMC, ENC or IMNC. These two facilities had the lowest implementation progress scores. Most of the others had between 1 and 5 staff trained. One district hospital had 10, another 20 and another 155 trained. Eight facilities (8) indicated that they did have a long-term plan to get all health workers trained (57%). Only 3 of them (21%) had a written plan.

Supervision of KMC was suboptimal at some institutions as a result of how staffs were allocated for shifts, especially at night. Apart from the central hospital and one or two district hospitals a specific nurse was apparently not made responsible for supervising mothers and babies receiving KMC on a daily basis. Two (2) hospitals admitted that the KMC ward was not covered with nursing staff for 24 hours per day. In one hospital the labour ward was responsible for the postnatal ward (including KMC) at night and in another the postnatal staff, resulting in the neglect of supervision in the KMC ward. Furthermore, in 2 hospitals registered nurses did not do night duty, only nurse-midwife technicians (NMTs).

The only facilities where staff rotations did not take place were the 2 health centres and the rural hospital. In 3 hospitals all staffs were rotated to other wards and units not related to maternity, neonatal and paediatric units (27%), whereas in 8 hospitals only some staff members were rotated (73%). Clinical officers and medical assistants, nurses and patient attendants were rotated in this way in 10 hospitals (not probed in the remaining hospital) (100%). In 7 of the 10 hospitals managers also rotated (70%), but in 6 of 11 hospitals some core staff members did not rotate (55%). In 3 hospitals 1 to3 nurses would be left behind every year to provide continuity (27%). In 2 hospitals the patient attendant trained in KMC was not rotated, in another one the in-charge and in the mission hospital the SNL and KMC coordinator. Staff rotations mostly took place annually (n=7 hospitals; 70%), whereas 1 hospital rotated staff every 6 months (10%), 1 every 2 years (10%) and 1 every 3 years (10%).

Three (3) facilities indicated that they had a special orientation programme for new staff coming to work in the section where KMC was located (maternity or the postnatal ward). Orientation was mostly done in the form of on-the-job training. In one district hospital only nurses with KMC knowledge were rotated to the KMC unit. In another the orientation for new staff members consisted of instructing them to read the guidelines on the wall of the KMC unit.

Facilities were also probed about their role in the practical training of health workers and the involvement of the students in KMC. Twelve of the 14 facilities received students from a variety of schools and colleges, including the Malawi Colleges of Medicine (MCM) and Health Sciences (MCHS) ((Lilongwe, Blantyre and Zomba campuses), Kamuzo College of Nursing (KCN), Mzuzu University and colleges attached to mission hospitals (Mulanje, Malamolo, Holy Family, St Joseph's, St Luke's, St Johns and Ekwendeni). Eleven (11) received nursing students, 3 received

medical students, 5 clinical officers and 5 medical assistants. Informants expressed the impression that the nursing students were theoretically more prepared on KMC than the medical and other clinician students. The students' knowledge also depended on which year they were in. The more junior nurses rotated through general nursing care, whereas high-risk midwifery and newborn care rotations (including KMC) were reported to take place at the higher level teaching hospitals, with the result that very few students were exposed to KMC, with the exception of 3 facilities visited.

5.4.9 Discharge and follow-up – ambulatory and community KMC

All 14 facilities reported that it was the nurses who decided on when a baby was ready for discharge from the facility. In 5 facilities it was a joint decision between the clinical officer on duty and the nurses (36%).

Three (3) of the facilities visited had evidence of a good follow-up system (21%), 9 with a partial system (64%) and 2 with no evidence of follow-up (14%). Some district hospitals indicated that some babies discharged from ambulatory care at the hospital were subsequently followed up by HSAs in the community. All other facilities indicated that the babies were reviewed until 2500g. In one of the districts visited a good discharge system from the district hospital to at least one of the health centres was observed, with some form of ambulatory and community KMC being practised and where most HSAs had been trained in KMC. The HSAs reported how they could see that KMC was making a difference to mothers, babies and community. Babies were discharged to ambulatory care at the health centre when they had reached 1800g and were then further discharged for home follow-up (community KMC) by HSAs when they were between 2000g and 2500g. There was, however, no linkage in the records kept by the HSAs and those kept by the health facility. This problem had also been reported in an MCHIP trip report of January 2011 (Abwao & Brasington, 2011b).

