Tracking implementation progress for Kangaroo Mother Care

Overview of results from a multi-country evaluation

Baby in Malawi held in the skin-to-skin position with a traditional cloth and blanket. Kangaroo Mother Care is a proven, low cost and highly effective way to care for low birth weight babies. Photo credit: Anne-Marie Bergh

Preterm birth is the leading direct cause of the 3 million neonatal deaths each year worldwide and the second leading cause of all deaths in children under age five.[1, 2] Preterm birth is also the dominant risk factor for neonatal mortality, particularly for deaths due to infection.[3] These deaths are preventable; Kangaroo Mother Care (KMC) can prevent up to half of all deaths in babies weighing ‹2000g[4]. Compared with incubator care, KMC has been found to reduce infection including sepsis, hypothermia, severe illness, lower respiratory tract disease, and length of hospital stay.[5] Babies cared for with KMC show improved weight gain, length, and head circumference, breastfeeding, and mother-infant bonding.[5]

A key component of the Bill and Melinda Gates Foundation-supported Save the Children's Saving Newborn Lives program and the USAID-supported Maternal and Child Health Integrated Program (MCHIP) newborn-focused activities has been to collaborate with governments, other development partners, and health professionals to systematically introduce, strengthen, or promote the scale up of facility-based KMC in 20 countries primarily in sub-Saharan Africa, as well as Asia and Latin America. KMC is seen as a successful example of catalytic program inputs resulting in behavior change and wide scale implementation.

Countries have taken different approaches to setting KMC policy and service guidelines; developing clinical training materials, supervision schedules and tools, and integrating recordkeeping and reporting on KMC into routine monitoring and evaluation systems; documenting implementation; and costing KMC services. Implementation progress has also differed across countries. In order to better understand these differences, four countries – Malawi, Mali, Rwanda, and Uganda (Table 1) – were selected for an in-depth evaluation, using standard measurement tools,[6] to systematically measure the scope and institutionalization of KMC services and describe the barriers and facilitators to sustainable implementation.

Table 1. Characteristics of the four evaluation countries

	Malawi	Mali	Rwanda	Uganda
Neonatal mortality rate per 1000 live births, 2011[7]	27	49	21	28
Number of neonatal deaths, 2011[7]	18,000	39,000	9,000	43,000
Preterm birth rate, 2010[8] / Low birth weight rate, 2010[9]	18% 13%	12% 19%	10% 6%	14% 14%
Neonatal deaths due to preterm complications, 2010[1]	36%	33%	34%	38%
Births in a health facility, 2010[9]	54%	45%	69%	41%
Number of facilities implementing KMC, 2011/2012	121	7	30	19

What is Kangaroo Mother Care?

Kangaroo Mother Care (KMC) is the *early*, *prolonged*, and *continuous* skin-to-skin contact between the mother (or another caregiver) and her baby, both in hospital and after early discharge with support for positioning, breastfeeding, prevention and management of infections and breathing difficulties, and proper follow-up. A baby is undressed down to the nappy and hat and/or socks and placed on a caregiver's bare chest with a blanket or wrap placed over the mother and baby. Although KMC is indicated for preterm and low birth weight babies (<2500 g), it can be done with any baby who does not need recurrent resuscitation. KMC is continued until it is no longer tolerated by the baby or until the 40th week of postnatal gestational age.

Continuous KMC entails prolonged skin-to-skin contact between mother (or another caregiver) and the baby 24 hours per day, with appropriate support from health workers and family and community members,

Intermittent KMC refers to recurrent but not continuous skin-to-skin contact between mother and baby with the same support from health workers as continuous KMC. It is practiced when the caregiver is unable or unwilling to practice continuous KMC in a health facility, or the baby is unstable. The periods of intermittent KMC can range from once to a few times a day over a variable number of days. An intermittent KMC session should ideally last at least 65 minutes.

Facility-based KMC is practiced at a health care facility which offers maternity and newborn services. It is initiated after the on-site birth of a baby or after admission of a baby born elsewhere.

