



## Testing Approaches for Increasing Skilled Care During Childbirth: Key Findings from Homabay and Migori Districts, Kenya

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## I. INTRODUCTION

Each year, over 500,000 women die from the complications of pregnancy and childbirth, almost all of them in the developing world. This could be largely prevented if all women received high-quality care during pregnancy and childbirth. More than 70% of maternal deaths are attributable to five major complications,<sup>\*</sup> and 77% occur during or shortly after childbirth (within 24 hours)—highlighting the critical need for good quality care during this period.

Increasing rates of skilled care during childbirth is widely recognised as a priority strategy for reducing maternal mortality, and rates of skilled attendance at childbirth are being used as the target indicator to measure progress toward the 5<sup>th</sup> Millennium Development Goal of improving maternal health. Globally, however, there is little evidence-based guidance available on how to make skilled care available and accessible in low-resource settings, and in many countries, little or no progress has been made in increasing skilled attendance rates during childbirth. Unfortunately, in some countries there has been a decrease in the use of skilled attendance. For example, in Kenya the percent of births attended by skilled attendants<sup>†</sup> in health facilities has declined from 50% in 1989 to 44% in 1998 and 24% in 2003.<sup>‡</sup> Moreover, there is little evidence-based guidance available on how to make skilled care available and accessible in low-resource settings.

### The Skilled Care Initiative

In 2001, the Ministry of Health and Family Care International launched the Skilled Care Initiative in Homabay and Migori districts, Nyanza Province, Kenya. The Skilled Care Initiative aimed to test and evaluate strategies to improve maternal health outcomes. It was specifically designed to:

- **Improve the availability and quality of skilled maternity care through health systems interventions.** These interventions included upgrading the health infrastructure, including surgical facilities, where needed; addressing equipment gaps; training providers in clinical and interpersonal skills in routine and emergency obstetric care; strengthening referral systems; and improving health management systems.
- **Increase utilisation of maternity services through facility- and community-level behaviour change interventions.** These interventions included antenatal counselling on birth preparedness and a community-level behaviour change communication (BCC) campaign on the benefits of skilled maternity care before, during and after childbirth.

The intervention package included a range of strategies to improve the availability, quality, and utilisation of maternity care (see Box 1), and interventions differed in the two districts. Health systems improvements and counselling on birth preparedness were introduced in both districts, but the community-level BCC campaign was only conducted in Homabay district.

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\* The five complications are severe bleeding/haemorrhage, infection/sepsis, unsafe abortion, eclampsia, and obstructed labour.

† According to the World Health Organization, skilled attendants include trained midwives, nurse/midwives or doctors who have completed set course of study and are registered or legally licensed to practise. This definition does not include traditional birth attendants.

‡ Demographic Health Surveys, 1989, 1998 and 2003.

### Box 1. The Skilled Care Initiative at a Glance

Health systems interventions in Homabay and Migori districts included:

- Training 102 maternity care providers in life-saving emergency obstetric care skills, and routine maternal health services, including individualised birth preparedness counselling, compassionate maternity care, and postpartum care. In addition 43 providers were trained in postabortion care, including manual vacuum aspiration.
- Addressing gaps in essential obstetric care equipment, such as blood pressure gauges, delivery beds, delivery couches, sterilising equipment, and such other items, at 57 health facilities at all levels of the health system in both districts.
- Strengthening the infrastructure of health facilities, including providing water catchment tanks, installing solar panels, and basic renovations at select health facilities in both districts.
- Providing mobile telephones to district hospitals and 24 rural health facilities to facilitate emergency referral of patients.
- Introducing a quality improvement tool, COPE for Maternal Health Services, to staff at district hospitals and seven rural health facilities.

Community-level behaviour change campaign activities carried out in Homabay district emphasised the importance of planning for delivery, and the importance of skilled maternity care during pregnancy, childbirth, and the postpartum period. These activities included:

- Barazas with local chiefs and assistant chiefs on the importance of planning for delivery and using skilled maternity care during childbirth. A total of 3,800 people were reached through barazas in the district.
- Drama performances and health talks at marketplaces, community mobilisation activities, and special health days at local health facilities. Approximately 14,000 community members were reached through such events at the community level.
- Meetings with church groups and women's groups reaching approximately 2,500 people.

## II. EVALUATION DESIGN AND METHODS

A rigorous methodology was used to evaluate the availability and quality of skilled care in the intervention districts, its financial and cultural accessibility, and changes in use of skilled care over time. The pre-test, post-test, quasi-experimental design included health facility survey and household surveys.

The specific objectives of the **health facility assessments** were to:

- Assess the maternal health services at all levels of the health care system and identify gaps in these services
- Guide the design of project interventions by identifying strategies for improving maternal health services and assist in prioritising interventions
- Evaluate the impact of SCI project interventions on maternal health services at health care facilities by comparing baseline and endline data.

Developed from the World Health Organization's Safe Motherhood Needs Assessment methodology, the health facility survey instruments included: interviews with district health management teams, interviews with facility managers, interviews with midwifery personnel, exit interviews with antenatal and postpartum clients, structured observation, and reviews of facility records.

The baseline sample of health facilities included 40 public, private, and mission facilities in the two districts that were known to be providing maternity care. The endline survey sample was similar, but larger (N=57) as maternity care had been introduced at a number of additional health facilities in the two districts.

