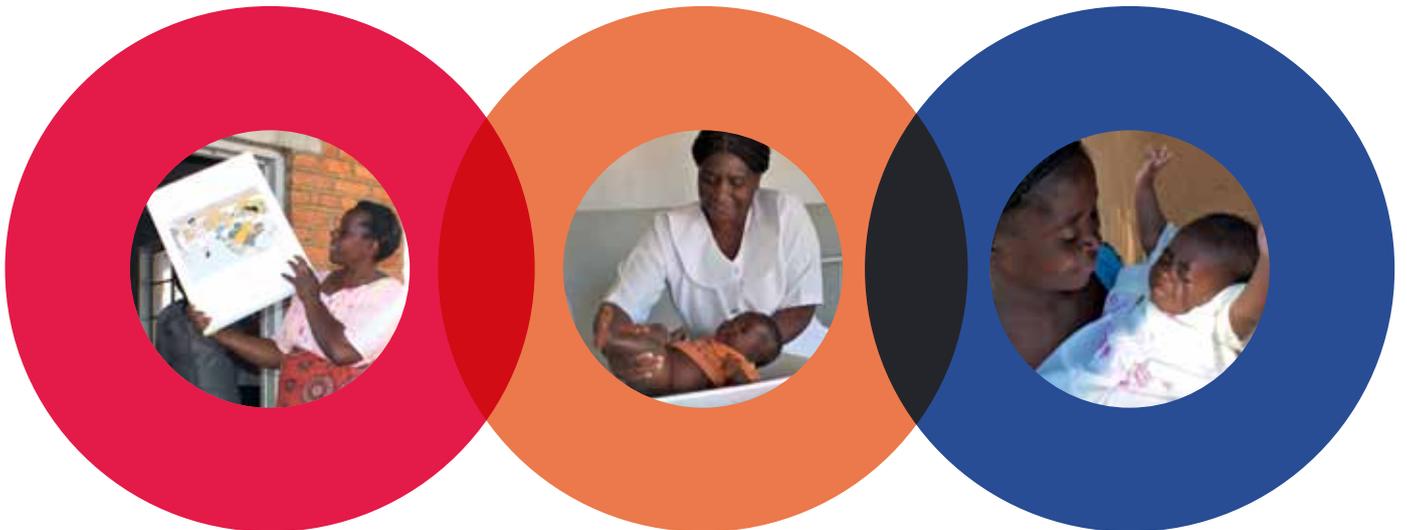


Improving maternal and newborn health in Malawi

Lessons from a landmark programme addressing
maternal and newborn health in Malawi



Learning report
June 2013



In collaboration with





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Summary

Malawi has one of the highest maternal mortality rates in Africa and a high rate of neonatal mortality. Although there is growing evidence of a trend towards a lower maternal mortality rate, the country is unlikely to meet its ambitious target to achieve the Millennium Development Goal (MDG) for a reduction in maternal mortality by 2015.¹ While Malawi may meet its target for reductions in child mortality, neonatal mortality lags behind.

So how can the international community accelerate progress? A key debate in this area has been whether the greatest gains can be achieved by educating and empowering communities or by improving healthcare systems. A handful of recent studies in Latin America and Asia have suggested that community mobilisation can lead to reductions in neonatal (and in some cases maternal) mortality. Healthcare system quality improvement approaches, on the other hand, are relatively new and largely untested in Africa.

As part of this debate, the Health Foundation questioned whether, in fact, this needed to be an either/or choice. Could more be achieved if we adopted a twin-track strategy of working with healthcare services and the communities they serve? In 2006, we launched a five year programme with a consortium of international experts to try to answer this question. The programme took the name MaiKhanda (Chichewa for ‘mother–baby’) and has been led by a dedicated group of Malawians based in Lilongwe.

The MaiKhanda programme incorporated a cluster randomised controlled trial (cRCT) design using four approaches in different locations and evaluating which was most successful.

The four approaches were:

- community mobilisation only
- healthcare facility improvements only
- a combination of community mobilisation and healthcare facility improvements
- no intervention (the control group).

The programme mobilised a total of 879 communities (initially 729, and in 2011 an additional 150), and worked with nine hospitals and 29 health centres across three districts to identify and implement local strategies for maternal and newborn healthcare improvement.

The results of the independent evaluation of the programme, carried out by University College London between 2006 and 2011, are striking.

On the primary outcomes, where the programme undertook community mobilisation only, it achieved a 16% reduction in perinatal mortality.² However, where it focused on community mobilisation and healthcare facility improvement in the same locations, it achieved a 22% reduction in neonatal mortality.³ In the second half of the programme the intervention was strengthened, and the evaluation shows that in the last 15 months of the programme it achieved an impressive 28% reduction in neonatal mortality.

¹ MDG 4 and 5: Reduce by two-thirds the under-five mortality ratio and reduce by three-quarters the maternal mortality ratio between 1990 and 2015.

² Stillbirths and deaths in the first seven days following birth.

³ Deaths in the first 28 days of life.

On the secondary outcomes, where it undertook healthcare improvement alone, the programme achieved a 33% significant effect on late neonatal mortality.⁴

Overall, the evaluation estimates⁵ that each year the community-based intervention alone averted 933 perinatal deaths,⁶ and the combined approach (community mobilisation and healthcare improvements) averted 384 neonatal deaths.⁷ This corresponds to 2,099 perinatal deaths and 863 neonatal deaths averted over the course of the 27-month trial period.

The evaluation has shown that efforts to reduce newborn deaths can be more effective when we work simultaneously with healthcare systems and the communities they serve. They can also be cost effective, as the evaluation demonstrates.

We were not able to achieve a significant reduction in maternal mortality, however, and we have learned that it is more difficult to reduce maternal deaths than newborn deaths. We think this may be due to the complexity of events surrounding the transport of mothers from their communities and provision of safe care at the healthcare facilities. We have generated new evidence to strengthen recent claims of a general decline in maternal deaths in Malawi.