Post-discharge KMC, also called ambulatory KMC, is when the mother and baby are discharged from the facility because the baby is feeding well, growing, and stable, and the mother demonstrates competency in caring for the baby on her own. The pair practices continuous KMC at home with an agreed-upon schedule for follow-up visits.

A baby in Rwanda tied in the kangaroo position on the mother's chest. KMC provides warmth and promotes infant growth Photo credit: Anne-Marie Bergh.

Community-initiated skin-to-skin care refers to the practice of continuous KMC being initiated and continued at home. It is also called community KMC but it doesn't necessarily link to the full package of supportive care. It has been practiced in settings where referral to a health facility is challenging or not possible.

Skin-to-skin care is recommended for all babies immediately after delivery to ensure warmth. It is also a recommended method when transferring sick newborns to a health facility.

Kangaroo Mother Care can prevent up to half of all deaths in babies weighing <2000 grams.

A mother in Mali practices KMC with her 11-day old baby. Covering a newborn's head with a hat prevents heat loss. Photo: Joshua Roberts/Save the Children

Methodology

This review used a model developed and tested by the South African Medical Research Council's Unit for Maternal and Infant Health Care Strategies for monitoring the progress of KMC implementation (Figure 1). Facilities are assessed by means of a standard key informant interview guide and observation checklist, and receive scores up to a total of 30 (Table 2).[6] The tool has been applied in South Africa[6, 10, 11] and adapted for use in Malawi,[12] Ghana,[13] Nigeria,[14] and Indonesia.[15] The scoring methodology is based on three phases: pre-implementation, implementation and institutionalization. Each phase comprises two stages that need to be assessed.

A selection of KMC facilities were visited in each country. Distance between facilities played a role in the final selection of institutions as well as variation in geography and level of health care provision. In Mali, all facilities implementing KMC received a visit, including the national teaching hospital as well as regional and district hospitals. In Rwanda, only district hospitals were visited, whereas a range of facilities from central hospitals to community health centers were part of the Uganda and Malawi samples, with three private-not-for-profit hospitals included in Uganda and one mission hospital in Malawi. A total of 39 facilities were visited –14 in Malawi, 7 in Mali, 7 in Rwanda, and 11 in Uganda.

A team of local monitors were trained by the consultant in the use of the evaluation tools. A specific process was followed to prepare for facility visits. Relevant health authorities and facilities were contacted regarding the date of the visit and were provided with information about the evaluation. Evaluation visits began with an introduction and a presentation of KMC implementation by facility representatives. The monitoring team then conducted a structured interview with KMC focal-persons and other key informants and used a standard observation checklist to assess the KMC unit or space. Photographs were taken of documents, educational materials, available equipment and the space provided. Consent was obtained before pictures of mothers and babies were taken in the KMC unit. Thereafter the team compiled a report, provided verbal feedback to facility representatives and left a written report behind.

This evaluation aimed to provide a 'snapshot' of facility-based KMC activities in the four countries. Although the findings may not be generalizable, other countries and institutions may learn from the strengths and challenges of institutionalizing KMC. As the focus was on the provision of facility-based KMC services, mothers' and community views on KMC was not a primary assessment outcome and information collected from mothers was anecdotal.

Figure 1. Model for monitoring progress

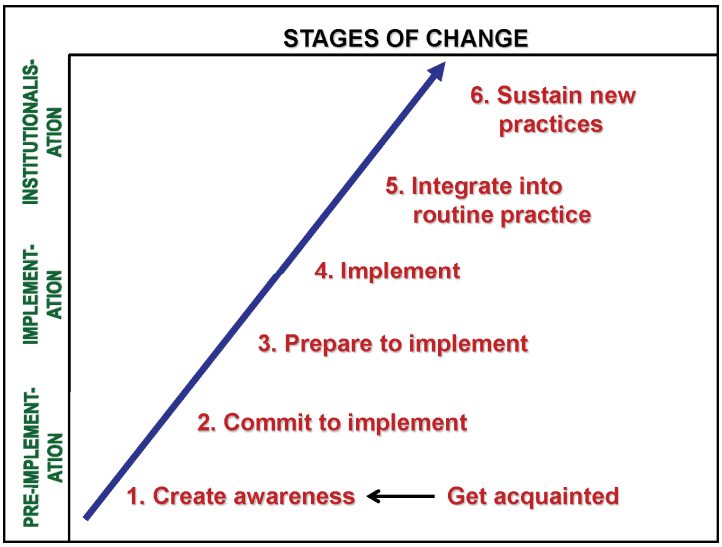


Table 2. Facility scoring system[6]

