IMPROVING AVAILABILITY AND QUALITY OF ROUTINE DATA FOR NEWBORNS:
MALAWI'S EXPERIENCE WITH KMC

Key messages

Background

Malawi has systematically scaled up Kangaroo Mother Care (KMC) for care of preterm and low-birth-weight (LBW) babies since 2005. However, the absence of a national system of standardized indicators, registers and reports resulted in limited, poor quality routine data for monitoring availability and uptake of KMC. A pilot effort found challenges with the registers and reporting form.

Activity

The Malawi's Ministry of Health (MOH), Reproductive Health Directorate (RHD) and Central Monitoring and Evaluation Department (CMED), with support from Save the Children, developed a national routine reporting system for KMC, including a simplified, user-friendly KMC register and reporting form. They tested the revised registers and reporting forms to include only core indicators, and then revised and finalized the reporting system. CMED approval for national scale-up was received in mid-2015.

National roll-out was led by CMED, with support from Save the Children. By October 2015, all KMC focal points in each district had been trained in data capture using revised register,

DHIS2 and basic data analysis. Analysis of DHIS2 data showed improved reporting, with 87% of hospitals submitting KMC reports in 2016 compared to 51% in 2014; however, data completeness and timeliness was an ongoing challenge.

Lessons learned

MoH and partners need to work together to harmonize and prioritize data collected and reported by facilities on newborn health as currently there are too many data elements. This will strengthen data quality and use. Specific lessons from this experience showed that:

1. Leadership of the MoH and early involvement of end-users (facility and HMIS staff) are critical to gain approval and ownership.

2. Prioritize indicators and data elements suitable for routine reporting to minimize reporting issues and help increase data quality.

3. Substantial and sustained additional investments of time for monitoring and analysis, along with building and retaining human resource capacity to do both, is needed to produce useable, quality data and a culture of data use to inform decision making.

Jonas Gratzer/Save the Children

Background

Malawi has one of the highest rates of preterm births in the world, with an estimated 18% of all live births occurring before 37 completed weeks of gestation.[1] Kangaroo mother care (KMC) is an evidence-based approach to reduce mortality and morbidity in preterm infants, which the WHO strongly recommends for the routine management of stable babies weighing 2000g or less at birth.[2] Malawi introduced the intervention on a pilot basis in 1999 as part of its efforts to address newborn morbidity and mortality and has systematically scaled up since the intervention became a national policy for care of preterm and low-birth-weight (LBW) babies in 2005. By 2011, Malawi reported that KMC was established in all central- and district-level hospitals as well as several first-level health facilities across the country.[3]

Despite KMC being national policy in Malawi for a decade, data on availability and use of KMC are limited. A pilot

register and monthly reporting form for KMC were developed in 2011, but were difficult to fill in, included unnecessary data elements, and were not widely available or endorsed nationally. A 2012 evaluation of progress in KMC implementation in Malawi found lack of documentation and poor record keeping for KMC to be widespread.[4]

Starting in 2014, the Malawi Reproductive Health Directorate (RHD) and Central Monitoring and Evaluation Department (CMED), with support from Save the Children, began a process to develop a national routine reporting system for KMC, including a simplified, user-friendly KMC register and reporting form.[5] This brief describes the development and roll out of a national routine reporting system for KMC in Malawi including the process undertaken, lessons learned and next steps. The panel 1 provides an overview of the findings from the data captured between 2014 – 2017.

Development of a national routine reporting system for KMC

The development process occurred in four phases (Box 1) and has been documented previously[5]. In phase one, five core indicators were prioritized and data elements for reporting reduced to 8 from 32. Phase two involved revision of the KMC register and reporting form, which were piloted in 21 facilities over a two-month period across Malawi under phase three. Finally, in phase four, the registers and reporting tools were finalized and CMED approved the full package. Five core indicators and 8 data elements were then incorporated in the Malawi's District Information Systems 2 (DHIS2) in October 2015 for routine reporting by all facilities.

Box 1. KMC Routine Reporting Development Process

KMC Routine Reporting Development Process
The national routine reporting system for KMC was developed in four phases

PHASE 1: Prioritize data elements and indicators

Starting in September 2014, Save the Children reviewed and reduced the existing list of 32 data elements on Malawi's KMC reporting form using the list of global KMC indicators from the KMC Acceleration Partnership[7] to help identify priority elements and adapting them to Malawi's context and needs.

PHASE 2: Revise the register and reporting form

From November 2014 to January 2015, Save the Children worked with CMED to develop the new user-friendly register and monthly reporting form. Revisions were based on the prioritized data elements identified in Phase 1 and informed by existing 'user-friendly' antenatal and maternity registers.