The specific objectives of the **household surveys** were to:

- Gather data on demographic, socioeconomic, and other variables that may influence the use of skilled care
- Assess knowledge, attitudes, and behaviours related to birth preparedness and care-seeking during pregnancy, delivery, and the early postpartum period
- Measure the use of skilled care during normal and complicated deliveries and the early postpartum period by the district population
- Evaluate the impact of SCI project interventions regarding these indicators

The survey instruments included a Household Questionnaire (with the head or other adult member of household), a Woman’s Questionnaire, and a Husband’s Questionnaire. Most of the questions were based on those used in the international Demographic and Health Surveys (DHS). Questionnaires used in other safe motherhood surveys were also reviewed, and relevant questions were adapted for the survey. Women were asked about *all* of their births and stillbirths in the two years prior to the survey.<sup>5</sup> This was done to ensure that women and their births would be represented in proportion to the number of births the women have had. Moreover, this type of sample requires a smaller sample of women than a sample based on the most recent birth only.

More than 2,500 households were surveyed in each district during the baseline and endline (See Table 1), and within each household, all women of reproductive age and their co-resident husbands were interviewed. In total, more than 1,000 women with recent pregnancies (i.e. had had a live or still birth within the previous two years) were interviewed. As very few surveys have collected such extensive data on women’s care-seeking behaviour before, during and after childbirth, this research provides an extraordinary opportunity to understand the reasons why women seek skilled care, and what can be done to ensure that skilled care is available and accessible for all women.

**Table 1. Household survey samples**

	Homabay		Migori	
	Baseline	Endline	Baseline	Endline
Number of households surveyed	2731	3175	2590	3156
Number of women interviewed who were pregnant within the last 2 years	1075	1125	1098	1079

### **Data Analysis**

Data were analysed using SPSS 14.0 for Windows (Chicago, Ill, SPSS, Inc). Functional indices were developed to assess changes in the status of essential aspects of quality care related to antenatal care, normal delivery care, complicated delivery care, and postpartum care. Drawing on the results of these functional indices, composite indices were developed to give a complete picture of the overall capacity to provide normal delivery care and complicated delivery care. Similar composite indices were developed to measure respondents’ exposure to and awareness of the intervention. Statistical analyses were done using the chi-square test and linear regression models, whose dependent variable was “delivery at a health care facility.”

<sup>5</sup> Since there is evidence that early pregnancy losses are underreported in surveys these were excluded.

### III. FINDINGS

#### A. Antenatal Care

Although most pregnancy- and delivery-related complications cannot be predicted, high-quality antenatal care (ANC) during pregnancy is recognised as an important opportunity for promoting health and education, instituting prophylactic measures for disease prevention, managing existing diseases and other health conditions, and detecting and managing maternal health complications. The WHO recommends that all pregnant women should have a minimum of four antenatal visits.

To improve the quality and availability of ANC, project interventions focused on updating the knowledge and skills of maternal health providers in Homabay and Migori through Emergency Obstetric Care (EMOC) training, which covers antenatal care and individualized birth preparedness counselling, as well as addressing critical gaps in equipment. In addition, flipcharts, posters, and client education booklets were developed and distributed to all health facilities in Homabay to aid providers in providing essential information and counselling during antenatal consultations.

##### ***Availability and Quality of ANC Services***

The vast majority of health facilities in both districts provided ANC services at both baseline and endline. Overall, the facility survey showed that there were significant improvements in both districts in terms of health providers' ability to spontaneously mention key diagnostic and health promotive ANC functions. The greatest changes in provider knowledge and recall of essential ANC functions were observed at dispensaries and the district hospitals.

In terms of essential resources for the provision of quality antenatal care, at baseline, most facilities were reasonably well stocked with essential equipment and consumable supplies for ANC. However, gaps in medicines, such as antimalarial drugs and tetanus toxoid vaccine were found at all levels, including the hospital level. At endline there were still a number of health facilities in both districts that did not have all the drugs reviewed for antenatal care.

##### ***Utilization of ANC Services***

The household survey showed small increases in the use of antenatal care during pregnancy in both districts. In Homabay, the proportion of women with at least one ANC visit during pregnancy increased from 85% to 89%, and in Migori district, an increase from 86% to 88% was observed. The proportion of women with more than two antenatal care visits during pregnancy also increased.

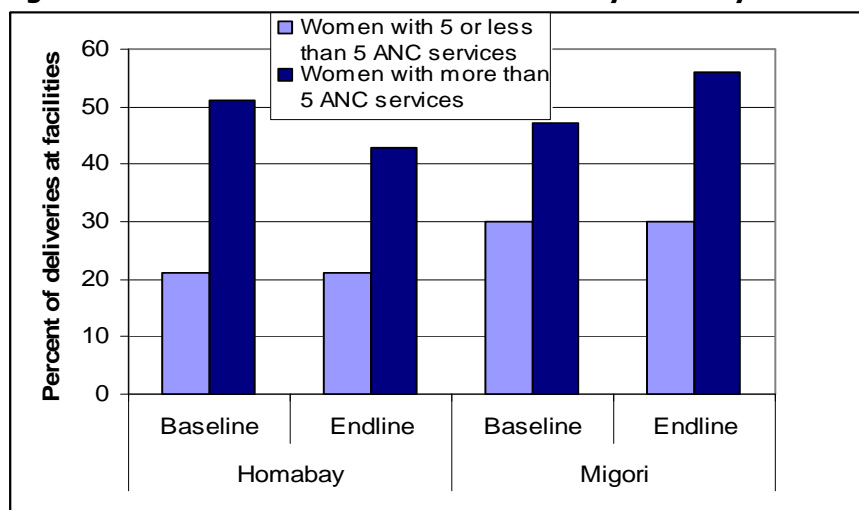
The household survey also showed an improvement in the content of women's antenatal visits. Women in Homabay received an average of 5.1 out of 8 essential diagnostic, counselling and preventive ANC functions in the endline survey, compared to 4.6 at baseline. In Migori district, women received an average of 4.2 out of 8 essential ANC functions at baseline and 4.9 at endline. In both districts, the largest improvement in preventive ANC functions was in the provision of malaria prophylaxis.