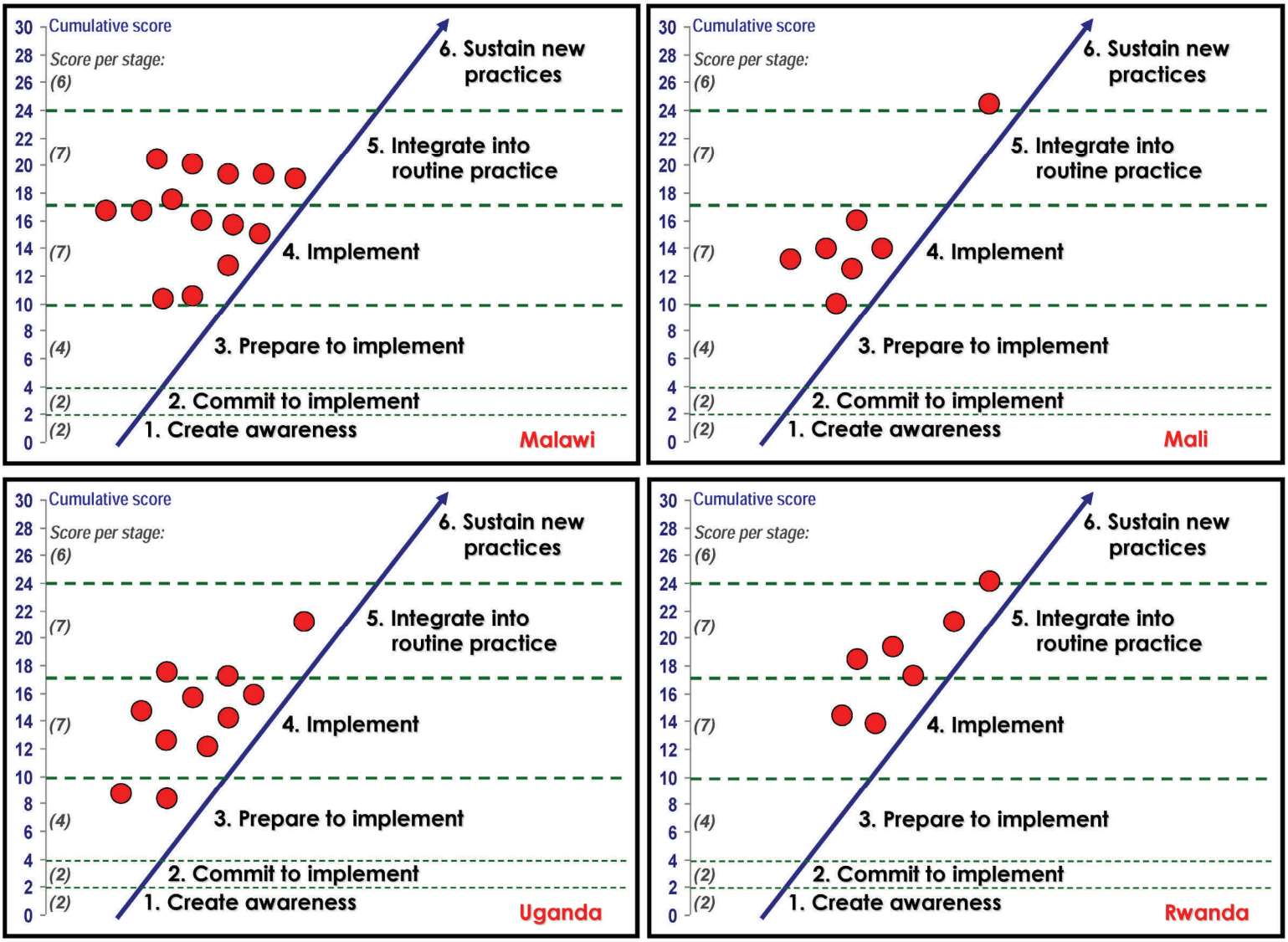
Stages and phases		Points per stage	Cumulative points
Pre-implementation phase			
Stage 1	Create awareness	2	2
Stage 2	Commit to implement	2	4
Implementation phase			
Stage 3	Prepare to implement	6	10
Stage 4	Implement	7	17
Institutionalisation phase			
Stage 5	Integrate into routine practice	7	24
Stage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