PHASE 4: Revise and finalize tools

In May 2015 the KMC register and reporting tool were revised and finalized based on the feedback from the pilot phase. Detailed instructions for how to fill the register were developed, and the full package was approved by CMED for printing.

PHASE 3: Conduct pilot testing

In February 2015 the KMC tools were introduced in 21 facilities (13 hospitals and eight health centers) across all five zones for a two-month trial. At midpoint, supervision was conducted to evaluate progress. At the end of the trial, feedback was solicited from facility staff.

Box 2. Core KMC indicators in Malawi HMIS

1. **KMC initiation rate:** # of babies initiated on KMC (inpatient and/or ambulatory) per i) 100 live births at health facility and ii) 100 LBW/premature babies identified at health facility

2. **KMC referral completion:** Proportion of babies who were initiated on KMC and referred who completed referral and initiated on facility-based KMC

3. **Survival to discharge:** Proportion of babies initiated on facility-based KMC who are discharged alive

4. **Death before discharge:** Proportion of babies initiated on facility-based KMC who died before discharge

5. **Left against medical advice:** Proportion of babies initiated on facility-based KMC who left against medical advice or absconded

National roll-out was led by CMED, with support from Save the Children. District hospital level orientations were followed by ones at health facilities, and included distribution of revised registers and reporting forms. By October 2015, all KMC focal persons in districts had been trained and facility-level orientations completed.

The data elements and indicators were approved by CMED for inclusion in Malawi's DHIS2 in 2015. It took several months to customize data entry forms in DHIS2 because there were multiple programs customizing reporting forms within the system. Data entry became possible in February 2016. At the district level, all data from KMC monthly reporting forms of reporting facilities are entered into DHIS2 by statistical clerks; DHIS2 automatically calculates core indicators (Box 2) using data elements from the KMC monthly report and the maternity report.

Improving data quality and use

Data quality

In November 2015, CMED, with support from Save the Children, conducted the first national audit of maternal and newborn data collected through HMIS in all five national zones. While CMED and district partners were aware of data quality issues, there was no proper documentation nor an understanding of existing gaps. The joint Data Quality Assurance (DQA) process consisted of data extraction from DHIS2 and registers, analyzing the data, and formulating national, zonal and district level recommendations to improve data quality. The exercise fostered collaboration with CMED and district staff to address critical gaps. Activities to address data quality issues included: retrospective data entry of KMC data for 2015 and 2016 into DHIS in order to fill data gaps; joint supportive supervision visits with CMED to underperforming districts and hospitals, and regular meetings with CMED management to address observed gaps with data entry and management in DHIS2. Follow-up DQAs were conducted in 2016 and 2017; while some improvements in data recording were noted, important gaps remain (Box 3).

Box 3. Ongoing data quality challenges identified through DQA processes in 2016 and 2017

Factors affecting data quality

- Availability of registers and reports
- Major delays in data entry at district level
- Poor storage and organization of forms at facility and district levels
- Turn-over of staff, changes to DHIS2 system
- Unreliable internet connectivity
- Compliance and documentation challenges around referral indicator

Evidence of data quality issues

- Incomplete registers/reports and page summaries not routinely filled
- Lack of consistency between figures in registers and monthly reports
- Limited use of data at facility and district levels

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Challenges in data analysis and use

Limited capacity for data analysis using DHIS2 was identified early on as an important barrier to data use. The DHIS2 system has been overloaded with data that is not in a usable form. Inadequate capacity in terms of human resource shortage and staff skills hinders appropriate analysis and interpretation.

Save the Children supported CMED to conduct DHIS2 data analysis and use training for HMIS officers in 11 districts (March 2016). Additional initiatives undertaken to facilitate data use included convening technical meetings with partners on dashboard development, supporting HMIS data review meetings at national level where KMC was on the agenda. Save the Children conducted monthly reviews of KMC data in DHIS2 to identify gaps and work with HMIs officers to resolve gaps.

Despite substantial inputs to strengthen CMED capacity, several constraints to improved data analysis remained – notably:

- Issues around numerators or denominators e.g. different data sources report different numbers on the same indicator in DHIS2 creating a challenge to calculate indicators
- DHIS2 not fully customized to detect errors
- Data managed centrally making it difficult for other departments and district staff to access data to inform programs.
- Limited coordination between CMED and other MOH departments to address common bottlenecks
- Insufficient human resources, especially at district level

PANEL: Analysis of KMC data in DHIS2

Save the Children supported MOH to analyze KMC data in DHIS2 for 2014 – 2017, to track implementation strength and estimate coverage of KMC. Data were analyzed for all 29 districts with further analysis of 11 target districts where Save the Children and partners were providing support for KMC implementation (Figure 1).