In addition, improvements in ANC counselling were observed. At baseline only 32% of women in Homabay and 20% of Migori received the full range of birth preparedness counselling and information that is recommended at ANC visits. This number increased at endline to 46% and 32%, respectively. An increase was also seen in the proportion of women who were counselled on danger signs of problems during pregnancy and

childbirth. **While these increases are encouraging, it should be noted that overall, the majority of women are not receiving such counselling, and that opportunities to inform antenatal clients about danger signs during pregnancy and childbirth are being missed.**

The endline household survey found that women who were advised on where to deliver were also more likely to delivery at a health facility, underscoring the value of birth preparedness counselling. To explore the association between the content of ANC and women’s care-seeking during childbirth, an index was created to quantify the number of antenatal services women received. Women were grouped according to whether they had received less than six or six or more out of eight diagnostic and health promotion antenatal functions. **Analysis of the association between high and low antenatal care content and care-seeking during delivery showed that women who received more services at ANC were more likely to choose to deliver at a facility** (Figure 1).

**Figure 1. ANC Services Provided and Facility Delivery**



## B. Normal Delivery Care

The vast majority of maternal deaths occur during delivery and in the immediate postpartum period. The WHO recommends that health facility staff have the appropriate skills, tools, and supplies to provide the appropriate of routine care to all women during labour and delivery, including:

- Diagnosis of labour
- Monitoring labour progress, and maternal and foetal well-being with the partograph
- Providing supportive care and pain relief
- Detection of problems and complications (e.g. malpresentation, prolonged or obstructed labour, hypertension, bleeding and infection)
- Clean, atraumatic delivery and immediate care of the newborn, including initiation of breastfeeding
- Newborn resuscitation
- Active management of the third stage of labour (AMTSL).

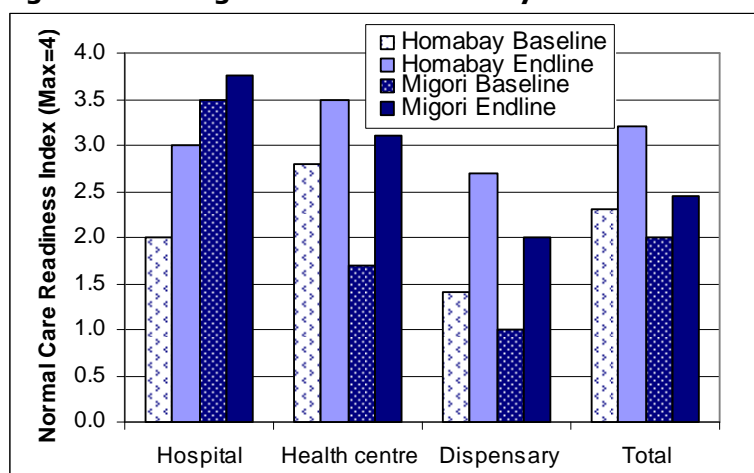
Improving normal delivery care and encouraging women to deliver with a skilled attendant were key elements of the SCI intervention package. In both districts, maternity care providers at all levels of the health system were trained in EMOC. These trainings had a focus on routine maternity care, including interpersonal and compassionate dimensions of care, as well as complications management. In addition to the training interventions, infrastructural support (solar panels, water tanks, etc.) and a range of obstetric equipment (delivery kits, delivery couches, etc.) was provided to each health facility to address gaps identified through the baseline assessment.

### **Availability and Quality of Normal Delivery Care Services**

The facility survey showed that all hospitals and health centres were routinely providing delivery care and had provided this care within the month prior to the baseline and endline survey. However, few dispensaries were providing such services at baseline, and at endline a marked increase was seen in the proportion that had offered this service within the past month.

To appraise the overall capacity of health facility to provide quality and skilled maternity care, a composite Facility Readiness Index was developed from functional indexes for infrastructure, equipment and supplies, provider training, and provider knowledge and skills. There was a significant increase in index scores in both districts from baseline to endline (see Figure 2). In Homabay, the mean Facility Readiness Index score increased from 2.3 at baseline to 3.2 (with a maximum score of 4) at endline, and in Migori, the mean score increased from 2.0 to 2.5. In Homabay, improvements in facility infrastructure, equipment, and provider skills accounted for most of the gain. In Migori, the increase was primarily attributable to improvements in equipment.

**Figure 2. Changes in Normal Delivery Care Readiness Index (Facility Survey)**

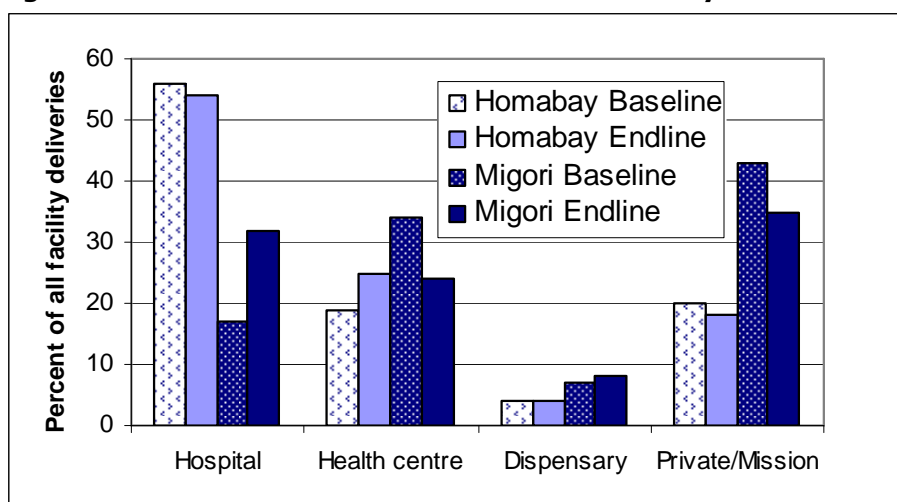


### **Utilization of Normal Delivery Care Services**

The household survey showed small increases in the proportion of live and still births that took place in health facilities in both districts. In Homabay, the percentage of births in health facilities increased from 27% at baseline to 28% at endline. In Migori district, the increase in the proportion of births at health facilities was greater, from 30% to 37%. There was an increase in delivery by a skilled attendant in Migori, which appeared to be at the expense of both TBAs and family members/friends. In Homabay, there were marginal increases in delivery by a nurse/midwife or clinical officer, and decreases in delivery by a doctor.