We have learned a great deal about the challenges of improving maternal and newborn health. It is not easy to transpose improvement interventions of proven efficacy, such as quality improvement techniques, from high-income countries to resource-poor settings like rural Malawi. There are many limitations, in terms of resources, supervision systems, staff morale and motivation, that can interfere with and limit impact. Interventions in healthcare facilities need to extend beyond clinical micro-systems and engage in system improvements for long-term sustainability. The leadership support of District Health Management Teams, District Health Officers and local clinicians has been crucial to getting quality improvement work accepted within healthcare facilities.

We have also demonstrated that a community-based birth and death surveillance system can be set up and run at low cost using a combination of government Health Surveillance Assistants (HSA), volunteer key informants in villages, and a handful of staff to collate the data collected. This is of enormous significance for governments in sub-Saharan Africa where real-time information about population mortality is a policy aspiration rarely achieved.

In 2006, *The Lancet* published the *Maternal survival* series of articles (<http://www.thelancet.com/series/maternal-survival>). What emerged strongly was the need to focus on a continuum of care – in short, linking skilled care with empowered communities. While we acknowledge that we have some way to go in achieving optimal standards of care in health facilities, we believe we have demonstrated the benefits overall of applying a combined approach to delivering care to pregnant women and their newborns.



4 Deaths occurring after the seventh day but before 28 completed days of life.

5 Estimates of this kind need to be provided alongside their 'confidence interval'. A 95% confidence interval (95%CI) provides a range within which we can be 95% confident the true value of the statistic lies, in the total population that our sample represents.

6 95%CI: The estimate is 933 per year. There is 95% confidence that the figure lies between 159 and 1,609 perinatal deaths averted.

7 95%CI: The estimate is 384 per year. There is 95% confidence that the figure lies between 14 extra neonatal deaths and 695 neonatal deaths averted.

Introduction: maternal and newborn healthcare in Malawi



Malawi is one of the poorer countries in sub-Saharan Africa. It has a gross domestic product (GDP) of \$343 per capita, and 39% of the population live below the poverty line. There is a high rate of population growth, predominantly due to the high, though falling, total fertility rate (now estimated at 5.7) and low contraceptive prevalence (42%). Malawi has been severely affected by the HIV epidemic, with prevalence among adults aged 15–49 estimated at 11%.⁸

In 2004, the maternal mortality rate (MMR) was estimated at 984 deaths per 100,000 live births – one of the highest rates in Africa. Data from 2006 revised this figure down to 807, and 2010 data indicate a further reduction to 675.⁸ Indeed, there are indications from recent studies of a secular trend of declining maternal mortality. The rate in high-income countries is nine deaths per 100,000 live births.

The majority (99%) of maternal deaths worldwide occur in low and middle-income countries. In sub-Saharan Africa, the lifetime risk of maternal death is one in 16, whereas in high-income nations, it is only one in 2,800. Almost half (45%) of post-partum deaths occur within 24 hours. Major causes of maternal death are: severe bleeding, infections, unsafe abortions, eclampsia and obstructed labour.

Similarly, the majority (98%) of neonatal deaths occur in low and middle-income nations. In these countries, the risk of death in the neonatal period is six times greater than in high-income countries. Neonatal mortality rates in these countries are declining, but slowly. In 2006, neonatal mortality in Malawi was estimated at 33 deaths per 1,000 live births and in 2010, 31 deaths per 1,000 live births.

The main direct causes of neonatal death are estimated to be pre-term birth (28%), severe infections (26%), and asphyxia (23%). Neonatal tetanus accounts for a smaller proportion of deaths (7%), but is easily preventable. Low birthweight is an important indirect cause of death. In Malawi, the uptake of antenatal care is very high at 98% for at least one antenatal visit,⁸ although women undergoing the recommended four visits is lower at 46%.⁸ Institutional deliveries were at 57% at the



beginning of the programme, but at 73% as of 2010.⁸ Maternal complications in labour carry a high risk of neonatal death, and poverty is strongly associated with an increased risk. Policies aimed at improving neonatal survival rates have only recently been implemented in Malawi.

In 2005, Malawi developed a ‘Road Map’ to accelerate the attainment of the Millennium Development Goals relating to maternal and child health. This was updated in 2011. The MaiKhanda programme is aligned with the key objectives of the Road Map.

Malawi spends 13%⁹ of its GDP on healthcare, which is lower than the 15% the Abuja Declaration recommends. Healthcare is mostly managed by the government. There is a critical shortage of qualified health workers and Malawi continues to lag behind neighbouring countries in this regard.

Policy developments in Malawi have had important consequences for the MaiKhanda programme, not least the banning in 2008 of traditional birth attendants (TBAs). No provisions were made for alternative home-based delivery, and women were actively encouraged to deliver at health facilities (women who did not could even be fined through by-laws set by some traditional leaders). This resulted in a 30 percentage point increase in deliveries in facilities (from around 45% to around 75%), with no corresponding increase in staffing or other resources, placing an additional burden on already overstretched facilities.

⁸ National Statistical Office (NSO) and ICF Macro. 2011. *Malawi Demographic and Health Survey 2010*. Zomba, Malawi and Calverton, Maryland, USA: NSO and ICF Macro.

⁹ *World Health Statistics Report, 2009*.

What is 'MaiKhanda'?

