TESTING APPROACHES FOR INCREASING SKILLED CARE DURING CHILDBIRTH: KEY FINDINGS

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1. 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,[*] 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 5th 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. In some countries, however, skilled attendance has been decreasing, and globally, only 63% of deliveries are assisted by skilled attendants, and only 40% of births take place in a health facility[‡]

2. FCI'S Skilled Care Initiative

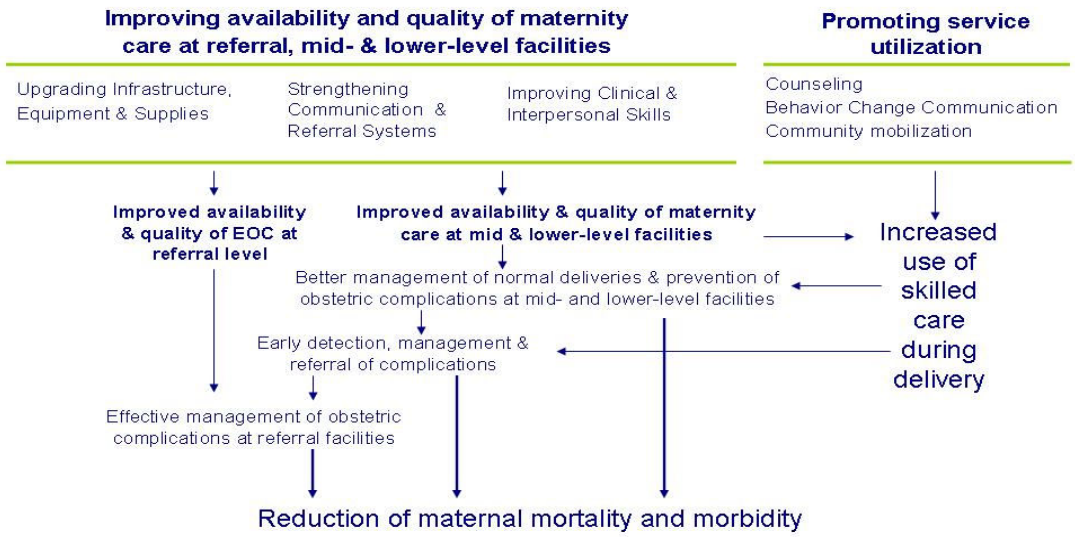
In 2000, Family Care International (FCI), with support from the Bill and Melinda Gates Foundation, launched the Skilled Care Initiative—a five-year project in four rural, under-served districts in Burkina Faso, Kenya, and Tanzania where the majority of women give birth with unskilled providers. The specific objective of the Skilled Care Initiative was to increase use of skilled maternity care in the intervention areas and evaluate factors linked to observed changes.

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

[†] World Health Organization. *Coverage of Maternal Care: A Listing of Available Information, Fourth Edition.* (Geneva: WHO, 1997)

[‡] UNICEF. *UNICEF Global Database on Skilled Attendant Delivery,* http://www.childinfo.org/areas/deliverycare/countrydata.php (accessed September 30, 2007)

BOX 1. CONCEPTUAL FRAMEWORK FOR FCI'S SKILLED CARE INTIATIVE



As illustrated in Box 1, project activities focused on two main areas:

- **Improving** the availability and quality of maternity care at health facilities, and
- **Promoting** increased utilisation of maternity services by women, through counselling and community events.

The project focused on improving maternity care where the need is greatest—in the health centres and dispensaries closest to women—and motivating women and their families to use these nearby services. It also aimed to strengthen obstetric care at the first referral level—the hospitals where women are referred with more serious complications.

District-level interventions were complemented by national-level activities aimed at strengthening government policies and strategies related to maternal health, including the development of clear standards of obstetric care, and the authorisation of mid-level providers to carry out life-saving obstetric procedures. In addition, the project had a strong evaluation component designed to provide reliable data on the feasibility and effectiveness of the approach.

Implemented in the four project districts from 2003 to 2005, health systems interventions to improve maternal health care included:

- **Infrastructure strengthening:** A range of infrastructure improvements were made at facilities, including the provision of solar equipment and water tanks, and repair of leaky roofs and damaged walls. In addition, FCI worked with the Ministries of Health to upgrade the surgical facilities of selected referral sites.
- **Addressing equipment and supply gaps:** Health facilities in the project districts received a range of essential obstetric equipment, such as blood pressure gauges, weighing scales, delivery kits, delivery beds, autoclaves for instrument sterilisation, examination lamps, incubators, etc. In Tanzania and Burkina, FCI also worked with

Ministry of Health partners to strengthen logistics systems and improve the availability of essential obstetric drugs and supplies.