Results

Across all four countries, sites varied in terms of implementation progress but most scored at the level of stage 4 – "Implement," i.e. some evidence of KMC practice (Figure 2). Malawi, with a longer history of implementation, had more facilities which showed evidence of integration of KMC into routine practice. Implementation in Rwandan facilities was further along compared to facilities in Uganda and Mali, despite the comparatively recent initiation of services.

Figure 2. KMC implementation status in four countries

Each red dot represents a single facility and their placement along the stages of implementation



The quality of KMC implementation varied between facilities and across countries and seemed to be related to three factors: (1) the quality of KMC training and in-service orientation for health workers; (2) the intensity of supervisory support; and, (3) the ability to integrate KMC into existing quality improvement activities. In some instances master trainers without sufficient personal experience in KMC practice were used, especially where KMC was part of a more comprehensive newborn care training package. Some health workers did not or were unable to share their new knowledge and skills on return to their workplace; and some did not appear to be very knowledgeable about KMC. A large variation in the extent of inclusion of KMC in the theoretical and practical in-service and pre-service curricula of nursing, medical and other clinical staff was reported across facilities despite the fact that training was designed nationally to be standard. In three of the countries the scale up of KMC was linked to a donor project with built-in supervisory activities. Anecdotal evidence was provided for deterioration in quality of services after the end of a project – "*Almost everything has faded.*"

Overall, staff appeared to be enthusiastic about KMC, and the support of senior management at district and facility level – psychological, budgetary, and in-kind – played a role in staff motivation and the ability of facilities to move forward with KMC. In two countries, use of maternity services appeared to be low with little demand for inpatient care. Low uptake of KMC services could be linked to high percentages of home deliveries and a lack of incentives for admitted mothers in the form of provision of free services or regular in-facility meals and support for companions or helpers for mothers.

The support of management played a role in staff motivation and the ability of facilities to move forward with KMC.

Some of the key findings across countries are described in Table 3. Lack of space for KMC practice was a problem in some facilities and available space ranged from cramped to pleasant. Where space was available, many health workers did not understand the importance of continuous skin-to-skin contact for keeping the baby warm. Few facilities promoted intermittent KMC for babies not yet admitted to continuous KMC or where there was no space for rooming-in. A few facilities had KMC-specific job aids or protocols in place to guide KMC practice. In Rwanda there were standardized newborn protocols that included the management of KMC. Ensuring routine follow-up after discharge from health facilities was reported to pose many challenges in all four countries.

The quality and completeness of recordkeeping and documentation was highly variable across sites. Very few facilities had a mechanism in place for regularly reporting on KMC-specific activities and statistics to a higher level of in-facility management. The number of low birth weight babies admitted was routinely captured by more facilities though some confused low birth weight babies in general with those receiving KMC. It was therefore difficult for health workers on the ground to see the purpose of accurate recordkeeping in KMC when the information from these records was not used. In one country facilities were supposed to send regular reports with more detailed information to a central office at the Ministry of Health, but it was unclear what was done with these reports.