Most babies were initially followed up at the hospital where they had been born or had received KMC services. Twelve facilities (86%) could provide evidence of records of follow-up visits. Ten used the KMC register (83%) and merely recorded the date of follow-up and the baby's weight. One (1) district hospital used the baby's health passport only and the central hospital used a special follow-up sheet.

Methods of communication between health care facilities and providers were mostly a referral slip or discharge sheet (n=6) and information written in the baby's health passport (n=5). In one district the hospital provided mothers with the contact details of the nearest HSA and a health centre in the same district used mobile messages via the supervisor of the HSAs for reminding mothers to come for follow-up.

Estimates by informants on the percentage of babies returning for follow-up varied between 50 and 100 per cent, with 1 district hospital only giving it as 5% because babies were brought in on other days when the full-term babies come for follow-up. Measures described to be in place for encouraging mothers to bring their babies back for follow-up included providing follow-up dates, stressing the benefits of KMC, the importance of follow-up for vaccination, growth-monitoring

and checking for problems (inter alia during health education). Some also wrote in the baby's health passport when babies were in KMC so that other health workers would also be reminded. Informants at one hospital explained that their special relationship with mothers and the fact that they are helped immediately and do not have to wait when coming for follow-up served as an incentive. One hospital used a "threat" tactic by telling mothers that they would come and look for them if they did not come for follow-up (although they did not do it), whereas another was giving incentives such as baby hats. One facility also mentioned that mothers were praised for practising KMC and providing good care.

Of the 5 facilities doing home visits, the 2 health centres and the rural hospital indicated that home visits were done by HSAs. The 2 district hospitals mentioned using nurses, community nurses, nurse auxiliaries and HSAs to trace defaulters. One of these hospitals also indicated that some HSAs did not follow up all babies as they were supposed to because of their multiple roles and workload. This confirms the observation by Abwao and Brasington (2011b): "HSAs had multiple tasks so do not always manage to cover all as needed." (p.4) In one site there was uncertainty on what HSAs should do with the forms on which they had recorded their follow-up of KMC babies.

In the 2 health centres and the rural hospital the assessors were able to get a sense of the practice of ambulatory and community KMC that has been widely advocated as part of the IMNC scale-up in Malawi. In one of the MCHIP-supported districts there was also evidence of a proper referral system in place for 'stepping' babies 'down' in ambulatory care from the district hospital to the health centre or in community KMC from the district hospital or health centre to the local HSA.

5.4.10 Community sensitisation and involvement

As the assessment visits focused on facilities providing KMC the team did not have the opportunity to evaluate community sensitisation and involvement in depth. Each facility received questions in this regard beforehand with a request to reply on them during the visit. Of those that did prepare a report very few reported on occasions used or created for the sensitisation in KMC of other health workers such as health surveillance assistants (HSAs). In one district 50 chiefs and community health workers were oriented in KMC and 135 local leaders and community members sensitised. In another district 50 people were reached through a maternal and newborn health review meeting and two KMC supervision visits.

Table 7. Summary of implementation progress per progress marker

PROGRESS MARKER	Number	Total number of facilities[1]	%
#Baby-friendly status	9	14	64%
Neonatal care available:			
(a) Incubators (used and unused)	9	11	82%
Incubators available in use	6	9	67%
(i) Number of incubators available	Total: 20		
(ii) Number of incubators in use	Total: 12		60%
(b) Radiant heater	1	11	9%
(c) Ordinary cribs in a heated room	4	11	36%
(d) Ordinary cribs in a non-heated room	4	11	36%
(e) Beds for mothers with heaters in KMC room	4	11	36%
#Decision to implement KMC taken at a specific meeting	7	11	64%
#Written record (minutes or reports) of this meeting	0	7	0%
#Sponsors:			
(a) Allocations or implementing KMC from hospital/district budget	7	14	50%
(b) Other sponsors for implementing KMC	13	14	93%
#Impressions on management involvement in the implementation of KMC:			
(a) Strong involvement	9	14	64%
(b) Some involvement	5	14	36%
KMC practised:			
#(a) Intermittent KMC (district hospital and higher levels)	9	11	82%
(b) Continuous KMC	14	14	100%
#Ward or special area allocated for KMC:	13	14	93%
(a) Separate ward	11	11	100%
(b) Space or beds in another ward	2	3	67%
Babies admitted to KMC at time of visit:			
(a) Intermittent KMC	1	9	11%
(b) Continuous KMC	12	14	86%
#Babies observed in KMC position at time of visit:			
(a) Intermittent KMC	1	1	100%
(b) Continuous KMC	8	14	57%
#Records for babies in KMC could be provided:			
(a) Intermittent KMC	1	9	11%
(b) Continuous KMC	9	14	64%