*A unique programme
in Africa*



The MaiKhanda programme was designed and supported by a consortium of expert partners¹⁰ which provided technical guidance to a Malawian team who led and executed the work on the ground. The programme was innovative in its ambition to combine two large-scale interventions:

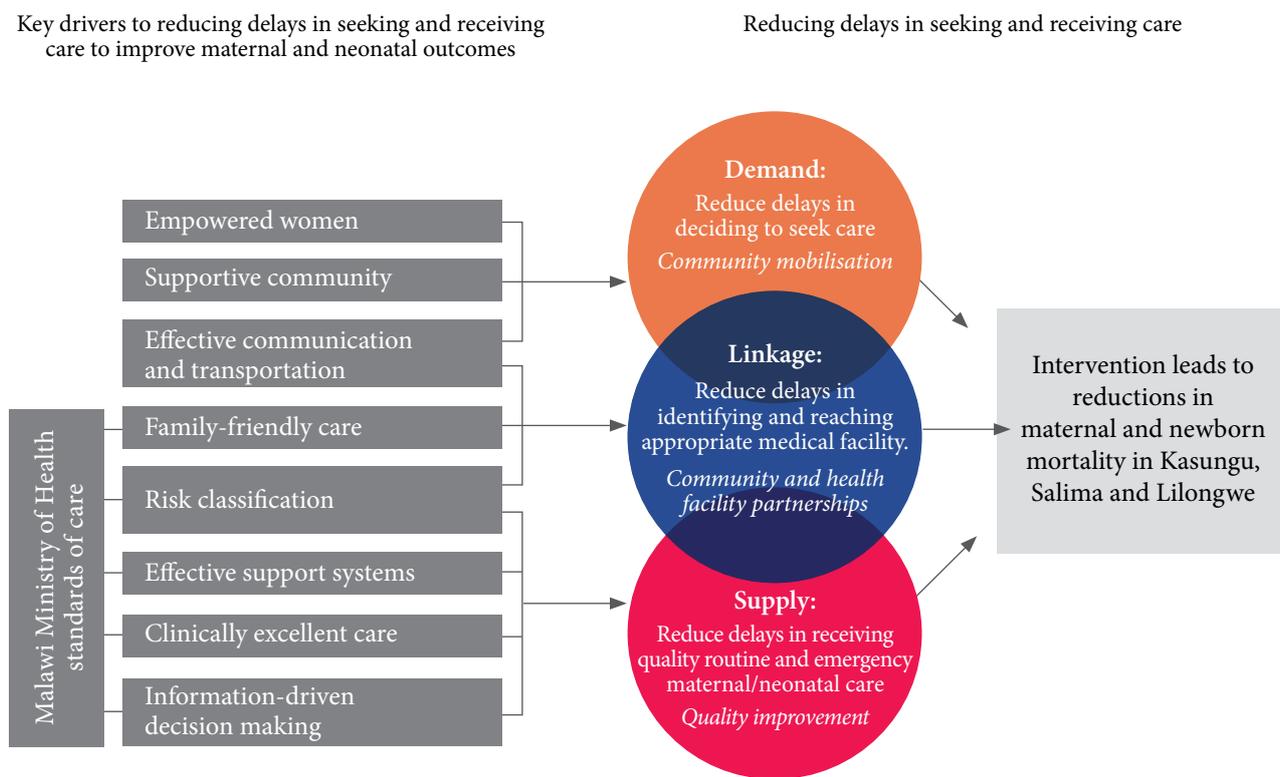
- A community mobilisation intervention, using a participatory action group cycle focused on women’s groups that had shown some promising evidence of effectiveness from international studies.
- A quality improvement intervention, working first in nine hospitals that provide Comprehensive Emergency Obstetric Care (CEmOC), and later in 29 health centres (facilities) that provide some elements of Basic Emergency Obstetric Care (BEmOC).

The MaiKhanda programme was implemented in three districts in central Malawi: Lilongwe, Salima and Kasungu.

The overall programme and evaluation design is possibly unique in Africa and the community mobilisation intervention is believed to be the largest of its kind.

MaiKhanda was underpinned by the ‘three delays’ model (see Figure 1 below). Delay 1 is defined as the delay in seeking medical care; delay 2 as the delay in reaching the medical facility; and delay 3 as the delay in receiving appropriate treatment at the facility.

Figure 1: Application of the three delays model to MaiKhanda



Adapted from: Thaddeus S, Maine D. Too far to walk: maternal mortality in context. *Social Science & Medicine*. 1994; 38(8): 1091-110.

¹⁰ Three organisations – the Institute for Healthcare Improvement (IHI), Women and Children First (UK) (WCF) and Liverpool School of Tropical Medicine (LSTM), with administrative support from Liverpool Associates in Tropical Health (LATH) – were invited to form a consortium to design and deliver the

programme, working in partnership with University College London (UCL), which would deliver an independent evaluation. LATH and LSTM left the consortium in early 2008, but the other partners remained throughout.



The community-based intervention focused on tackling delays 1 and 2. Using volunteers as group facilitators, the intervention involved forming women's groups.

The women's group action cycle approach is a series of regular (monthly) meetings led by a trained local (female) facilitator during which the groups identify problems, solutions and strategies to improve maternal and newborn health. The groups evaluate their strategies and the whole process has the active support of traditional leaders and their communities.

Community mobilisation has been defined as a 'capacity-building process through which community members, groups or organizations plan, carry out, and evaluate activities on a participatory and sustained basis to improve their health and other conditions, either on their own initiative or stimulated by others'.¹¹ More information on the model used can be found on Women and Children First (UK)'s website: www.wcf-uk.org



The overall aim of the health facility intervention was to address delay 3. The focus of this work was on enabling health workers and their supervisors to improve routine obstetric and neonatal care processes. It did this by providing them with quality improvement tools and techniques which they could use to address problems and work together in teams to identify locally appropriate solutions. To accelerate the spread of innovations, we regularly brought together clinic and hospital staff, who then designed and shared ideas to improve care.

The model for healthcare improvement used in the programme was based mostly on the Breakthrough Collaborative model used in the US and UK (as well as work in South Africa). More information can be found on the Institute for Healthcare Improvement's website: www.ihl.org



It is important to note that strong, well-qualified and experienced local leadership did not exist at the outset and the consortium did not have an established local partner to work with. An organisation and staffing structure had to be built from scratch and then trained in community mobilisation, quality improvement and evaluation.

¹¹ Howard-Grabman LH *et al* (2007) *Demystifying community mobilization: An effective strategy to improve maternal and newborn health*. Baltimore, MD: JHPIEGO/USAID.