Use of the health system for delivery care was different in the two districts, and changed in different ways over time. In Homabay district, the vast majority of institutional deliveries (54%) took place in hospitals, and little change was observed over time (see Figure 3). A small increase was observed in the use of health centres for delivery in Homabay, and no change occurred in the use of dispensaries. In Migori district, a much lower proportion of deliveries took place in the district hospital at baseline (17%), and the use of this facility increased; at endline, 32% of institutional deliveries took place in the district hospital. Surprisingly, in Migori, the use of health centres during delivery declined, and there was a small increase in the use of dispensaries. In both districts, there was a small decrease in the use of private and mission facilities.

**Figure 3. Distribution of births across the health system**



Interestingly, the readiness or capacity of a health facility did not appear to strongly influence women's use of that site for delivery care. In both districts, women who lived close to a site with a "high" Facility Readiness Index score were only slightly more likely to deliver in that facility than women living close to a site with a low Readiness Index score. In contrast, a stronger association was found between the type or level of health facility (i.e. hospital vs. health centre and dispensary) and women's care-seeking, particularly in Homabay. Women whose nearest health facility was a hospital were much more likely to deliver in a health facility than women whose nearest health facility was a health centre or dispensary. These findings suggest that distance from a hospital is a key determinant of skilled care seeking in Homabay, and imply that many women are less likely to consider mid- and lower-levels a viable source of care.

### C. Complicated Delivery Care

Given that most life-threatening maternal health complications are sudden in onset and difficult to predict, high-quality essential obstetric care (EOC) services must be provided as close as possible to the communities where women live. The WHO recommends that elements of EOC can be safely provided at the each level of the health system as follows:

- **Dispensary level:** the provision of obstetric first aid, such as the administration of antibiotics and anticonvulsants; the injection of ergometrine and other oxytocics; and the administration of IV fluids.

- **Health centre level:** the provision of basic essential obstetric care, including the administration of oxytocics and antibiotics; assisted normal delivery; manual removal of placenta and vacuum aspiration to treat complications of incomplete abortion.
- **Hospital level:** the provision of comprehensive essential obstetric care, including blood transfusion and Caesarean deliveries.

These services must be complemented by well-functioning communication and transport linkages to ensure that referrals to appropriate-level facilities can be made promptly.

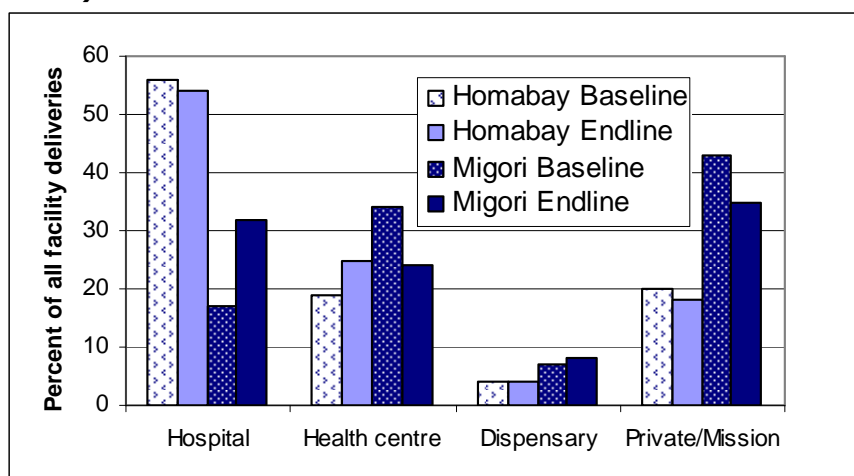
Project interventions to improve the availability of EOC were similar to those described earlier for normal delivery care—i.e. strengthening provider skills, addressing gaps in essential equipment, and improving the referral system through the provision of mobile telephones to all rural health facilities and to the district hospitals.

### **Availability and Quality of Complicated Delivery Care Services**

A composite EOC Readiness Index was developed to appraise the capacity of each facility to handle obstetric complications. The index took into account changes in provider skills for complicated delivery, equipment, supplies, and referral capacity (radio/phone/emergency vehicle). The mean score for all types of facilities increased from baseline to endline, with larger improvements being observed in Homabay, where the mean score increased from 1.8 at baseline to 2.9 at endline ( $p < .01$ ) (maximum score of 4) for all types of facilities (see Figure 4). A small increase in EOC Readiness Index scores was also observed in Migori (from 1.9 to 2.0). In Homabay, four facilities had the maximum EOC Readiness Index score of 4 at endline, compared to only two at baseline. In Migori, one facility had the maximum score at endline, compared to none at baseline.

The greatest increases in EOC Readiness Index scores were at dispensaries in Homabay and at health centres in both districts—an encouraging finding given that these facilities were an important focus of the intervention. A key factor contributing to those cases of low scores was the poor availability of essential drugs and supplies for EOC.