PROGRESS MARKER	Number	Total number of facilities[1]	%
#Records with evidence of KMC practice			
(a) Intermittent KMC	0	9	0%
(b) Continuous KMC	2	14	14%
#Impression of mothers' compliance in doing KMC:			
(a) Diligent	7	14	50%
(b) Some KMC	3	14	21%
(c) Very little KMC	2	14	14%
(d) Could not probe/establish	2	14	14%
Methods of tying babies in the KMC position:			
(a) Local cloth (*chitenje*)	14	14	100%
(b) Material triangle and special blouse	4	14	29%
#Equipment available in KMC space:			
(a) Low beds	7	14	50%
(b) Head rests or pillows for mothers to lean against	12	14	86%
(c) Comfortable chairs	4	14	29%
#Mothers able to provide breastfeeding 24 hours per day	14	14	100%
Feeding and weight monitoring:			
#(a) Written feeding policy/protocol	3	14	21%
#(b) Job aids for feeding (feeding chart for EBM)	11	11	100%
#(c) Feeding records for each feed for each baby	3	11	27%
(d) All babies weighed regularly	11	14	79%
#Records in use for KMC information:			
(a) Official register of MoH	3	14	21%
(a) Special KMC register or collective record	10	14	71%
(c) Discharge scoring sheet	0	14	0%
(d) KMC daily notes	4	14	29%
(d) Other special form (e.g. treatment sheet)	3	14	21%
(e) Baby's health passport	10	14	71%
(f) Follow-up form for HSAs	1	14	7%
#Figures for a period of time can be provided for babies who received KMC:			
(a) Intermittent KMC	0	9	0%
(b) Continuous KMC	10	14	71%
(c) KMC in general	3	11	27%
#Impressions on quality of data:			
(a) Excellent	4	14	29%
(b) Average	6	14	43%
(c) Poor	4	14	29%
#Official channels used to report on KMC[2]	10	14	71%
#Written checklist for procedures on admission to KMC space	0	14	0%

PROGRESS MARKER	Number	Total number of facilities[1]	%
#Written and audiovisual information available for mother:			
(a) Posters (Saving Newborn Lives)	11	14	79%
Own posters or wall displays	4	14	29%
(b) Brochures / Information sheets	1	14	7%
(c) SNL counselling cards	3	14	21%
(d) Video/DVD	0	14	0%
Regular educational or recreational programme for mothers	3	14	21%
#KMC vision and/or mission statements	0	14	0%
#Written policies, guidelines or protocols for KMC	9	14	64%
Follow-up of majority of KMC babies:			
#(a) At facility where baby has been born or at facility where baby received KMC initially	11	11	100%
(b) At nearest community centre / clinic	5	14	36%
#Records are kept for follow-up visits	12	14	86%
#Impressions on follow-up system:			
(a) Well developed	3	14	21%
(b) Partially developed	9	14	64%
(c) Absent (no evidence of a system)	2	14	14%
Babies transported to facility in KMC position:			
(a) Always	3	14	21%
(b) Sometimes	7	14	50%
(c) Seldom, never, no experience	4	14	29%
#Babies transported from facility in KMC position:			
(a) Always	11	14	21%
(b) Sometimes	2	14	14%
(c) Seldom, never, no experience	1	14	7%
#Long-term plan in hospital or district to get all health workers trained	8	14	57%
(a) Written plan	3	8	21%
#Staff members involved in KMC regularly rotated to other wards and units	10	10	100%
(a) Managers	7	10	70%
(b) Clinical officers and medical assistants	10	10	100%
(c) Nurses	10	10	100%
(d) Patient attendants	10	10	100%

Items contributing to the progress score

[1] Total number of facilities: 14. Health centres and the rural hospital are excluded for some of the indicators, leaving a total of 11 remaining facilities (district, mission and central hospitals). Other totals refer to a total in a previous row and are a further qualifier for a practice not found in all relevant facilities.