- **Improving provider skills:** More than 300 maternity care providers were trained in essential obstetric skills, such as active management of the third stage of labour, use of the partograph, infection prevention, and management of obstetric complications. Training was also provided in interpersonal communication and counselling, with an emphasis on compassionate treatment of clients and birth preparedness counselling. To reinforce the trainings and to address the lack of standards and protocols, FCI worked with the Ministry of Health in each country to develop job aids and clinical reference tools on obstetric care.
- **Strengthening referral systems:** Ambulances were purchased for district hospitals in Burkina Faso and Tanzania. In all three countries, two-way radio call systems or cellular phones were supplied to most mid- and lower-level facilities to enable them to call the district hospital to request emergency transport or receive advice on managing or stabilising complicated cases.
- **Strengthening supervision and health service management:** FCI worked with Ministry of Health partners to improve maternal health record-keeping. To encourage a problem-solving approach among facility managers and staff, FCI introduced COPE® for Maternal Health Services, a quality improvement process, at selected health facilities in each country.

To complement the health systems interventions, FCI also launched behaviour change and community mobilisation efforts to encourage health-seeking behaviours and build community support for the use of skilled care. These efforts included counselling on birth preparedness during antenatal consultations, as well as behaviour change communication (BCC) campaigns at the community level, which were designed to:

- Heighten awareness of the risks associated with pregnancy and childbirth;
- Promote birth preparedness and planning for delivery;
- Strengthen recognition of and responses to obstetric complications at household and community levels;
- Promote the use of skilled care throughout pregnancy, childbirth, and the postpartum period.

The behaviour change interventions targeted pregnant women, as well as those with important roles as household decision-makers or community influentials: husbands, female elders, community leaders, religious leaders, and women's group leaders. Carried out at the village level in almost every community, these activities included the use of traditional health education tools, such as printed pamphlets and posters, as well as a variety of other approaches, such as participatory drama and performing arts, and community discussion and dialogue.

3. 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. In Burkina Faso and Tanzania comparable comparison districts were selected where no intervention was conducted. In Kenya there where two intervention districts, one where one health facility interventions were implemented, Migori district, the other, Homabay, where both health facility and community behaviour change

interventions were conducted. This design was selected with the aim of assessing the "added value" of the community behaviour change component.

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.

Baseline assessments were conducted in 2001; the sample of health facilities included 137 public, private, and mission facilities in the six intervention and comparison districts that were known to be providing maternity care. The endline survey was conducted in 2006, with a slightly larger sample of 147 facilities as maternity care had been introduced at a number of additional health facilities in Kenya.

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 household 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, which where then adapted for the survey. Women were asked about *all* of their births and stillbirths in the two years prior to the survey.[§] 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.

Almost 17,000 households were surveyed in the six districts during the baseline and endline, and within each household, all women of reproductive age and their co-resident husbands were interviewed. A total of 8,040 women with recent pregnancies (i.e. had had a live or still birth within the previous two years) were interviewed in the 2003 baseline and 8,300 in the 2006 survey. As very few surveys have collected such extensive data on women's care-seeking behaviour before, during and after childbirth, this research provides a unique

[§] Since there is evidence that early pregnancy losses are underreported in surveys these were excluded.

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

	Number of women interviewed		Number of women with recent live/still birth (within 24 months)	
	2003	2006	2003	2006
Burkina Faso	4267	7569	2502	3493
Kenya	5332	5371	2110	2221
Tanzania	4262	5585	3428	2545
Total	13861	18525	8040	8300

Data Analysis
Health facility data were entered in either EPI-info or SPSS and analysed in SPSS. Household survey data were entered in CSPro and converted to SPSS for analysis. 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."

4. 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 the four districts through Life-Saving Skills (LSS) or 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, Kenya, Tanzania and Burkina Faso to aid providers in providing essential information and counselling during antenatal consultations.[**]

Capacity to Provide and Provision of ANC Services
The vast majority of health facilities in the four intervention districts provided ANC services at both baseline and endline. Overall, the facility survey showed that there were significant improvements in all four intervention districts in terms of health providers' ability to

[**] It should be noted that the SCI in Ouargaye focused in particular on 14 health centres and the district hospital, while the district's remaining six health centres received financial support from other donors. The SCI community-level interventions aimed to cover the entire district.

spontaneously mention key diagnostic and health promotive ANC functions. In Kenya, 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 in Tanzania and Kenya were reasonably well stocked with essential equipment and consumable supplies for ANC, but not in Burkina Faso, where the greatest improvement in available equipment for ANC was made.