An evolving programme

MaiKhanda was a complex and emergent programme. Although some aspects of the design were well-defined at the outset, others were not. Mid-way through the programme, efforts were made to strengthen the community-based and facility-based interventions in the following ways.

- Between 2008 and 2010, the healthcare facility-based intervention was strengthened by increasing the number of staff providing training and support. A clear ‘change package’ of interventions to use at health centres and hospitals was also identified. The change package targeted post-partum haemorrhage, maternal and neonatal sepsis and neonatal asphyxia.
- In 2009, 365 safe motherhood taskforces were introduced. Initially, these were made up of local women and men, and community leaders. Later, health service staff were added. Their initial design was to improve maternal and newborn health knowledge within communities. Later, they encouraged women to attend health facilities for antenatal and postnatal care and delivery. From 2011 they have followed up high-risk pregnant women identified by facility staff.

Even with these efforts to strengthen the programme, it is arguable whether ‘full dosage’ of the programme was ever achieved:

- The model of community mobilisation through women’s groups was pioneered in South Asia, and recent evidence suggests that optimal coverage for women’s groups likely to be effective is around one for every 500 women. MaiKhanda achieved a ratio of only one group for every 1,200 women.
- Having reviewed the data from the facility-based work, it is clear that the programme was not able to achieve reliable delivery of the intervention on the ground.

This makes the evaluation findings all the more impressive.

*The largest
community
mobilisation
intervention of
its kind*



Evaluation design

As the World Health Organization (WHO) notes, *'All over the world, changes are taking place in the area of maternal and child health to achieve the goals set out in international declarations and country commitments. The need for evaluation and information has, therefore, become increasingly apparent.'*¹²



The Health Foundation commissioned the Institute of Child Health (ICH) (now Institute for Global Health) at University College London (UCL) to undertake an independent evaluation of MaiKhanda. The evaluation had three components:

- A cluster randomised controlled trial (cRCT) to evaluate the impact of the programme on maternal and neonatal mortality.
- A process evaluation to understand the context and mechanisms of quality improvement in healthcare delivery and the delivery of the women's group action cycles.
- A cost-effectiveness analysis, using criteria for health interventions in the developing world established by the WHO.

Very few low and middle-income countries have accurate data on maternal and newborn deaths and morbidities, and less than one in three reports national data on post-partum care. Unlike the situation for disease-specific programmes, for maternal and child health very little attention has been paid to monitoring progress and evaluating programmes, even for the analysis and use of existing data.¹³

For the MaiKhanda evaluation, UCL developed a prospective, community-based mortality surveillance system to measure mortality at population level, using 1,800 'key informants' (members of the community) who collected birth and death data on a monthly basis from 1,900 communities. This was a low-cost surveillance system which may be more accurate in recording births and deaths in the communities than the retrospective 'sisterhood' method of measuring maternal mortality.¹⁴

The evaluation randomised health centres either to receive or not receive the quality improvement programme. The communities surrounding each group of health centres were then randomised either to receive or not receive the women's group intervention.



The randomisation did not include the nine CEmOC hospitals. These cater for the entire district population and it was therefore difficult to include them in the randomisation process. Despite their exclusion, a number of the improvement activities were concentrated in the hospitals, as they receive the most referrals, including the most complicated cases, and therefore also record the largest numbers of maternal and neonatal deaths. This latter point also became an important consideration in the interpretation of the cRCT results.

In addition to the evaluation, process and outcome data were collected from the hospitals and health facilities participating in the programme.

The primary outcome measures are district-wide mortality (deaths that occurred either within or outside of the health facilities), as follows:

- **perinatal mortality:** stillbirths and deaths in the first week of life
- **neonatal mortality:** deaths in the first 28 days of life
- **maternal mortality:** deaths during pregnancy or within 42 days of termination of pregnancy.

The evaluation also looked at case fatality rate data from the nine participating hospitals for mothers and neonates from 2006 to 2011.

- **Case fatality rates:** the number of deaths at healthcare facilities divided by the number of deliveries/births at those facilities.

12 Zupan J, Åhman E (2006) *Neonatal and perinatal mortality: country, regional and global estimates*. World Health Organization, iii.

13 Shibuya K (2007) 'Decide monitoring strategies before setting targets.' *Bulletin of the World Health Organization* 86 (6): 423.

14 Graham W, Brass W and Snow R (1989) 'Estimating maternal mortality: the Sisterhood Method.' *Studies in Family Planning* 20 (3): 125–135.

What was the impact of the MaiKhanda programme?

The independent evaluation estimates that over 1,200 lives were saved each year.





The full evaluation report¹⁵ can be downloaded from the Health Foundation's website: www.health.org.uk/maikhandanda

Here we provide a brief summary of the statistically significant key findings of the evaluation.

Summary of key findings:

Impact on death rates

- Overall, the evaluation estimates that, each year during the 27-month intervention period, the community-based intervention averted 933 perinatal deaths, and the combined approach averted 384 neonatal deaths (see footnotes 4-6 on page 5 showing the confidence intervals for these estimates).
- Neonatal mortality decreased by 22% in areas that received the combined (facility and community-based) interventions, compared with control areas.
- In the last 15 months of the programme – where the implementation of the women's groups' strategies were coming to fruition, safe motherhood taskforces had been formed, the number of programme staff providing training and support had increased, and a clear 'change package' of interventions were being used at health centres and hospitals – neonatal mortality decreased by 28%.¹⁶
- Perinatal mortality decreased by 16% in areas that received the community-based intervention alone, compared with those that did not.
- Late neonatal mortality decreased by 33% in areas that received the facilities intervention, compared with those that did not.¹⁷
- At baseline (June 2007 – September 2008), maternal mortality was estimated at 415 deaths per 100,000 live births. This was significantly lower than the 984 that had been estimated in the most recent national data.
- The programme had no impact on maternal mortality.
- There were no significant differences between neonatal case fatality rates at health centres that had been provided with the quality improvement intervention and those that had not.
- Fresh stillbirth rates¹⁸ were lower in health centres that had received the facility-based intervention (5.5 fresh stillbirths per 1,000 births) compared with those that had not (the control health centres, where the rate was 7.8 per 1,000 births).
- Possible changes in maternal case fatality rate (MCFR) for nine CEMOCs were determined by a statistical process control chart analysis. Median MCFR decreased from a baseline of 381/100,000

¹⁵ Colbourn T, Nambiar B, Costello A (2012) *MaiKhanda – Final evaluation report: the impact of quality improvement at health facilities and community mobilisation by women's groups on birth outcomes: an effectiveness study in 3 districts in Malawi*. London: Health Foundation.