[2] Most reports possibly do not contain information on KMC but only on the number of LBW babies according to a quarterly pro forma

6. MAIN CONCLUSIONS

As only 14 of the 121 facilities reported to provide KMC services were included in the convenience sample of this evaluation, the findings are not generalisable to all facilities in the country. However, the concept of KMC has been adopted at the sites visited, although the evidence was not strong in two of the facilities. Staffs know about KMC, although not all are trained and not all are committed to the concept. Other stakeholders also have an important role to play in the implementation of KMC.

Most facilities have created a special space for practising KMC. Intermittent KMC does not appear to be utilised optimally and some facilities that claim to practise continuous KMC are in actual fact practising intermittent KMC. The gaps with regard to documentation and record keeping made it impossible to assess the extent and quality of KMC practice in most of the facilities. Because of the long history of implementation a question could be posed why none of these facilities did not attain scores on the level of sustainable practice. Two of the reasons are poor record keeping and staff rotations that could jeopardise quality of care and sustainability.

At the stakeholders' meeting a concern was also expressed that KMC was not perceived to be widely practised. There is also concern with regard to the ability and/or political will of some districts to sustain the support for KMC practice after the current projects have ended.

There were many anecdotal reports of increased neonatal survival as a result of the introduction to KMC. This is also confirmed in the findings of Abwao and Brasington (2011b) who had visited three districts in January 2011: "Providers appreciated the introduction of KMC services as it has made a difference for survival of low birth weight babies" (p.7). Because none of the facilities could, however, provide evidence of the survival rates before and after the introduction of KMC, the effect of the introduction of KMC on neonatal mortality could not be assessed.

6.1 Role-players and stakeholders in the initiation of KMC

With regard to the initiation of facility-based KMC the more the support and direct involvement of management, the better the chances are of good KMC implementation. Having dedicated focal persons and coordinators leads to better KMC implementation, with good teamwork also being essential. Where clinical officers are involved in the implementation and running of the KMC programme (inter alia with regular ward rounds), KMC practice is also enhanced. In the case of a systematic training and implementation programme, in collaboration with partners, the chances of sustainability seem to be better.

There appears of be varying levels of acceptability of KMC by mothers, guardians and communities. Mothers seem to be willing to do KMC in the health facility, but not all continue once discharged from the facility. Some of the facilities reported high absconding rates and others few. The real versus the reported reasons could not be probed sufficiently (e.g. inadequate sensitisation of mothers and guardians; inadequate KMC space; cultural beliefs; home conditions). Some health workers considered guardians as a support in the practice of KMC and others as a hindrance. In their MCHIP trip report Abwao and Brasington (2011b) refer to their

observations that mothers and families had in general managed to do KMC at community level, that available and able grandmothers assisted with the care of KMC babies and that mothers and families indicated that they were willing to share KMC information with others in the community. "Several mothers had to continually explain to neighbors why their babies were being carried in KMC position and not as usual on the back." (p.7)

The way in which the community has been sensitised may play a role in the acceptance of KMC. Where HSAs have been trained, there appears to be a higher follow-up rate for babies in the community and there may be more community acceptance. Influential leaders in the community contributed to KMC awareness in some districts.

6.2 KMC components

Record keeping with regard to all three components of KMC is a challenge (see section 6.5 below). This was also emphasised in the MCHIP trip report (Abwao & Brasington, 2011a&b).

There still appears to be many missed opportunities where KMC is not practised optimally, intermittently and continuously. Improved record keeping may assist with increasing the number of hours babies are cared for in the KMC position. Whereas an SNL evaluation report of 2005 (Save the Children, 2005) had noted that KMC admission and discharge criteria at different facilities were not standardized, discharge criteria were found to be consistent and according to the criteria for facility-based, ambulatory and community KMC as set out in the revised National KMC Guidelines (MoH, 2009). Health workers appeared to be less confident or less consistent with regard to admission criteria for intermittent KMC.

