

# BRIEF: EARLY OUTCOMES AMONG NEWBORNS DISCHARGED FROM KMC IN MALAWI

## Background

Kangaroo mother care (KMC) is an evidence-based approach recommended by the World Health Organization (WHO) to reduce mortality and morbidity in low-birthweight (LBW) and preterm newborns.<sup>1</sup> The Government of Malawi has prioritized KMC as part of its effort to improve quality care for mothers and children and to reduce neonatal deaths from direct preterm birth complications. Although KMC is implemented widely in Malawi, information is limited on the outcomes of babies discharged from KMC and the extent to which families adhere to recommended KMC practices at home and follow-up care.<sup>2</sup>

In partnership with the Ministry of Health and the Malawi College of Medicine, Save the Children conducted a study at two facilities in 2016 to describe current early mortality outcomes and associated factors among young infants discharged from facility-based KMC, adherence to KMC practices and levels of follow-up care. This brief summarizes the results of this study and key recommendations and compares the results to a similar study conducted in 2004.<sup>3</sup>



## KEY MESSAGES

### Background

Malawi has prioritized KMC to improve outcomes for small babies, but little is known about early mortality outcomes and adherence to recommended KMC practices and follow-up care after discharge from facility KMC. In 2016, a hospital-based prospective cohort study was conducted to follow up babies discharged alive from facility-based KMC.

### Main findings

- **Mortality outcomes have improved:** The mortality rate for small babies discharged alive was 2.5% after 60 days post-discharge. The rate represents an improvement over the 2004 study, possibly in response to facility policy changes around discharge weights and follow-up procedures and improved quality of care.
- **Preterm babies remain vulnerable after discharge:** Most deaths occurred more than 10 days after hospital discharge, highlighting the continued threats small babies face as they mature.
- **Families are more likely to adhere to follow-up care closer to home:** 89% of mothers and babies followed up at health facilities within 30 days. Follow-up rates were higher at the facility where families were able to visit peripheral health centers closer to home rather than the discharge hospital.
- **Breastfeeding small babies is feasible and achievable:** Near universal coverage of breastfeeding at both facility and community with small babies was achieved, though support, such as cup and spoon, was still needed for selected babies.
- **Mothers adhere to KMC practice at home:** Mothers adhered to KMC in the community, with 99% reporting continuing skin-to-skin practice following discharge. The timing and duration were influenced by facility resources (e.g. space), and patterns established in facility continued post-discharge.

## Study Objectives

The primary objectives were mortality outcomes and their associated factors among young infant discharged from facility-based KMC at QECH and Bwaila hospital. Secondary aims of the study was to determine the rate of weight gain post discharge from facility-based KMC; describe adherence to recommended KMC practices and follow-up care by mothers and other caregivers at the community level; and describe barriers and identify factors that affect caregiver adherence to KMC practices at community level.

## Methodology

This was a hospital-based prospective cohort study to follow up with babies discharged from facility-based KMC until two months post-discharge. The study was conducted in two large hospitals in Malawi, Bwaila hospital in Lilongwe (central Malawi) and QECH in Blantyre (southern Malawi). The primary outcome variable was mortality measured at two months post-discharge among babies with birthweight less than 2000g discharged alive from KMC. Secondary outcomes included adherence to skin-to-skin and feeding practices in the facility and community, follow-up completion, and rate of weight gain. Data on study outcomes were collected through record reviews and semistructured interviews with mothers at discharge and 30 and 60 days post-discharge.

Data were collected from May 2016 to March 2017 by trained Ministry of Health staff based at the two hospitals. Data collectors were trained for four days by the study principal investigator and Save the Children staff. Babies were weighed by study staff at KMC admission, facility discharge and 30 and 60 days after facility discharge. Mothers were interviewed about their skin-to-skin practice and breastfeeding at discharge and 30 and 60 days post-discharge. T-tests and chi-square tests were used to assess statistical significance of differences between study facilities. All analyses were carried out in Stata® 12 [StataCorp LP, Texas, USA].

Ethical approval for the study was received in July 2015 from the College of Medicine Research and Ethics Committee (COMREC) national bioethics committee.