¹⁶ This result was of borderline statistical significance.

¹⁷ This result was of borderline statistical significance.

¹⁸ The intrauterine death of a foetus during labour or delivery.

births from January 2007 to December 2008 to 266/100,000 in the period from January 2009 to May 2010. Some worsening of this improved rate was detected from June 2010 to the end of the observation period in November 2011, when the median rate was 310/100,000. Since none of the CEmOCs were included in the randomisation design, we are not able to determine whether the apparent improvement after January 2009 was due to the initiation of QI interventions in the nine non-randomised CEmOC facilities in July 2007 or to secular trends for improved MCFR throughout Malawi. The worsening of rates after May 2010 occurred after a rapid increase (~ 50%) in rates of health facility delivery, an increase that started in 2008. It is possible that a threshold for overcrowding was reached in mid 2010, limiting the ability of these poorly resourced facilities to effectively manage the higher volume of patients.

Summary of key findings: *Health facility-based intervention*

- The health centres were severely under-resourced in terms of basic emergency obstetric care ‘signal functions’¹⁹ and human resources.
- There was no clear evidence for the impact of specific quality improvement activities on clinical practices and intermediate outcomes such as post-partum haemorrhage and asphyxia, although record keeping was not strong.
- Hospital deliveries increased by as much as 30 percentage points during the programme (from around 45% to around 75%) probably due to a change of policy by Malawi’s Ministry of Health that banned the use of traditional birth attendants and encouraged delivery at healthcare facilities. There was no concomitant increase in staffing and other resources to meet this major additional demand.

- Capacity constraints in Ministry of Health management structures and competing priorities in the external health system environment resulted in further significant challenges to embedding quality improvement in the health system.

Summary of key findings: *Community-based intervention*

- The community-based intervention did not increase the number of health facility deliveries over and above the rapid increase observed in all areas. This probably reflects the change in Malawian health policy referred to above.
- The number of newly pregnant women who attended women’s groups was fairly low, at 10%. The percentage of members who had never had children before was also very low, at 2%.
- The most popular strategies chosen by the women’s groups to improve health outcomes were bicycle ambulances, health education, vegetable gardens and bed nets. The strategies that were implemented most successfully were health education, voluntary counselling and testing for HIV, village savings and loans, bed nets and vegetable gardens.
- Women’s group facilitators were generally satisfied with their working conditions and were found to be facilitating the groups effectively.

Summary of key findings: *Cost-effectiveness*

- The effect of the community-based intervention on perinatal mortality and the effect of the combined intervention (facility and community-based) on neonatal mortality are highly cost-effective according to WHO criteria which, for Malawi, is less than \$5,400 per stillbirth or neonatal death averted.

¹⁹ A Basic Emergency Obstetric Care (BEmOC) facility should be able to perform the following signal functions: administer parenteral antibiotics, oxytocic drugs and anticonvulsants; manual removal of placenta; removal of retained products;

and assisted vaginal delivery. A Comprehensive Emergency Obstetric Care (CEmOC) facility should be able to offer all the functions above, plus Caesarean section and blood transfusion.

Case study 1

MaiKhanda the matchmaker



*'I feel so proud. Our lives
are changing so much.'*

Case study 1 **MaiKhanda the matchmaker**

The narrow, dusty path to Chisuma is lined with tobacco farms, tall grass, and not much else. On this lonely trail, pregnant women have tried, and failed, to walk the 24-kilometre distance to deliver at the nearest health centre. In most cases, the women had difficulty delivering at home, then either attempted the long walk or paid 1,000 kwacha (\$7 USD) for a ride on an oxcart, which takes just as long.

But on this day, women and men sing and dance as MaiKhanda unveils a bicycle ambulance, a shiny two-wheeler hitched to an orange metal contraption that resembles a reclining beach chair.



Bicycle ambulances, introduced by MaiKhanda and its partners, aim to help alleviate the burden of travel for pregnant women in rural Malawi.

Access to a faster, easier mode of transport is a key priority for most of MaiKhanda's 879 women's groups. To make that happen, MaiKhanda, which does not provide any external supplies, has partnered with Transport for Transport in the Netherlands to distribute 165 bicycle ambulances. In that way, MaiKhanda has become a 'matchmaker' for women in remote and rural areas who have long felt helpless and voiceless.

Since 2007, more than 21,000 rural women have joined women's groups in three of Malawi's Districts, the largest intervention of its kind in Africa.

MaiKhanda formed 729 groups when it first started (of which 650 are still in existence), plus an additional 150 groups in 2011. The basic idea is that, in the fight to reduce maternal and neonatal mortality, what happens in the community is just as important as what happens inside medical facilities.

Women must decide for themselves the biggest problems they face during pregnancy and childbirth, such as anaemia, malaria, or lack of transport to a health facility, then brainstorm low-cost solutions and devise an implementation plan. MaiKhanda helps them achieve that plan by helping them mobilise resources to deliver their plans by engaging the wider community, including traditional leaders, who can help access resources. They also introduce women's groups to government services and other organisations which can support their ideas and teach the women how to engage them. For example, MaiKhanda helps women's groups 'shop' for partners, such as Care Malawi, Plan Malawi, World Vision, or Transport for Transport, if the women need them.

'At the moment, you can see this is a tender stage for the women's groups,' says MaiKhanda's Partnership and Advocacy Officer, Gerald Chidzankufa. 'The women need MaiKhanda to link them to these partners. But, already, they are learning to do it themselves.'