Exclusive breastfeeding is promoted, but it is unclear whether mothers do come for all feeds every 2 or 3 hours right through the night when the baby is still in the nursery or whether mothers are reminded of night feeds when the babies are cared for in continuous KMC.

The follow-up of KMC babies is one of the main challenges identified in this study. Not all mothers have adequate access to ambulatory KMC because of the far distances they have to travel, whereas others do not see the need for a follow-up visit if the baby appears to be well. Furthermore, the linkages in the follow-up system between district hospitals and health centres are not clear and there does not seem to be a 'seamless' transition between facility-based, ambulatory and community KMC. Details of the specific HSA to whom to refer a mother is not always available at the district hospital. Furthermore, not all HSAs to whom mothers referred are sensitised on the importance of follow-up, especially of LBW babies. Abwao and Brasington (2011b) also commented on the need for stronger linkages and communication "between facility service providers and HSAs for the purposes of KMC referral and follow up" (p.7). No data on follow-up are required for inclusion in monthly or quarterly reports to the district office, which may also give the message that it is not important. Information from the HSA reports on KMC follow-up also does not seem to be incorporated in any reporting system.

6.3 Staff allocations and rotations

Generally the informants in our encounters were committed to KMC. Most of the care in KMC is provided by patient or hospital attendants. In some facilities a specific staff member is not assigned every day to oversee KMC, resulting in poor nursing supervision. In most district hospitals KMC mothers and babies are the first to be dropped from routine supervision when maternity becomes too busy. Clinical officers do not do regular ward rounds for KMC mothers and babies in at least 4 of the hospitals visited.

Moving focal persons out of maternity before KMC has been well established can impact on the sustainability of KMC practice and the quality of care, as new staff members are often not well oriented in KMC upon arrival. Abwao and Brasington (2011b) also observed: "The total numbers of KMC trained service providers at each site needs to be established and determine whether they are actually providing the KMC service or allocated to other duties" (p.7).

6.4 Documentation and record keeping

There are written guidelines or policies in some of the facilities, mostly displayed on the walls and mostly taken from the training materials without any adaptation. Their usefulness and the extent of their use could not be probed in the current survey. It also appears as if guidelines are not always used optimally in on-the-job training and refreshers (e.g. in orientation of new staff).

In some sites even existing skimpy records are poorly completed. There is no consistent record keeping in case notes that provide evidence of KMC practice in most facilities. Intermittent KMC is documented nowhere and only a few sites have complete feeding records for each KMC baby.

With regard to the KMC register, not all LBW babies eligible for KMC are recorded (especially those over 2000g referred for ambulatory or community KMC). In some sites the register is incomplete, as not all KMC babies are entered and/or information on follow-up visits is incomplete. In the case of hospitals that started KMC after the scaling-up programme since 2008, there appears to be a trend of slacking down with record keeping after the initial drive and surge in enthusiasm. One reason for this may be that sufficient supervision mechanisms are not built into the process that would require regular reporting.

6.6 Data management and reporting mechanisms

Abwao and Brasington (2011a) reported that "KMC monitoring and reporting tools need revision and should be subsequently used to effectively facilitate timely and continuous data collection and reporting of KMC service implementation" (p.7). Quarterly KMC reports were not available for all facilities visited as part of the current study and the extent to which these sheets are completed and the completeness of figures (also those received from the health centres in each district) could not be properly gauged. Although there is a standardised quarterly summary sheet for KMC, reporting seems to be for all LBW babies. Data collected has also not been made part of some districts' required health information provided in the quarterly reports and indicators on KMC per se are not included in the HMIS either. Health care providers in some

districts are also uncertain about official channels of reporting KMC data (as opposed to data for LBW babies). One of the major challenges with regard to data management is the fact that some of the data collected on KMC and LBW babies were done as part of a project. During the project the necessary forms were, for example, provided as part of a project but it is unclear how the provision of forms and registers, the data collection and collation and the reporting requirements will be sustained when the project has ended.

At the facility and community level staff members do not always see the purpose of collating data, as they never get any feedback on what happens with the information they send in their monthly or quarterly reports. In the SNL evaluation report of 2005 it was already reported that "KMC data collection and use was poorly understood at several KMC units" (Save the Children, 2005). Some districts are also passive in getting the required KMC data from the health centres and do not follow up when quarterly reports are not submitted. Almost nowhere are data, minutes of meetings and other records filed in a way that one can get a systematic overview or find a particular document.