**Figure 4. Changes in Facility Readiness Index for Complicated Delivery (EOC Index)**



Despite increases in the readiness of most sites to provide complicated delivery care, little change was observed in the proportion of facilities that reported having provided

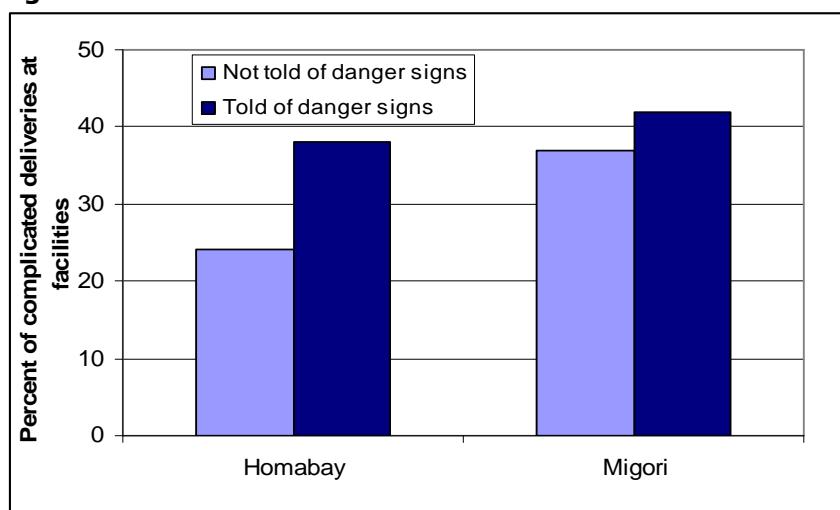
basic essential obstetric care (BEOC) services during the three-month period prior to the baseline and endline facility surveys. Administration of parenteral antibiotics and sedatives were the two main areas where large decreases were observed between baseline and endline surveys. A possible explanation for the apparent decrease in the provision of these functions could include either stockouts of essential drugs, as well as problems with the questionnaire during the baseline survey.\*\*

### **Utilization of Complicated Delivery Care Services**

Despite observed increases in EOC Readiness, a facility's capacity to provide EOC did not appear to be associated with care-seeking patterns; women living close to a facility with a high EOC Readiness Index score were not more likely to deliver at a health facility than women living nearest to a site with a low EOC Readiness score.

The household survey also found that there was little change in care-seeking for complications among all women. However, women who had been informed about danger signs during pregnancy and who were advised about delivery location were more likely to deliver at a facility when they experienced a complication than those who had not received this information (see Figure 5).

**Figure 5. Care-seeking for obstetric complications by counselling on danger signs**



### **D. Postpartum Care**

The period immediately following delivery is an important time for detecting and managing life-threatening obstetric complications. Postpartum care should therefore include the identification and management of maternal health problems and health promotion, as well as immunisations for newborns. In addition, postpartum care should include counselling, information and services for family planning.

The project interventions consisted primarily of training interventions to heighten maternity care providers' awareness of the importance of **early** postpartum care for new mothers (as opposed to the traditional 6-week visit that is mainly focused on the well-

\*\* The question did not specify the provision of antibiotics and sedatives for obstetric cases and could have therefore been interpreted as the administration of these drugs for any case, including non-obstetric cases.

being and immunisations of the infant). EMOC trainings included a module on postpartum care. A postpartum care register was also designed and introduced at all health facilities in both districts. All providers were trained to use the postpartum care register.

Supplies, such as contraceptive commodities were not supported through the project, as such items are requisitioned through national logistics systems. However, the project did produce informational booklets on maternal health care that included information on self-care during the postpartum period and the importance of a postpartum check-up for both mothers and newborns. The importance of a postpartum check-up was also the subject of a poster developed for display at health facilities.

### ***Availability and Quality of Postpartum Care Services***

The provision of maternal postpartum care requires only basic equipment and supplies, such as a private space for client counselling and examination, gloves, speculum, and consumables, such as contraceptive methods and client education materials. The availability of essential equipment generally improved in both districts. The availability of a range of contraceptives was good at baseline and did not change. Similarly, the availability of health education materials, such as information on postpartum care and family planning was fair at baseline and remained the same.

Large increases were observed in the proportion of health facilities that were routinely providing postpartum care services, including check-ups for mothers and newborns, as well as breastfeeding support, and family planning services. In addition, there was a large improvement in the percentage of health facilities that had provided maternal postpartum check-ups within one week of delivery during the previous month.

### ***Utilization of Postpartum Services***

The endline household survey showed a marked increase in the proportion of babies that had a postpartum check-up from a health professional in both Homabay (64% to 96% of women) and Migori (60% to 95%).

Though low, the number of women who received a post-partum check-up themselves, increased in both Homabay, (6% to 16%) and Migori (8% to 12%). In Homabay, there was a large increase in use of health centres for this service, whereas in Migori, women relied primarily on the hospital for postpartum care.

## **E. Characteristics associated with Skilled Care-Seeking during Childbirth**

As described earlier, the SCI intervention package included both facility- and community-level interventions to promote the use of skilled maternity care during childbirth. At the health facility level, these interventions were primarily comprised of strengthened birth preparedness counselling during antenatal consultations.

At the community-level, a behaviour change campaign was carried out, targeting women, men, female elders and community leaders with information on the benefits of skilled care during childbirth, as well as the importance of antenatal care, maternal postpartum care, and preparing for childbirth through household planning and discussion and setting aside funds for delivery. Community-level interventions also aimed to heighten awareness about the risks associated with pregnancy and childbirth, and improve individual, household, and community-level recognition of and responsiveness to obstetric complications. These community-level interventions were carried out only in

Homabay district, and one aim of the operations research study was to explore the “added value” of such activities on skilled care-seeking patterns.