Maria Mkandawire (left), a trained facilitator, dances with one of her women's groups in Kasungu District.

In Kasungu District, Maria Mkandawire is a trained facilitator for a cluster of nine women's groups. They've received goats, vegetable seeds for 'Dimba' gardens, and farm inputs for maize crops from the Food and Agriculture Organization. The groups distribute iron-rich vegetables to pregnant women or sell them on the market to generate money for bicycle ambulance maintenance and birthing materials that women must take to the hospital.

'I feel so proud,' says Maria with a wide smile. 'Our lives are changing so much.'

She is confident that members of each group, 25 to 35 women, are directly benefiting from their projects, either by increasing their access to information, income and nutritious food or by gaining confidence. She's not sure whether those benefits are trickling down, though, to women outside the group. 'You know, we don't have enough vegetables to give to everyone in the village. And our maize farm is just small now, so not everyone gets to share. But if there's a woman who really needs help, we go there.'

The independent evaluation showed that community mobilization work alone reduced perinatal deaths (stillbirths and deaths in the first seven days following birth) by 16% in the locations that MaiKhanda was working.

'That perinatal mortality rates have dropped means that mothers must be in much better shape in order for babies to be surviving. One of the biggest reasons that newborns die is because there's been a difficult delivery which affects the health of the baby when it's born,' concludes Ros Davies, Chief Executive of Women and Children First (UK) (WCF).

That impact comes despite a lower 'dosage' in Malawi than in South Asian countries, such as India and Nepal, where the model was pioneered. In India, there was one women's group for every 500 people. In Malawi, the drop in perinatal and neonatal deaths was possible even with a much lower ratio of one group per 1,200 women.

It was difficult to decipher MaiKhanda's direct impact on getting women to deliver at facilities because the Malawian government imposed a ban on traditional birth attendant deliveries in 2008. That policy change triggered more facility deliveries, regardless of whether women came from a MaiKhanda area.

Likewise, maternal mortality is declining in all parts of Malawi. The evaluation does not show that MaiKhanda's community interventions reduced maternal deaths.

While it's clear that the women's groups have helped save newborn lives, it's difficult to pinpoint which of their activities are most effective.



MaiKhanda community mobilization officers use motorcycles to visit women's groups in rural villages.

Case study 1 **MaiKhanda the matchmaker**

Maria Mkandawire has her own opinion, something she's grown braver in expressing.

She believes there's more information in the community about hygiene, nutrition and infant care. She also insists that women in her areas go to the clinic because they know it's important, not because they're blindly obeying a government order. Women in labour have access to a bicycle ambulance to rush them to the health centre. And, in general, farming projects are pumping more food and cash into the local economy and raising the standard of living.

In 2011, MaiKhanda acted as a 'matchmaker' and partnered Exagris Africa, a UK-based company, with its women's groups to grow paprika and birds eye chillies as cash crops. Exagris benefits from linking with MaiKhanda's organised network of women's groups, while the women receive training, seeds, chemicals to control disease, and a guaranteed market for their product.

MaiKhanda's Director, Martin Msukwa, has concluded that income-generating partnerships are the glue that holds a women's group together. He notes that 90% of the 729 original groups that started in 2007 are still in existence, but that some are much more active than others.

'For example, one in Kasungu District is cultivating tobacco and maize, and has set up a village savings and loans scheme. That keeps the women together. So, those are the women's groups that, I think, will continue to exist even after MaiKhanda stops supporting them.'

The challenge, says Martin, is that while women's groups are more sustainable with income-generating projects, they risk focusing too much on earning money and losing sight of maternal and neonatal health issues. However, he hopes that continued mentoring and training of local promoters will keep the women on track.

Maria Mkandawire believes it will. 'It's nice to bring money home to our husbands and children, but we care about so many things... like safe drinking water.' There's no clean water source in her village, she explains in rapid Chichewa. The clever leader, seeing an opportunity, finishes her long speech by appealing to MaiKhanda to apply its 'matchmaking' skills and link her women's groups with an organisation that digs water wells.

Maria is insistent that improving conditions in the entire community will result in healthier pregnancies and safer child deliveries.



Gelwa Malefula points to a safe motherhood message on her house in Chadza Village, Salima District.

Case study 2

Change over time



*‘You ask, “What is happening now?”
and then think, “How do we move
from here to a different stage?”’*

Case study 2 **Change over time**

Even on her day off, Martha Mwale reports to work at St. Gabriel Hospital's maternity ward to perform resuscitation drills. Dressed in blue jeans, the 23-year-old nurse stands over a doll and pumps air into its plastic lungs.



Martha Mwale (left) performs resuscitation drills on the maternity ward at St. Gabriel Hospital.

She works quickly and confidently, earning a top grade for her performance on the 'mannequin' baby. Martha admits that she used to panic when she saw an asphyxiated newborn.

'I was actually afraid. I thought, "What am I going to do to make this baby breathe?"'

She candidly describes the mistakes that she made a year ago, when she started her first nursing job at St. Gabriel. She wasted time cleaning the baby, or cutting the umbilical cord, instead of clearing the newborn's blocked airway.

'Maybe 10 minutes was going by. But, as I'm talking now, we only take one minute to provide ventilation to the baby.'

Martha joined the ten member quality improvement (QI) team that was established at St. Gabriel Hospital by MaiKhanda to reduce maternal and neonatal mortality. The QI design, popular in western countries, was introduced by the Institute

for Healthcare Improvement, MaiKhanda's lead technical partner. Essentially, frontline workers meet regularly to examine routinely collected data and perform audits on deaths. They define gaps in knowledge and quality of care, then brainstorm solutions, test them, and make changes.

At St. Gabriel, the QI team decided to tackle newborn deaths due to asphyxia and sepsis.

'I think MaiKhanda has really improved people to think critically,' says Hilda Kamera, Principal Nursing Officer at St. Gabriel. 'You ask, "What is happening now?" and then think, "How do we move from here to a different stage?"'