In Malawi there was evidence of extensive community engagement in some of the target districts. This involved training community health workers (health surveillance assistants) in newborn care and the organization of events for creating awareness among community leaders and sensitizing families on the importance of skin-to-skin contact and improved health-seeking behavior, especially for low-birth-weight babies. In the other countries systematic community involvement was less evident, except in one of the districts that was part of a newborn care trial in Uganda. The training of maternal health workers (agents de santé maternelle) in Rwanda, where inclusion of KMC into the health workers programs has been in place since 2009, also has potential for supporting KMC at the community level where appropriate supervision of activities is provided.

Mothers practicing continuous skin-to-skin care in a KMC ward in Mali. In KMC position, the baby's head is well supported with the edge of the cloth at level of the baby's ear. Photo credit: Anne-Marie Bergh.

Table 3. Key findings by country

	Malawi (n=14)	Mali (n=7)	Rwanda (n=7)	Uganda (n=11)
Facilities targeted for KMC implementation	• All districts, with focus on district hospitals and community health centers	• Regional and district hospitals	• All district hospitals, as part of the neonatology outreach	• Varied, depending on districts targeted for newborn care training
Existence of national KMC guidelines	• Yes	• Incorporated in newborn care guidelines	• Yes	• Incorporated in newborn care guidelines
Location of KMC services at the health facility	• Most often part of postnatal ward • Separate space: 11/14	• Part of postnatal, pediatric or neonatology wards • Separate space: 4/7	• Part of maternity or neonatology wards • Separate space: 7/7	• Most often part of postnatal ward • Separate space: 6/11
Availability of KMC education materials	• Posters: 11/14; Murals: 2/14; Leaflets: 1/14; Counseling cards: 3/14; Photocopies on wall: 1/14	• None	• Photocopies on wall: 1/7	• Posters by donors: 7/11
Promotion of KMC in antenatal care services	• 6/14	• 1/7	• 0/7	• 3/11
Promotion of intermittent KMC for babies not yet admitted for continuous KMC	• 9/14. No facilities have a set schedule or recording system	• 2/7. No facilities have a set schedule or recording system	• 3/7. No facilities have a set schedule or recording system	• 6/11. No facilities have a set schedule; 2 facilities recorded hours per day in KMC
Written policy for feeding low birth weight babies	• 3/14	• 4/7	• Incorporated in national neonatal protocols	• 3/11
Quality of documentation	• Good: 4 • Average: 6 • Poor: 4	• Good: 2 • Average: 4 • Poor: 1	• Good: 2 • Average: 5 • Poor: 0	• Good: 1 • Average: 6 • Poor: 4
Availability of KMC register	• 10/14	• 7/7	• 5/7	• 7/11
Number of staff trained in KMC	• Total: 780 • In facilities visited: 238	• Total: Unknown • In facilities visited: 142	• Total: 501 • In facilities visited: 60	• Total: Unknown • In facilities visited: 262
Existence of KMC orientation for new staff	• 3/14	• 2/7	• 6/7	• 5/11
Evidence of follow-up system	• Good evidence: 3 • Partial evidence: 9 • Little / No evidence: 2	• Good evidence: 4 • Partial evidence: 3 • Little / No evidence: 0	• Good evidence: 5 • Partial evidence: 2 • Little / No evidence: 0	• Good evidence: 4 • Partial evidence: 2 • Little / No evidence: 5

A nurse in Mali helps a mother wrap her baby in the KMC position. Photo credit: Joshua Roberts/ Save the Children

Recommendations

1. Scale up: Balance rapid expansion of services with the need to improve quality of care

- Provide routine supervision and strengthen services for existing KMC facilities alongside further scale up of KMC. If scale up occurs too quickly, quality of care and future sustainability could be compromised.
- Create a mechanism to identify struggling facilities and connect them to centers of excellence or KMC champions that could serve a benchmark function and help entrench good practices.
- Target the least-resourced districts or facilities with the highest numbers of deliveries in order to ensure equitable scale up of services.
- Ensure KMC guidelines and protocols, where they exist, are distributed widely, including to health centers which do not have KMC services but would serve as referring sites.