6.7 KMC training and supervision

KMC has been included in the pre-service curricula of nursing students. Nursing students rotating to some facilities for their practical work appear to have a basic knowledge of KMC, whereas clinical officer and medical assistant students appear to be less informed about KMC. Providers commented that students "are interested" but it is not clear whether students get sufficient exposure to working with KMC mothers and babies at individual sites, especially because not all students do practical work in KMC at the district hospital level – it depends on the objectives and tasks outlined by the training institution.

In some districts more health workers received in-service training in KMC than in others. Some providers have the perception that they cannot provide KMC services unless they have had special training in the form of an IMNC or KMC course. There is also a general trend of not wanting to do in-service training unless there is some monetary incentive.

KMC supervision is not included in supervisory visits conducted at the district level. This may ultimately lead to attrition in KMC practice if health workers experience a lack of interest in and support for KMC.

7. KEY RECOMMENDATIONS

At a *national level* KMC services have expanded in Malawi at a very rapid pace. In future plans that include KMC it will be important to ensure sustainability of practices. If the acceleration is too fast sustainability and quality of care could be compromised. On the other hand, KMC has also been scaled up to facilities where LBW babies are seldom treated and there is a danger that these trained health workers may loose their skills. Too frequent staff rotations in hospitals may have the same effect on skills. Strengthening pre-service education in KMC should also be a priority for all health worker categories, especially for medical and clinical officers and medical assistants.

At *district level* continued and renewed District Health Management Team (DHMT) commitment to the implementation of KMC is crucial and KMC programmes should be included in the District Implementation Plan (DIP), including budget for training more health workers in KMC and providing refresher courses and updates. Aggressive in-service and on-the-job training in KMC as part of normal service delivery (e.g. use clinical meetings, continuous professional development opportunities), as well as more training of HSAs, inter alia in community mobilisation for KMC, is proposed. Existing meetings and forums could be used to report on KMC and advocate for more support. Using channels for regularly reporting on KMC statistics in a systematic way can also ensure that it does not "fall off" the agenda. Lastly, facility linkages to ensure better follow-up of all LBW babies should be investigated, especially the linkage between district hospitals and community health centres and mechanisms for informing HSAs of LBW babies needing regular follow-up. Comprehensive plans for improvement should be considered.

Revisiting the findings and recommendations on previous reports on newborn care and KMC and identifying issues not addressed well yet may enhance current initiatives to have more impact. One important recommendation not to relegate to the backburner is the following taken from the Save the Children (2012b) report on the household findings of the community based maternal and newborn care project:

> "However, only 9.4% of LBW newborns received extra care at a health facility (including being admitted for KMC), and only 12.5% received extra care from an HSA. There is need therefore to intensify scale up and supervision of KMC in all the districts. Additionally counseling of mothers on how to take care of low birth weight babies should not only be limited to mothers who have given birth to low birth weight so that there is wide and proper sharing of information in the community. In addition members of the core groups can play a role as well. There is need to sensitize core groups on LBW and KMC so that they can also promote KMC at community level. This could include engaging core groups to promote support of provision of KMC by other members of the family like the husband and grannies and not just leaving it to the mother." (p. 47)

At *facility level* intermittent KMC should be practised in a more systematic and formalised way and continuous KMC should be strengthened by building in more care checklists in the treatment of KMC mothers and babies to ensure continuity of care. Better liaison with antenatal care to promote KMC can contribute to better preparedness of mothers in the case of a preterm birth. Regular staff rotations should be managed mindfully and 'succession planning' should be done for having sufficient numbers of staff skilled in KMC at all times. Documentation and record keeping need much more attention.

Sustained support for KMC in any *future programmes* that include newborn care is important (e.g. with the Support for Service Delivery Integration [SSDI] project). Patient attendants in particular need more skills, as they provide most of the care (cf. also Blencowe & Molyneux, 2005). Including KMC in the pre-service education of clinical officers and medical assistants also needs more attention. Other strategies that may be beneficial for increasing community awareness in KMC are a media campaign, looking for opportunities to include advocacy messages for KMC in other IEC programmes and using KMC statistics to promote the practice.