A series of indexes were developed to measure exposure to health facility and community-level behaviour change interventions aimed at promoting birth preparedness, heightening awareness about maternal health and signs of complications (see Box 2). Separate indexes were created to distinguish between exposure to birth preparedness messages during health consultations, such as antenatal visits, and exposure to such messages through community-level events, such as community-level meetings, print materials, drama, and other traditional media. The indexes can be regarded as a series of indicators of: exposure to information about birth preparedness and safe motherhood either through the antenatal setting or through other community-level sources; adoption of positive attitudes toward birth preparedness; and, ultimately, planning for and using skilled maternity care during delivery.

In Homabay, there was a significant increase in three of the indexes that measured exposure to facility- and community-level interventions to promote skilled care during childbirth. In both districts, there was a large increase in exposure to birth preparedness messages during the antenatal setting from baseline to endline. In Homabay, where the community-level campaign was carried out, there was a measurable increase in exposure to messages about birth preparedness in the community setting, whereas in Migori district, there was a small decrease in such exposure at the community level. In Homabay there was a small increase in safe motherhood awareness index scores. No increase was observed in Migori.

**Box 2: Indexes to Evaluate Women’s Exposure and Response to Skilled Care Promotion Interventions**

**Birth preparedness counselling index.**

Told about danger signs

- Advised where to go if had symptoms of complications
- Given advice on where to deliver
- Source of birth preparedness information was a health professional

**Birth preparedness community campaign exposure index.** Had heard of birth preparedness (a key BCC message in the project)

- Agreed women should plan where to deliver
- Source of information was from printed material
- Source of information was from community /group events

**Safe Motherhood Awareness.**

- Agreed that a woman should plan ahead where to deliver and how to get there
- Agreed that a woman should plan what to do in event of serious complication
- Could name 3 or more danger signs during pregnancy, childbirth, and postpartum
- Agreed that any of the danger signs can be fatal

**Planning and Discussion**

- Discussed with her husband or family where she would deliver the baby
- Discussed with her husband or family how to pay for the delivery
- If the woman or anyone in her family put aside money to pay for the delivery

### ***Effect of the Intervention on Care-Seeking***

To explore whether or not increased exposure to the SCI demand-related interventions were associated with women's skilled care-seeking decisions, each birth/stillbirth was analysed according to whether the woman had high or low scores on each of the Intervention Exposure indexes. As a general pattern, higher scores on three of the four indexes correlated with an increased likelihood of seeking skilled care during childbirth. Safe motherhood awareness was the only index not associated with care-seeking.

Receiving counselling on birth preparedness during antenatal care appeared to strongly influence women's use of skilled care during delivery. Women in Homabay who had heard of at least two of the birth preparedness messages during antenatal consultations were more than twice as likely to seek skilled care at a health facility during delivery. In Migori, 50% of women with higher exposure to birth preparedness messages during antenatal care delivered at a facility, compared to 32% not exposed to these messages.

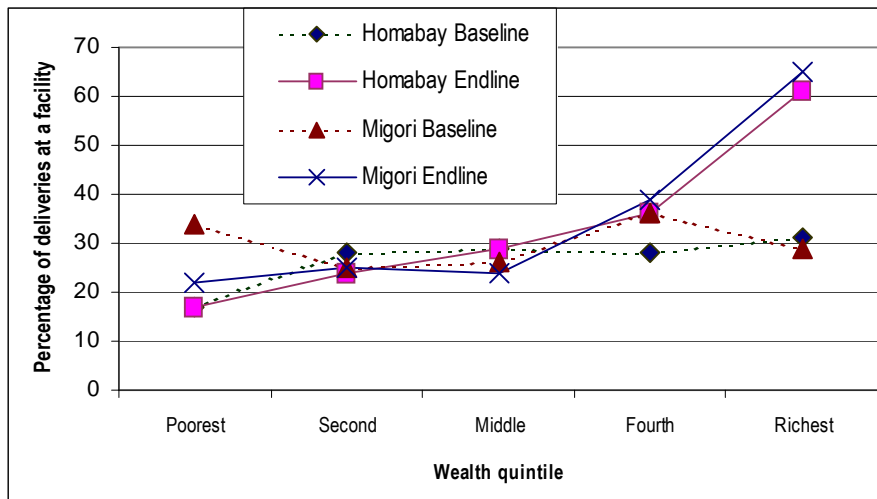
Household discussion and planning for birth was also strongly associated with use of skilled care during delivery. Women who reported having discussed and prepared for the delivery were almost twice as likely to deliver in a health facility than those with low scores on the Planning and Discussion Index. However, it is also important to note that there were very different patterns across time in the two districts regarding both the Birth Preparedness Counselling Index and the Household Planning and Discussion Index and their respective association with skilled care-seeking. In both districts, the proportion of women who received high levels of birth preparedness counselling and who had high scores on the Planning and Discussion index increased. These increases were larger in Homabay where the community-level behaviour change campaign was carried out. Nonetheless, higher levels of birth preparedness counselling and household preparation for birth did not translate to increased use of health facilities for delivery in Homabay. In fact, a smaller proportion of women with high Planning Index scores in Homabay sought delivery care at a health facility in the endline survey, whereas in Migori district, the opposite was true.

This result suggests that other factors were interacting with the effect of household planning and discussion in Homabay district in the endline survey. Analysis of the Homabay data by wealth quintile is interesting. Amongst women who planned for delivery there was a considerable increase in the gap between wealthy and poor women as to delivery at a facility. In the 2003 survey, among women with high Planning Index scores, there was only an 8 percentage point difference in use of skilled care between the poorest and richest quintile; 40% of women in the poorest quintile who had a high Planning Index score delivered in a health facility compared to 48% of women in the wealthiest quintile. At the endline higher levels of planning for delivery were no longer correlated with higher use of skilled care during childbirth among the poorest quintiles. There was a large decrease in the percentage of institutional deliveries among the poorest. Only 21% of the poorest quintile delivered at facility at endline compared to 63% of the wealthiest women. **This suggests that despite their increased planning, women in the poorest quintiles had more difficulties accessing maternity care in Homabay during the period covered by the endline survey.**

Age, educational status, and wealth were found to be significantly associated with skilled care-seeking during childbirth but there were differences between the two districts. In Homabay and as found in many other studies, younger women (aged 15 to 19) were more likely to deliver at a health facility. In Migori, educated women in both districts were more likely to deliver in a facility than uneducated women. Finally, as noted above, there was a significant change in the use of institutional deliveries among income

groups. At baseline there was not a large difference in delivery at a facility between the different wealth quintiles in either district (see Figure 6). However at endline, in both districts women in wealthiest quintile were three times more likely to deliver at a facility. This may reflect the high cost of delivery in these two districts and a decrease in the ability of poorer women to pay these costs.