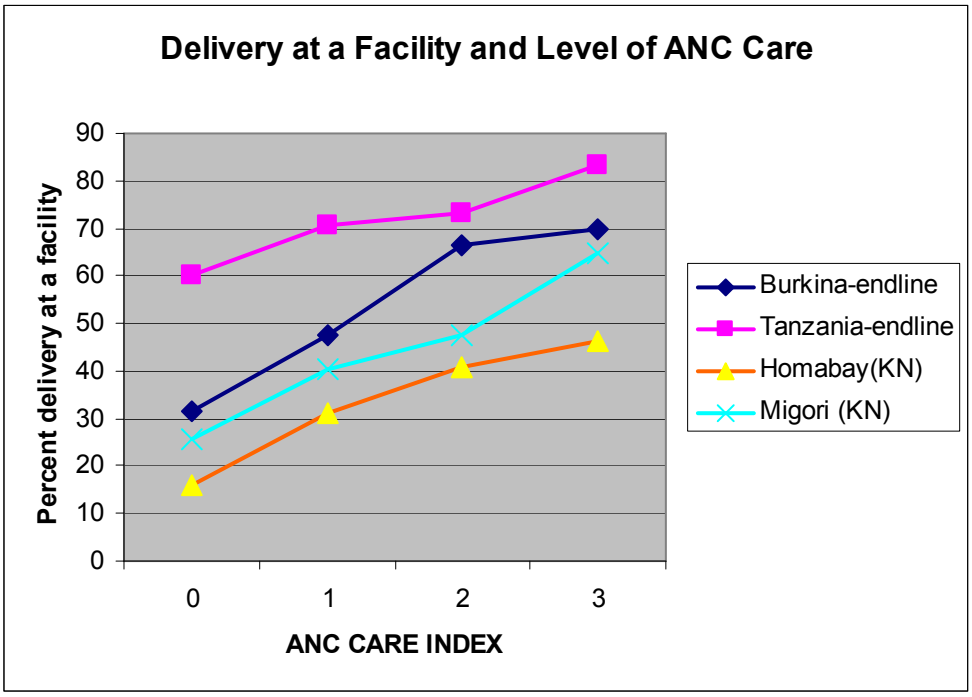
The content of ANC was particularly good in Burkina Faso where women at baseline already received an average of 6.4 out of 8 services and it went up further to 6.8 at endline, compared to 5.1 in Kenya and 5.7 in Tanzania at endline. The services assessed included: checking weight, checking height, taking blood pressure, taking urine sample, given iron tablets, blood sample taken, anti-malaria prophylaxis given, advised where to deliver.

Utilization of ANC Services

In all districts ANC utilization was high at baseline and increased even further at endline (greater than 90% at endline in Burkina Faso and Tanzania and 89% in Kenya) however not all women who use ANC choose to deliver at a facility. Other studies (Bloom et al, 1999) have shown the importance of the quality and content of ANC in influencing women's decision to deliver in a health facility. The SCI community behaviour change campaign encouraged women to go for ANC early and often, while the ANC consultations themselves were used as an entry points for counselling on seeking skilled care for childbirth.

To explore the quantity and quality of women's ANC consultations, a composite index was developed that includes clinical services received (if women received more than 5 out of 8 ANC services), the timing of the first ANC visit (< 5 months gestation) and whether she had 4 or more visits during her pregnancy. The maximum score for this composite index was 3. According to this index, women in Burkina Faso received the highest quantity of ANC (in terms of the number, timing and content of visits), with a mean index score of 1.8, compared to 1.2 in the two Kenya intervention districts, and 1.1 in Tanzania. In all intervention districts, women receiving higher levels were more likely to deliver at a skilled care facility (Figure 1). The association of ANC care with skilled care-seeking during childbirth was greatest in Homabay, Kenya; women with higher composite ANC index scores were three times more likely to deliver at a facility than women with lower scores. In Burkina women with higher levels of ANC were more than twice as likely to deliver at a facility as women with lower index scores.