The quality improvement ideas don't always work right away, says Hilda, but she believes that's part of the process. 'You test them, and then if you see it doesn't work, you go back to the table, you try to think of other ways on how best to improve it, until you have refined, "Yes, this is what we wanted."'

Today, the QI team at St. Gabriel feels it has made progress since 2009, when it first started focusing on neonatal asphyxia.

Several staff members had received training on how to use the 'Helping Babies Breathe' model, which teaches frontline workers to begin resuscitation within the first 'Golden Minute' of a baby's life. However, the rest of the labour and delivery staff at St. Gabriel didn't know what to do, and with staff shortages, high turnover, and rotations between wards, there were wide gaps. The QI team decided to hold weekly resuscitation practice sessions on dolls, in which nurses, midwives, clinical officers, and even patient attendants and hospital maids, were timed, scored and critiqued by their co-workers.

St. Gabriel Hospital has not yet achieved a sustainable impact on the neonatal fatality rate. Hilda blames extenuating factors, such as spurts of complicated maternal cases arriving late at the hospital and the recent increase in hospital deliveries overwhelming the already over-stretched staff.

The seasoned nurse of 22 years believes that certain changes introduced by the QI team and MaiKhanda cannot be fairly or accurately measured yet.

Kangaroo Mother Care

Down the hall from the maternity ward, in the paediatrics section, a hospital maid carefully pours a tiny cup of breast milk into the mouth of a premature baby. Two mothers nestle their babies between their breasts to maintain skin-to-skin contact around the clock. They wrap themselves in blankets and warm jackets. The hospital maid, a trained caregiver, administers antibiotics and monitors temperature, heartbeat, weight and food intake.



A hospital maid monitors Joyce Gerald's premature son.

This is a Kangaroo Mother Care (KMC) room, where premature newborns are given close attention and mothers are taught how to care for their infants.

Shakila Fredrick, 21, gave birth to a tiny boy who weighed only 1,500 grams (3.3 lbs). At the time, she was weak from hemorrhaging, and had no idea that she shouldn't bathe him (compromising his body temperature) or that he was too small to breast feed.

Previously, the hospital packed premature babies into its two incubators, with three tiny infants lying side-by-side, and kept the overflow in the maternity ward.

'The cross-infection was very high,' says Hilda Kamera. 'If one baby had an infection, it was likely the other babies would have the infection. And since they were always in use, there was no proper cleaning.'

MaiKhanda has helped St. Gabriel improve its KMC. Before, it was located on the maternity ward where nurses were too busy to monitor the infants. Now, it's on a separate ward, under the supervision of two hospital maids who received two weeks of training through MaiKhanda.

Hilda says these babies would have died in the community, after being discharged from hospital, but the improved care and education for mothers is saving lives.

MaiKhanda's Director, Martin Msukwa, believes that the next phase of the project will ensure that frontline workers adhere to protocols more consistently and provide more consistent and useful data to assess trends.

MaiKhanda plans to mentor the Malawian Ministry of Health regional and district management teams to carry out quality improvement work in the facilities.

'Those people will be more present on the ground,' explains Martin. 'They have more and better influence than MaiKhanda's staff does. When we come, we are viewed as outsiders bringing more work. But when someone from the Zone office comes, the frontline workers listen to them, and say, "Oh yes, this is part of our work.'"

At the Ministry of Health Reproductive Health Unit, Deputy Director Fannie Kachale expressed support for training government employees as quality improvement mentors. She said it will foster 'ownership and responsibility' and assure 'sustainability, even when donors pull out.'



Inside the Kangaroo Mother Care room, a premature infant, weighing 1,400 grams, has his temperature checked by a trained hospital maid.

What have we learned?

An article²⁰ in *The Lancet's* 2006 special edition on *Maternal survival*, called for more research to investigate strategies to implement tested interventions in developing countries and to measure their effectiveness. In particular, it called for innovative interventions with low-cost, low-technology requirements that are applicable to both urban and rural areas and are of potentially high impact. It also called for more research on population empowerment. MaiKhanda is a response to these calls.

MaiKhanda's combined approach – working to improve health facilities and to mobilise local communities – has achieved impressive results in particularly resource-constrained settings. The independent evaluation estimates that over 1,000 newborn lives have been saved through this innovative and cost-effective approach.



Overall, the effects of the two interventions seem complementary, with the community-based intervention impacting on earlier mortality (stillbirths and early neonatal deaths (that is, within seven days)), and the facility-based intervention impacting on later neonatal mortality.

Community mobilisation through women's groups has proven to be an effective way of reducing neonatal mortality in other resource-poor rural settings. The approach was pioneered in Nepal²¹ and then adopted in India.²² In Bangladesh,²³ though, women's groups were not found to be effective in reducing neonatal mortality – possibly due to inadequate population coverage. Evidence to support the effectiveness or otherwise of women's groups in reducing maternal mortality is less clear, given inadequate statistical power in previous studies to measure maternal deaths.

It is challenging to implement quality improvement initiatives proven to be effective in high-income country contexts in severely resource-constrained settings. For example, adherence to a sepsis treatment protocol is ultimately dependent on the availability of antibiotics, and MaiKhanda was unable to influence the supply of such resources. Health facilities that provide Basic Emergency Obstetric Care (BEmOC) are defined as providing six 'signal functions', yet the evaluation found an average of only 1.6 functions in health centres in the three districts. Malawi hospitals have a weak Health Management Information System, limiting the ability of the clinicians involved in the programme to use data for decision making. In addition, the programme was implemented at a time when there was a government drive to encourage women to deliver at hospitals, without providing sufficient additional resources in the system to cope with the increased demand.

Neither the community nor the facility interventions achieved a 'dosage' that, based on the information that is currently available, would be expected to have a significant impact on maternal and neonatal mortality. In hindsight, MaiKhanda would have benefited from a clearer phased design for scale-up. This would have started with a more intensive learning phase, the development of a clear change package, the building of staff capacity, and more robust engagement of the Ministry of Health, before attempting to scale up the programme across the three districts at full strength.