**Figure 6. Delivery at a health facility, by wealth quintile**

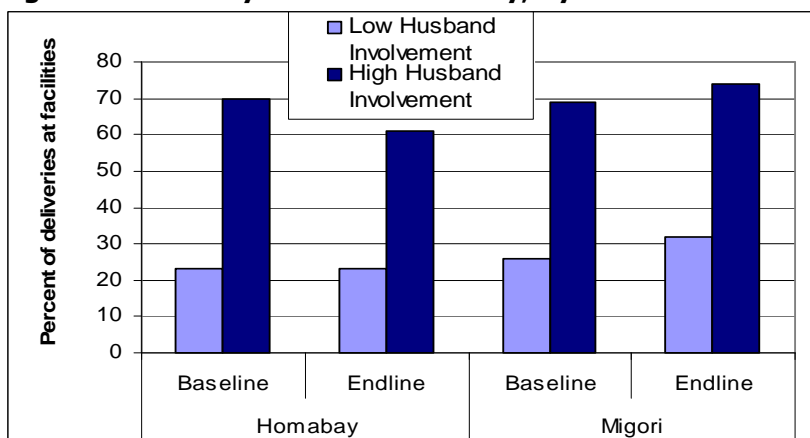


Family decision-making patterns related to health care-seeking were also significantly related to use of health facilities during childbirth. To examine family decision-making patterns quantitatively, a Husband Involvement in Decision-Making Index was derived based on the following variables:

- Woman recalled discussing with partner where to deliver
- Woman reported that husband made decision where to deliver
- Husband said he discussed with partner where to deliver
- Husband reported discussing with partner how to pay

In both districts, high scores on the Husband Involvement Index were associated with skilled care-seeking during childbirth (see Figure 7). However, overall, husband involvement in decision making was very low in both districts in Kenya.

**Figure 7. Delivery at a health facility, by Husband Involvement Index**



## IV. DISCUSSION AND INTERPRETATION OF FINDINGS

### A. Quality and Availability of Skilled Maternity Care

Important improvements were observed in the capacity to provide the continuum of maternal health services that were the focus of the intervention—namely antenatal care, delivery care, care for obstetric complications, and postpartum care. The largest improvements were observed at mid- and lower-level health facilities, which were a major emphasis of the project, given their greater accessibility to women in rural communities.

Alongside these improvements, there were increases in the provision of maternal health services at all levels, and a much greater number of health facilities in each district were routinely providing delivery care at the endline survey than was the case at the project outset. Large improvements were also observed in the provision of postpartum care to new mothers. However, there was little change in the provision of basic or comprehensive essential obstetric care (EOC) functions in either district, with the exception of removal of retained products, which increased considerably. As the provision of EOC functions may depend on the skills of and resources available to maternal health providers, as well as cases, it is difficult to ascertain why there was little increase in the provision of basic EOC functions at mid- and lower-level health facilities, particularly as improvements in the capacity to provide such care were observed. It should be noted, however, that maternity caseloads at most peripheral facilities in the two districts are very low, and thus they may receive few obstetric complications.

Evaluation findings related to provider skills were mixed, suggesting that more efforts are needed to support maternal health personnel in the provision of both routine and emergency obstetric care. In some areas, such as antenatal counselling, there were important improvements. Particularly noteworthy is the increase in the proportion of providers who routinely counsel women on birth preparedness, including place of delivery and danger signs during pregnancy—advice that was found to be closely linked to women’s use of health facilities for delivery care. At the same time, however, it appears that many essential diagnostic and preventive elements of focused antenatal care are not routinely provided to women during pregnancy.

Improvements were also observed in maternity care providers’ skills related to normal delivery care—especially use of the partograph to monitor labour and active management of third stage of labour. However, little improvement was observed in the area of complications management—a finding that was surprising given the large number of providers in each district who were trained in EMOC, an intensive two-week residential training that is competency-based. These results may have been due in part to the rotation of trained maternity care providers to positions where they were not practicing maternity care, which happens for various reasons. Evaluation challenges related to measuring providers’ skills and competencies may also be a potential factor in the limited improvement in provider skills related to obstetric complications.

### B. Utilisation of Skilled Care during Pregnancy, Childbirth, and the Postpartum Period

Despite improvements in the availability of maternal health services, relatively little change was observed in utilisation patterns in either district. The lack of change in skilled care-seeking is surprising given both the improvements in the availability of

maternity care, and decreases in mean distance to a facility where such care is provided. The outcomes in Homabay are particularly surprising given the fact that there was a significantly higher level of exposure to community-level BCC messages and an increase in household planning and preparation for birth in the district.