Increased community awareness of the importance of KMC is a priority action area. *Further research* into the acceptability of KMC and ways of improving compliance can yield beneficial proposals for practice and behavioural change interventions.

References

Abwao S, Brasington A. (2011a). MCHIP program trip report, Malawi, January 19-28, 2011.

Abwao S, Brasington A. (2011b). MCHIP program trip report, Malawi, January 19-28, 2011 (Appendix 2).

Belizán M, Bergh A-M, Cilliers C, Pattinson RC, Voce A, for the Synergy Group. (2011). Stages of change: A qualitative study on the implementation of a perinatal audit programme in South Africa. *BMC Health Services Research* 11**:** 243 (Published: 30 September 2011). (doi:10.1186/1472-6963-11-243)

Bergh A-M. (2002). *Kangaroo mother care implementation workbook.* Pretoria: MRC Unit for Maternal and Infant Health Care Strategies.

Bergh A-M, Arsalo I, Malan AF, Pattinson RC, Patrick M, Philips N. (2005). Measuring implementation progress in kangaroo mother care. *Acta Paediatrica* 94: 1102-1108.

Bergh A-M, Van Rooyen E, Lawn J, Zimba E, Ligowe R, Chiundu G. (2007). Retrospective evaluation of kangaroo mother care practices in Malawian hospitals, July-August 2007 (report). Lilongwe: Malawi Ministry of Health.

Bergh A-M, Van Rooyen E, Pattinson RC. (2008). 'On-site' versus 'off-site' facilitation: a randomised trial of outreach strategies for scaling up kangaroo mother care. *Human Resources for Health* 6: 13 (23 Jul 2008).

Bergh A-M, Rogers-Bloch Q, Pratomo H, Uhudiyah U, Poernomo Sigit Sidi I, Rustina Y, Suradi R, Gipson R. (2012). Progress in the implementation of kangaroo mother care in ten hospitals in Indonesia. *Journal of Tropical Pediatrics* (Advance Access published January 19, 2012).

Blencowe H., Molyneux E. (2005). Setting up Kangaroo Mother Care at Queen Elizabeth Central Hospital, Blantyre – A practical approach. *Malawi Medical Journal* 17(2): 39-42.

Charpak N, Ruiz JG, Zupan J, Cattaneo A, Figueroa Z, Tessier R, Christo M, Anderson G, Ludington S, Mendoza S, Mokhachane M, Worku B. (2005). Kangaroo Mother Care: 25 years later. *Acta Paediatrica* 94(5): 514-522.

Charpak N, Ruiz-Pela JG. (2006). Resistance to implementing kangaroo mother care in developing countries, and proposed solutions. *Acta Paediatrica* 95: 529-534.

Conde-Agudelo A, Belizán JM, Diaz-Rossello J. (2011). Kangaroo mother care to reduce morbidity and mortality in low birthweight infants. *Cochrane Database of Systematic Reviews* Issue 3: Art. No.: CD002771. (DOI: 10.1002/14651858.CD002771.pub2)

Kinney MV, Lawn JL, Kerber K (eds). (2009). Science in action: Saving the lives of Africa's mothers, newborns and children. Report for the African Academy Science Development Initiative. Cape Town, South Africa.

Lawn J, Cousens S, Zupan. (2005). 4 million neonatal deaths: when? Where? Why? *Lancet* 365(9462): 891-900.

Lawn J, Mwansa-Kambafwile J, Horta BL, Barros FC, Cousens S. (2010). 'Kangaroo mother care' to prevent neonatal deaths due to preterm birth complications. *International Journal of Epidemiology* 39: i144–i154. (doi:10.1093/ije/dyq031)

Liu L, Johnson HL, Cousens S, Perin J, Scott S, Lawn JE, Rudan I, Campbell H, Cibulskis R, Li M, Mathers C, Black RE, for the Child Health Epidemiology Reference Group of WHO and UNICEF. (2012). Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000. *Lancet* 379: 2151–61. (DOI:10.1016/S0140-6736(12)60560-1)

Ludington-Hoe SM, Morgan K, Abouelfettoh A. (2008). A clinical guideline for implementation of kangaroo care with premature infants of 30 or more weeks' postmenstrual age. *Advances in Neonatal Care* 8(3 Suppl): S3-S23.