Nevertheless, in the latter stages of the programme, where 'dosage' and implementation were improved, a 30% reduction in neonatal mortality was achieved through the combined intervention. This was in spite of the observed poor state of obstetric services at health centres. The evaluation concludes that if major improvements were made to the availability of these care 'signal functions' then the combined intervention approach could significantly reduce neonatal and perinatal mortality, and probably maternal mortality as well. This is important given the rapidly rising number of mothers having deliveries in health centres and hospitals.

Policy makers are starting to think about the need for an integrated approach to developing the full range of evidence-based interventions to reduce maternal and newborn mortality. In December 2011 the findings of a global review of key interventions were published.²⁴ The report did not focus on 'cross-cutting community strategies' such as women's groups. However, it will do so at a later date and will make recommendations in a complementary report.

We hope that the results and learning from MaiKhanda will strengthen the evidence for simultaneously working with healthcare facilities and the communities they serve in the drive to improve maternal and newborn health.

20 Belizan J (2006) 'More research is needed', *The Lancet* 368: 2123–2124

21 Manandhar D, Osrin D, Shrestha B *et al.* Effect of a participatory intervention with women's groups on birth outcomes in Nepal: cluster-randomised controlled trial. *The Lancet* 2004;364(9438):970–9.

22 Tripathy P, Nair N, Barnett S *et al.* Effect of a participatory intervention with women's groups on birth outcomes and maternal depression in Jharkhand and Orissa, India: a cluster-randomised controlled trial. *The Lancet* 2010; 375(9721):1182–92.

23 Azad K, Barnett S, Banerjee B *et al.* Effect of scaling up women's groups on birth outcomes in three rural districts in Bangladesh: a cluster-randomised controlled trial. *The Lancet* 2010;375(9721):1193–1202.

24 The Partnership for Maternal, Newborn & Child Health (2011). *A Global Review of the Key Interventions Related to Reproductive, Maternal, Newborn and Child Health (RMNCH)*. Geneva, Switzerland: PMNCH.

Conclusion: taking MaiKhanda into the next phase

The Health Foundation is committed to helping embed the learning from the programme in order to leave a sustainable legacy. Over the next three years, MaiKhanda will redirect its efforts from direct participation and support of women's groups, safe motherhood taskforces and quality improvement activities, to supporting the Ministry of Health structures to execute the taskforces and facility-based work. It will support civil society organisations to implement the women's group model across the three districts in which the programme has worked.

MaiKhanda will develop beacon sites to be used as examples of best practice with regard to safe motherhood taskforces and women's groups. The sites will be used for advocacy work, demonstrating best practice methods to the Ministry of Health and to civil society organisations that will be trained in supporting the women's group model. The programme will also develop a plan with District Health Management Teams and community leaders to incorporate the taskforces into the District Improvement Plans for 2013.

MaiKhanda will establish and implement a broader advocacy strategy to lobby traditional and formal leaders to take responsibility for the maternal and neonatal health issues in their communities.

The centrepiece of MaiKhanda's work over the next three years will be to demonstrate a full-scale implementation of combined community-based and facility-based interventions that dramatically decrease maternal and neonatal mortality in one district – Salima. It will involve scaling up what is now being called the 'MaiKhanda approach' through a comprehensive set of activities involving the community, the village infrastructure, the health centres, Salima District Hospital, the District Health Management Team, and zonal office (Malawi has five zonal offices).

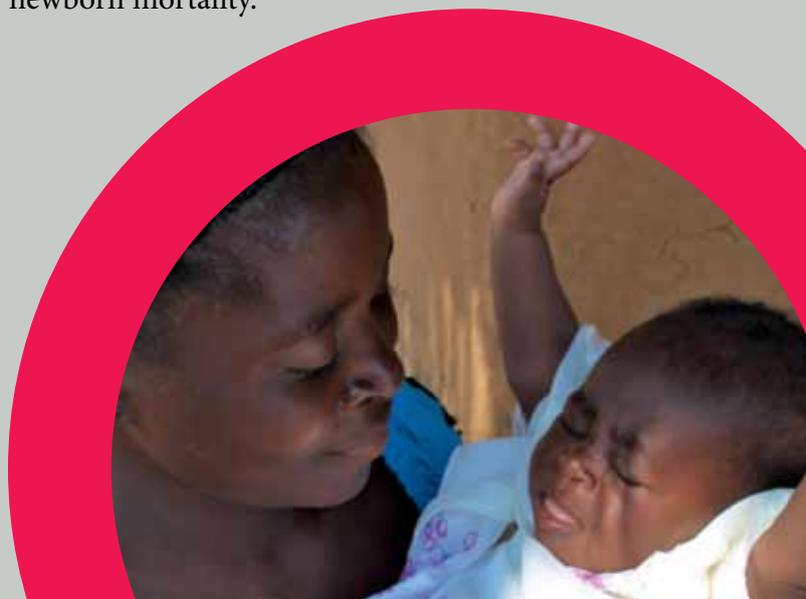
Critically, it will be executed by the Salima District Health Management Team, with guidance and support from MaiKhanda programme staff.

The MaiKhanda approach has already gained the support of the Ministry of Health at central, regional and district levels. MaiKhanda has provided advice to the Ministry of Health on community mobilisation, and key policy documents including the recently revised Road Map and Health Sector Strategic Plan. Both of these documents demonstrate a renewed commitment to community mobilisation and to healthcare improvement. We look forward to strengthening this partnership.

We believe that by:

- working with clinical teams to focus on the key drivers of maternal and newborn deaths using targeted packages of care (including improved referral systems and reporting)
and simultaneously
- working with community groups and maternal and newborn health taskforces to improve knowledge and skills through peer learning and support, and increase timely access to service utilisation
and promoting the linkages between them

we can further accelerate reductions in maternal and newborn mortality.





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