While additional analysis of these results is needed, increased poverty or decreasing ability to pay costs associated with maternity care may be an important factor in the lack of change in skilled care use in Homabay. At baseline and endline the vast majority of women (96%-97%) reported that they incurred out-of-pocket costs for institutional delivery care. At endline the mean costs of normal and complicated delivery care increased significantly, imposing an important barrier to care upon all women, especially the poorest. In multivariate regression analysis, wealth was significant as a determinant of skilled care-seeking in both districts at endline, though it was not significant at baseline. In addition, analysis of recent births and stillbirths according to the mother's wealth quintile showed that the gap between the rich and poor in the use of institutional delivery care had widened considerably between 2003 and 2006. Moreover, while high levels of household planning for delivery in 2003 appeared to mitigate or minimise wealth differentials in access care, in 2006 the three poorest quintiles were much less likely to have skilled delivery care, despite their planning.

Another key contextual issue in Homabay is that the majority of facility births take place in the hospital, where costs of care are highest. The capacity of health facilities did not appear to influence women's care-seeking patterns during the course of the intervention, and many women bypass their local health facilities to seek care at the hospital—a decision that has cost implications for them, and for the health system more broadly. Given that historically dispensaries and many health centres in the intervention area did not provide delivery care, more time may be needed to build communities' confidence in their local health facility for such services.

While these findings highlight the limitations of an intervention such as the Skilled Care Initiative to address the varied socio-demographic determinants of maternity care-seeking, the evaluation results also point to the importance of antenatal care as a platform for promoting skilled care during delivery. Both the content and quality of antenatal care were shown to be strongly associated with skilled care-seeking. Women who received counselling on birth preparedness were much more likely to deliver in a health facility, irrespective of education, wealth, or distance from a health facility. Similarly, women who received more of the essential diagnostic and health promotion functions of ANC were also more likely to deliver in a health facility. These findings are important as they point to a relatively low-cost, but effective, intervention that can easily be scaled up.

Other interventions aimed at promoting the use of skilled care during delivery did not appear to have a strong association with care-seeking. No increase in safe motherhood knowledge and awareness was observed in Homabay, despite measurable exposure to the campaign. However, it should be noted that knowledge about maternal health and obstetric complications was quite high at baseline, and was not associated with use of skilled maternity care. This finding suggests that care-seeking in this context is influenced by factors other than knowledge and factual information about maternal health—factors such as distance to a health facility, funds, transport, etc. Finally, the evaluation results highlight the critical role that husbands and male partners may play in skilled care-seeking, since high male partner involvement in planning for delivery was associated with skilled attendance at birth. Overall, however, relatively few husbands were involved in care-seeking decisions-making.

## V. CONCLUSION AND RECOMMENDATIONS

The experience and results of the Skilled Care Initiative highlight a number of key issues for subsequent efforts to increase rates of skilled attendance during childbirth in Homabay and Migori districts, and nationally in Kenya, including the need to:

- **Ensure the provision of focused antenatal care (FANC), including individualized birth preparedness counselling on place of delivery.** Women who received counselling on place of delivery and danger signs during pregnancy were more likely to deliver at a health facility. Given the fact that the vast majority of women in Kenya have at least one antenatal care visit during pregnancy, it is critical to ensure that birth preparedness counselling is given. This is a relatively low-cost intervention in comparison with community-level mobilisation and sensitisation campaigns. As such, it should be a key element of any skilled care strategy.
- **Improve national logistics systems and the availability of essential drugs and supplies for obstetric care.** Gaps in essential supplies and drugs were found at all levels of the health system and for all elements of the continuum of essential maternal and newborn health services. It is crucial that forecasting and purchasing systems at the national level be reviewed and strengthened to address these gaps. The content of the drug kit should be reviewed and updated, as needed, to ensure that all facilities providing maternal health services, receive uninterrupted stocks of these essential items needed for obstetric care, as providers, no matter how skilled, cannot save women's lives without these inputs.
- **Strengthen mid- and lower-level health facilities.** Peripheral health facilities are the most accessible, especially for the rural poor. In addition, the costs of care—both to women and to the health system—are lowest at these sites. Traditionally, however, these sites have received little investment and support, and many, if not most, are challenged by a crumbling physical infrastructure, shortages of skilled personnel, serious gaps in essential obstetric equipment, and limited referral capacity. In contexts where these sites are handling the majority of deliveries, addressing these gaps is urgent.
- **Improve financing of the health system.** The vast majority of women incurred out-of-pocket expenditures for maternal health services, even at mid- and lower-level sites that officially provide services free of charge, and these expenses increased over the period studied, despite the change in cost-sharing policy. The costs of complicated delivery care threaten to impoverish a household and may be a strong deterrent against health care-seeking. These findings underscore the critical need to address the main costs to women, which were the purchase of drugs and supplies for care.
- **Improve the training and deployment of skilled attendant cadres.** Overall, there is a shortage of skilled attendants, which has negative consequences for the availability and quality of maternity care. Facilities providing maternal health care need sufficient staffing to ensure round-the-clock care, as communities lose confidence in a site that is not reliably open. In addition, it is crucial to review the content of pre-service training programmes to ensure that essential competencies of a skilled attendant are acquired, and overall manpower shortages within the health system must be addressed to make care available to the women who need it.
- **Focus on routine elements of maternal health services, in addition to complications.** While improvements were observed in the areas of antenatal care, normal delivery care, and postpartum care, there are still gaps in the content of



these routine services that reduce the potential benefits of these health interventions in terms of preventing maternal mortality. Many women do not receive essential elements of focused antenatal care, and postpartum care visits are rarely used as an opportunity to assess the health status of new mothers and ensure that they are recovering well from childbirth. Given that a large proportion of maternal deaths take place in the early postpartum period, such missed opportunities can cost women their lives.

Overall, the results of the project underscore the need for context-specific approaches that are based on the capacity of the health system and maternity care utilisation patterns of communities. Such approaches hold great promise for improvements in the availability of skilled maternity care and increasing the likelihood that women will be able to receive care that prevents complications *and* access life-saving care when complications arise.

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To obtain a copy of the full report on the Skilled Care Initiative in Kenya, please contact:

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