Strength of implementation: Reporting levels improved over time, with 93% of hospitals nationally (82% in target districts) submitting KMC reports in 2017 compared to 51%

in 2014 (59% in target districts). However, data completeness and timeliness remain a challenge. The identification of low birth weight (LBW) and preterm babies among facility births remains below expected levels, and prioritize varies substantially by district. Data on the percentage of babies who died before discharge are challenging to interpret without further information on weight and other complications and would require further analysis by exploring facility-level data, including data in the registers.

District	KMC reporting (hospitals)				LBW identified per 100 HF births (target 10)				KMC initiation per 100 HF births (target 10)				Status at discharge (% died)			
	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017
Blantyre	🔴 33%	🔴 33%	🟡 67%	🟢 100%	🟢 12.3	🟢 10.5	🟡 7.2	🟢 14.6	🟢 7.8	🟡 3.3	🟡 4.3	🟡 3.9	10%	1%	2%	1%
Dedza	🟡 50%	🟢 100%	🟢 100%	🟢 100%	🟡 6.3	🟡 6.1	🟡 5.5	🟢 40.0	🔴 0.5	🔴 1.1	🔴 1.2	🔴 1.7	11%	4%	2%	2%
Dowa	🟢 100%	🟢 100%	🟢 100%	🟢 100%	🟢 8.3	🟡 7.9	🟢 8.6	🟢 9.0	🟡 4.9	🟢 7.2	🔴 1.9	🟡 3.0	5%	6%	6%	4%
Kasungu	🔴 33%	🟢 100%	🟢 100%	🟡 50%	🟡 6.4	🟡 6.5	🟡 7.5	🟡 6.6	🔴 0.5	🔴 0.3	🔴 1.2	🔴 1.2	8%	10%	10%	4%
Lilongwe	🔴 25%	🟡 75%	🟢 90%	🟢 100%	🟡 7.4	🟢 8.5	🟢 8.1	🟢 18.1	🟡 3.0	🟡 3.6	🔴 2.2	🔴 2.8	1%	4%	5%	3%
Machinga	🟢 100%	🟢 100%	🟢 100%	🟢 100%	🟡 5.6	🟡 6.2	🟡 5.3	🟡 7.4	🔴 2.1	🟡 4.3	🟡 3.1	🟡 3.6	1%	5%	6%	4%
Mchinji	🟢 100%	🟢 100%	🟢 100%	🟢 100%	🟡 7.1	🟡 5.6	🟡 6.6	🟡 7.2	🔴 1.5	🔴 1.8	🔴 1.4	🔴 1.8	7%	11%	10%	7%
Ntcheu	🟢 100%	🟢 100%	🟡 50%	🟢 100%	🟡 6.9	🟢 8.4	🟡 7.2	🟡 7.1	🔴 0.8	🔴 1.9	🔴 2.0	🔴 2.5	4%	5%	1%	1%
Ntchisi	🔴 0%	🟢 100%	🟢 100%	🟢 100%	🟡 5.4	🟡 6.9	🟡 7.0	🟢 8.1	🔴 0.0	🔴 1.6	🔴 2.7	🟡 3.1	na	15%	8%	4%
Salima	🟢 100%	🟢 100%	🟢 100%	🟢 100%	🟡 5.3	🟡 6.0	🟡 5.7	🟡 6.4	🔴 2.0	🔴 1.5	🔴 2.1	🔴 1.4	4%	3%	7%	1%
Thyolo	🟢 100%	🟢 100%	🟢 100%	🟢 100%	🟡 6.0	🟢 8.5	🟢 10.0	🟢 12.4	🟡 3.6	🟡 4.4	🟢 10.2	🟢 7.5	7%	18%	12%	2%
TOTAL	🟡 59%	🟢 82%	🟢 82%	🟢 82%	🟡 7.1	🟡 7.8	🟡 7.3	🟢 14.3	🔴 2.5	🟢 3.0	🔴 2.9	🔴 2.9	3%	6%	6%	3%

Figure 1. DHIS2 data showing KMC progress, 2014–2017

Thresholds: *KMC reporting: 0-49% red; 50-79% yellow; 80+% green; LBW identification: 0-4.9 red; 5.0-7.9 yellow; 80+ green; KMC initiation: 0-2.9 red; 3.0-4.9 yellow; 5.0+ green; Death before discharge: >10% red*