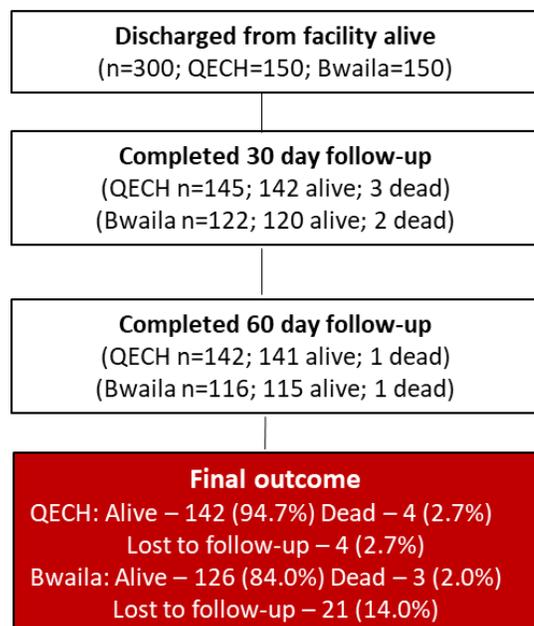
## Findings

Figure 1 summarizes the study flow. A total of 300 mother-baby dyads discharged alive were enrolled in the study (150 per study site). Final outcome data were available for 275 of the 300 babies enrolled in the study (92% total; 97% at QECH; 86% at Bwaila).

Table 1 provides a summary of the study outcomes. This study showed a mortality rate for small babies discharged alive at 2.5% after 60 days post-discharge, which represents an improvement over a similar study conducted in 2004 (key findings in Box 1). This difference may be due to facility policy changes around discharge weights and follow-up procedures and improved quality of care.

The average age at admission to KMC was four days and average length of stay in KMC was 10 days. Average weight at initiation to KMC was 1,541g. About half of all babies enrolled received oxygen therapy (55%) and antibiotic injections (50%), and about 15% received phototherapy. Analysis showed that KMC initiation was often delayed to accommodate special care. The average weight at discharge was 1,644g.

**Figure 1. Study Flow Diagram**



**Table 1: Study findings by study outcome**

Study Outcome	Study Findings
<b>Mortality until 60 days post-discharge</b> 	<ul style="list-style-type: none"> <li>A total of seven deaths (figure 1) were recorded, representing 2.5% of the 275 cases with known outcomes.</li> <li>Most deaths occurred 10 or more days after discharge (range 1–53 days), suggesting continued threats to small babies in the community beyond the period immediately following discharge.</li> </ul>
<b>Follow-up after discharge from facility</b> 	<ul style="list-style-type: none"> <li>Follow-up levels were high with 89% of dyads returning for follow-up visits within 30 days.</li> <li>The main reason given for not attending follow-up was distance i.e. facility was too far away.</li> <li>Among those returning for follow-up, most reported the baby was weighed (95%) and had temperature taken (66%). Few mothers reported being asked about skin-to-skin (19%) or feeding practices (7%), highlighting important gaps in service delivery.</li> <li>Protocol for follow-up visits varied by site. Nearly all mothers from Bwaila (99%) were told to return to the Hospital for follow-up, whereas 60% of mothers discharged from QECH were told to follow-up at a closer, peripheral facility. Therefore follow-up levels varied by site (97% at QECH; 79% at Bwaila).</li> <li>Community follow-up by health surveillance assistants (HSAs) was very low, with less than 1% of mothers receiving a home visit after hospital discharge.</li> </ul>
<b>Adherence to skin-to-skin practices</b> 	<ul style="list-style-type: none"> <li>Nearly all mothers (99%) reported practicing STS in the community after facility discharge.</li> <li>Reported STS practice for more than half of the day was high; however, it decreased from 96.7% in facility to 67.8% at 30 days post-discharge. Reported nighttime STS practice also declined from 77.7% in facility to 56.8% at 30 days post-discharge compared.</li> <li>Most mothers reported support from someone else practicing STS after discharge (76.1% compared to 51% in facility).</li> </ul>
<b>Feeding practices</b> 	<ul style="list-style-type: none"> <li>Levels of exclusive breastfeeding remained high for all time points. Nearly all mothers (95%) were exclusively breastfeeding at time of facility discharge, and all mothers interviewed at 30 days reported their baby was able to breastfeed (91%).</li> </ul>