2. Agenda-setting: Place KMC on the district agenda and budget early

- Use data to show the burden of neonatal mortality, particularly preterm, within the local or national context and advocate for prioritization based on burden.
- Cost services, including training, supervision and supplies, so that district planners have a sense of what is needed.
- Ensure that plans for health facility renovation or construction include space for a KMC unit or designated beds and that budgets can cover the necessary equipment and materials.

3. Sustainability: Ensure KMC services are a part of the routine system from the outset

- Plan projects and programs to use existing human resources, monitoring systems and supply chains. Motivate to include mentorship and supportive supervision for KMC as part of routine health system activities.
- Advocate for early commitment by the Ministry of Health for the implementation of KMC in all appropriate health care facilities and motivate for inclusion of KMC service outcomes as a performance indicator in district activities budgets.
- Clarify roles and responsibilities of stakeholders at various levels for the continuation of KMC activities and the establishment of implementation networks (e.g. steering committees) at different levels.
- Experiment with different approaches to training and scale up that include the introduction of KMC as a stand-alone intervention or within an integrated maternal and newborn care package alongside KMC orientation to staff outside the maternity unit and those in peripheral facilities.
- Promote ownership of national guidelines and centrally-developed KMC guidelines and protocols.

4. Monitoring: Use data effectively to document and report on progress at various levels

- Emphasize the value of monitoring and evaluation in KMC training and include follow-up supervision that shows what is being done with the data that are collected.
- Ensure that appropriate indicators are being collected and used. While most KMC information is too detailed to include in routine health information systems and sent up to central levels, these data are valuable for local use and quality improvement.
- Use existing feedback channels (e.g. facility or district meetings) to report on KMC statistics in a systematic way in order to keep KMC on the agenda of providers and policy makers.
- Encourage accountability by including KMC data capture in job descriptions and including KMC information or statistics in reports to all levels of the health system.

5. Training: Integrate KMC in pre-service and in-service curricula for all health workers

- Focus on integrating KMC into pre-service education for all health worker categories that attend deliveries and/or provide postnatal care visits, especially for medical and clinical officers and medical assistants but also provide tailored training for lower-level cadres.
- Involve professional associations in actively promoting KMC and develop champions for KMC who can advise on how to start and sustain KMC services.
- Ensure that all training is of high quality and combined with a program of supportive supervision and regular refresher courses.

6. Quality of care: Use KMC as an entry point to improve overall newborn care services

- Encourage more involvement of facility management staff to help with acquiring adequate space for continuous KMC.
- Develop a structured program of supervisory visits and outreach from regional hospitals and centers of excellence to district hospitals and lower level facilities.
- Institute measures for continued refresher and in-service training and limited staff rotations in hospitals. This may have a positive effect on skill retention.
- Promote systematic practice of intermittent KMC where no space is available or while the baby is on oxygen or phototherapy.
- Enable longer periods of skin-to-skin contact per day through measures such as providing comfortable chairs or allowing a companion to assist and support the mother in practicing continuous KMC.
- Strengthen follow-up systems and support for continuing KMC at home by ensuring that newborn care training, including KMC, reaches beyond the facilities that are directly providing KMC services.

7. Community involvement: Increase awareness among families and community leaders

- Introduce KMC to mothers during routine antenatal care and consider utilizing mothers who have successfully practiced KMC to share their experiences.
- Ensure systematic inclusion of KMC in training for community health workers and monitor the practice of KMC among discharged mothers in community maternal and newborn care projects.
- Tailor statistics and success stories for KMC for advocacy at different levels and identify innovative ways to promote KMC at public events and in the public media.
- Plan for and encourage widespread use of education and communication materials on KMC.
- Continue to advocate for male involvement in the care of newborns, including carrying the baby in the KMC position.
- Use national and international health days and weeks to promote KMC (e.g. child health days, breastfeeding week, World Prematurity Day, International Day of the Midwife).

Twins can simultaneously be cared for in the KMC position. Photo credit: Guy Calaf/Save the Children

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A mother and her sister care for twin babies in Malawi.
Photo credit: Anne-Marie Bergh

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Editorial note: Photos on pages 1, 2, 5 and 9 were taken during the evaluation visits. The additional photos are courtesy of Save the Children.

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