Luhanga RKK. (2008) Kangaroo mother care needs assessment report. Rumphi, Nkhotakota and Machinga districts, Malawi. March 26th to April 17th 2008

March of Dimes, PMNCH, Save the Children, WHO. (2012). Born Too Soon: The Global Action Report on Preterm Birth. Eds CP Howson, MV Kinney, JE Lawn. Geneva: World Health Organization.

MoH (Ministry of Health, Republic of Malawi). (date unknown). Community Based Maternal and Neonatal Care Manual for H.S.A.

MoH (Ministry of Health, Republic of Malawi). (2005). Malawi National Guidelines for Kangaroo Mother Care (Final draft).

MoH (Ministry of Health, Republic of Malawi). (2009). Malawi National Guidelines for Kangaroo Mother Care (revised).

MoH (Ministry of Health, Republic of Malawi). (2010). Draft National Reproductive Health Strategy, 2010-2015.

Munk C, Zimba E, George J, Waltensperger K, Gamache N. (2011). Malawi Newborn Health Program End of Country Program Report. Save the Children.

NSO (National Statistical Office), ICF Macro. (2011). *Malawi Demographic and Health Survey 2010*. Zomba, Malawi, and Calverton, Maryland, USA: NSO and ICF Macro.

Nyqvist KH, Anderson CG, Bergman N, Cattaneo A, Charpak N, Davanzo R, Ewald U, Ibe O, Ludington-Hoe S, Mendoza S, Pallás-Allonso C, Ruiz Peláez JG, Sizun J, Widström A-M. (2010a). Towards universal Kangaroo Mother Care: recommendations and report from the First European conference and Seventh International Workshop on Kangaroo Mother Care. *Acta Paediatrica* 99: 820-826.

Nyqvist KH, Anderson CG, Bergman N, Cattaneo A, Charpak N, Davanzo R, Ewald U, Ibe O, Ludington-Hoe S, Mendoza S, Pallás-Allonso C, Ruiz Peláez JG, Sizun J, Widström A-M. (20120b). State of the art and recommendations: Kangaroo mother care: application in a high-tech environment. *Acta Paediatrica* 99: 812-819.

Pattinson RC, Arsalo I, Bergh A-M, Malan AF, Patrick M, Philips N. (2005). Implementation of kangaroo mother care: A randomised trial of two outreach strategies. *Acta Paediatrica* 94(7): 924-927.

Ruiz JG, Charpak N *et al.* (2007). *Evidence-based clinical practice guidelines for an optimal use of the kangaroo mother method in preterm and/or low birthweight infants at birth*. Bogotá: Fundación Canguro and Department of Clinical Epidemiology and Biostatistics, School of Medicine, Pontificia Universidad Javeriana.

Save the Children. (2005). SNL/M FINAL Evaluation Report, 18.3 05.

Save the Children. (2012a). Saving Newborn Lives: Malawi health services assessment findings, January 2012.

Save the Children (2012b). Community based maternal and newborn care in three districts of Malawi: household survey findings – baseline and endline, January 2012.

Save the Children. (2011). Scaling up kangaroo mother care – Report of country survey findings. Save the Children, Saving Newborn Lives Program.

SNL (Saving Newborn Lives) Malawi. (2005). *Kangaroo mother care training manual* (Final editing: Dr. Betty Mkwinda-Nyasulu). Lilongwe: Saving Newborn Lives Malawi.

UNICEF. (2012). *State of the World's Children*. New York: UNICEF.

Van Zyl M. (2010). *The Ekwendeni Agogo Approach – Grandparents as agents of change for newborn survival*. Lilongwe: Save the Children in Malawi and Ekwendeni Church of Central Africa Presbyterian (CCAP) Mission Hospital (Synod of Livingstonia).

Wikipedia. (2012). Malawi. URL: http://en.wikipedia.org/wiki/Malawi (retrieved 26 February 2012).

WHO (World Health Organization), UNICEF. (2012). Countdown to 2015: Maternal, newborn and child survival. Building a future for women and children, the 2012 report. WHO & UNICEF: Geneva.