## BOX 1. RESULTS FROM 2004 AND 2016 STUDIES

The table below shows methods and results of the study<sup>3</sup> conducted at QECH hospital from November 2003 to May 2004 and the current study conducted at QECH and Bwaila hospitals from May 2016 to March 2017. The 2004 prospective descriptive study at QECH showed high levels of mortality post-discharge and low follow-up adherence as compared to this study. Over the 12 years between studies, substantial improvements in policies, implementation, quality, and community awareness may have had an influence on the improvements in mortality and follow up adherence. The results of the 2004 study led to facility policy changes around discharge weights and follow-up procedures including intensive in-facility counselling and support for mothers as well as increasing the capacity building of health centers in Blantyre on KMC. National policies changes also were undertaken to increased attention, guidance and scale up of KMC as well as overall improved quality of care.

Area	2004 study	2016 study
Discharge and follow-up policies	Babies discharged after reaching 1,300g and gaining weight and told to return to QECH every two weeks until 2000g, then every three weeks until 2,500g	Babies discharged after reaching 1,500g and with follow-up at nearest facility to QECH and at Bwaila itself. Babies discharged <1800g return weekly and others every two weeks
Methods	Prospective follow-up of 256 babies discharged alive until 2,500g through routine follow-up records and home visits for defaulters	Prospective follow-up of 300 babies discharged alive from KMC through home visits at 30 and 60 days post-discharge
Result: Early post-discharge mortality rate	32 deaths recorded: 13.7% of 233 babies with known outcomes and 12.9% of all 256 discharged alive	7 deaths recorded: 2.5% of 275 babies with known outcomes and 2.3% of all 300. At QECH, 4 deaths recorded (2.7% of 146 with known outcomes)
Result: Follow-up	54% of babies returned for follow-up to QECH hospital	97% of babies discharged from QECH received follow-up care either at peripheral facility or QECH itself, compared to 79% of babies discharged from Bwaila

## Conclusion

This study demonstrates positive early survival outcomes among small babies discharged from KMC and provides evidence that mothers and families adhere to recommended KMC practices in the community. Completion of follow-up visits by mothers and their babies was higher when families were encouraged to attend lower level facilities closer to their homes.

### RECOMMENDATIONS

- **Ensure clear hospital policies are in place regarding discharge weights and follow-up procedures.** Good policies can make a difference, as seen at QECH, which updated its policy following the 2004 study and now has observed mortality declines.
- **KMC discharge policies should encourage families to follow up at the closest facility to home.** Higher levels of follow-up were observed when families were able to attend follow-up at peripheral facilities closer to home.
- **Identify and invest in effective community- and facility-level approaches to support rigorous follow-up of preterm babies beyond the immediate newborn period following hospital discharge.** This study identified gaps in the quality of facility-level follow-up care and very low levels of engagement by community-based health workers.
- **Continue to invest in KMC uptake and quality improvement.** This study shows that KMC saves lives and that investing in quality improvement results in better health outcomes in Malawi.
- **Integrate special care with KMC to ensure early initiation of KMC.**
- **Allocate sufficient and comfortable space for newborn units in facilities to facilitate skin-to-skin practice continuously during the day and night and in conjunction with special care (oxygen, IV fluids, etc.).**

## REFERENCES

1. World Health Organization. WHO recommendations on interventions to improve preterm birth outcomes. Geneva: World Health Organization, 2015. [www.who.int/reproductivehealth/publications/maternal\\_perinatal\\_health/preterm-birth-guideline](http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/preterm-birth-guideline)
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3. Blencowe H, Kerac M, and Molyneux E. 2009. Safety, effectiveness and barriers to follow-up using an 'early discharge' kangaroo care policy in a resource poor setting. Journal of Tropical Pediatrics, Vol.55, No.4.

Photo Credit: Eldson Chagara/Save the Children

The full report will be available at:

[www.healthynewbornnetwork.org/resource/KMC-followup-study](http://www.healthynewbornnetwork.org/resource/KMC-followup-study)

## FOR MORE INFORMATION

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