KMC coverage

In 2017, an estimated 15,995 babies were initiated on KMC nationally, representing about 22% of expected cases nationwide (calculated as 10% of expected live births) and 44% of reported preterm or LBW babies. This represents an increase over 16% reported in 2014. The percentage of expected cases initiated on KMC in 2017 varied widely by district, from 4% in Karonga to 49% in Thyolo.
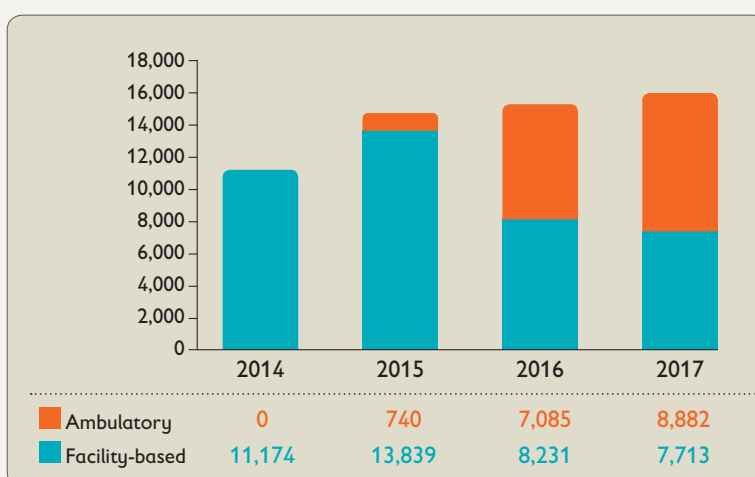

	2014	2015	2016	2017
🟧 Ambulatory	0	740	7,085	8,882
🟦 Facility-based	11,174	13,839	8,231	7,713

Figure 2. Improved reporting of KMC by type (facility vs ambulatory) between 2014–2017

Lessons learned

Several important lessons were learned through the process:

- **Engage all leadership from within the Ministry of Health** at the outset. Involvement of CMED, the health management information systems (HMIS) unit, and technical staff from the Reproductive Health Directorate facilitated coordination and instilled buy-in throughout the process of development and rollout.

- **Simplify and prioritize** indicators and data elements suitable for routine reporting. This is an essential first step in minimizing the data collection and reporting burden, leading ultimately to improvements in data quality and ultimately, in data use.

- **Consult global guidance** on what indicators are most important for tracking to help prioritize what is collected at country level.

- **Focus on end-users** by engaging facility and HMIS staff in the development and testing of the registers and reports, to ensure user-friendly tools.

- **Plan and budget for sustained support and investment of time** for monitoring and analysis, along with building and retaining human resource capacity to do both.

- **Collaborate across partners to address system-wide issues**, as many barriers to data quality and use are common challenges across health areas (e.g. poor internet, lack of population-based denominator data or discrepancies in values between different sources within DHIS2, etc.) and require pooling of resources and joint advocacy to mitigate.

- **Consider partner support and other district-specific factors when assessing performance**. Performance in data recording, reporting and provision of KMC services varied widely by district, highlighting the importance of partner support and district leadership.

Priorities going forward

Priorities to further strengthen national routine monitoring data for newborn health in Malawi include investing in human resource, institutionalizing regular data quality audits, developing dashboards at national and district level to facilitate data use, and harmonizing routine data tools on maternal and newborn health. Currently, facility-based providers are required to complete multiple registers capturing information related to maternal and newborn health (labor and delivery, postnatal care, Helping Babies Breathe, sick neonate register), in several cases with overlapping data elements. MOH and partners need to work together to harmonize and prioritize newborn data collected and reported by facilities to minimize burden of data collection and reporting and strengthen data quality and use.

Box 4. Key steps for strengthening national routine monitoring data for newborn health

Key steps for strengthening national routine monitoring data for newborn health

Prioritize and harmonize routine MNH data	Registers/reports are proliferating, requiring work with MOH data elements across HMIS
District and national level data visualization	Finalize customized dashboards for data analysis and use to ensure data entered into DHIS2 are immediately accessible by credentialed users at district and national levels.
Encourage facility-level data use	Advocate for and support CMED/RHD to develop templates for health facilities to encourage presentation and use of data on MNH service delivery (including KMC)
Data availability	Support CMED and districts to maintain timely and complete data entry for MNH routine data
Data quality	Collaborate with CMED to conduct regular reviews of data quality for MNH indicators including KMC

Jonas Gratzer/Save the Children

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