Figure 1. Quantity and Content of ANC and Delivery at a Facility in Intervention Districts



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. Maternity care providers at all levels of the health system in all four districts were trained in LSS or 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.

Capacity to Provide and Provision of Normal Delivery Care Services
At baseline and endline, all facilities in the districts in Tanzania and Burkina Faso and all of hospitals and health centres in Kenya were routinely providing delivery care and had provided this care within the month prior to the survey. However, few dispensaries in Kenya 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.

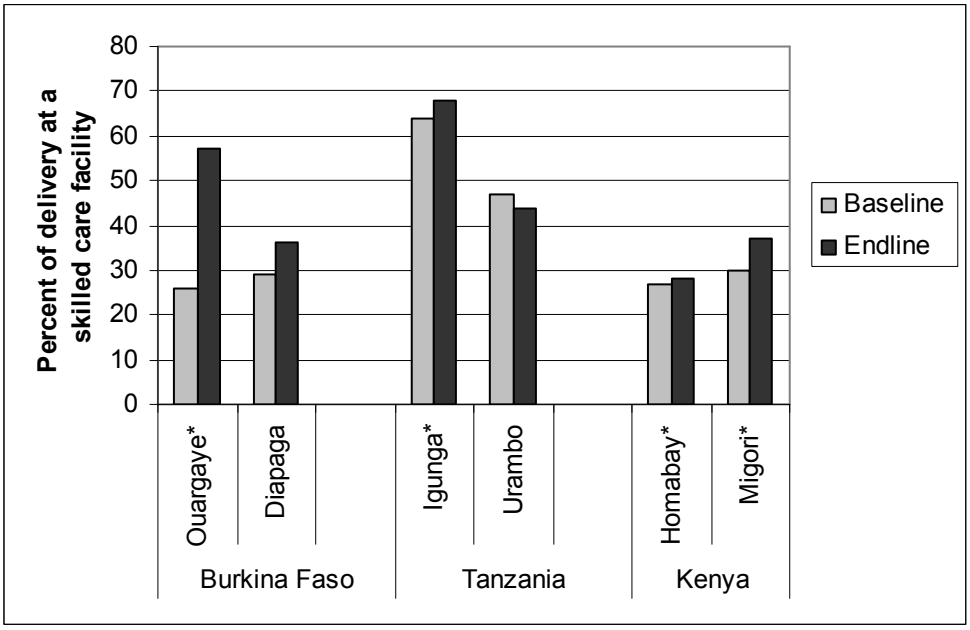
To appraise the overall capacity of health facilities to provide quality and skilled maternity care, a composite Facility Readiness Index was derived from functional indexes for infrastructure, equipment and supplies, provider training, and provider knowledge and skills. There were significant increases in index scores in all intervention districts from baseline to endline. These improvements were most marked in the health centres and dispensaries, which is encouraging as these lower level facilities handle most deliveries in both Burkina Faso and Tanzania. Changes were primarily due to improvements in infrastructure and equipment. Maintaining the supply of essential drugs was not met in all districts.

Utilization of Normal Delivery Care Services
In three of four intervention districts there was an increase in the percent of women who delivered at a facility (Figure 2); over time and in contrast to the comparison districts, more women in the intervention districts in Burkina Faso and Tanzania sought skilled maternity care at a health facility. The results for Burkina Faso are particularly noteworthy—an increase in facility deliveries from 26% to 57% in Ouargaye—and even more striking when contrasted to Diapaga, the comparison district, which has been Burkina Faso's best performing health district for years. Diapaga showed only a small increase in the use of skilled care (from 29% to 36%).

The increase in Tanzania's intervention district, Igunga, was smaller, but still noteworthy, given high use of health facilities for delivery care at baseline and a 30% increase in mean out-of-pocket expenditures for normal delivery care; use of a health facility increased from 64% to 68%, while the comparison district, Urambo, declined from 47% to 44%.

In Migori district, Kenya, where only health systems interventions were introduced, a modest increase was observed in the use of skilled care for all deliveries, from 30% to 37% (Figure 3). In Homabay district, where health systems improvements were complemented by community-level behaviour change communications efforts, no significant change was observed. It is noteworthy, however, that more than two-thirds of women delivering in a health facility in Homabay reported having to pay for transport to the health facility, compared to less than 10% in the intervention districts in Burkina Faso and Tanzania. In addition, the mean costs of normal and complicated delivery in the two Kenya districts represented 17% and 35%, respectively, of average household income.

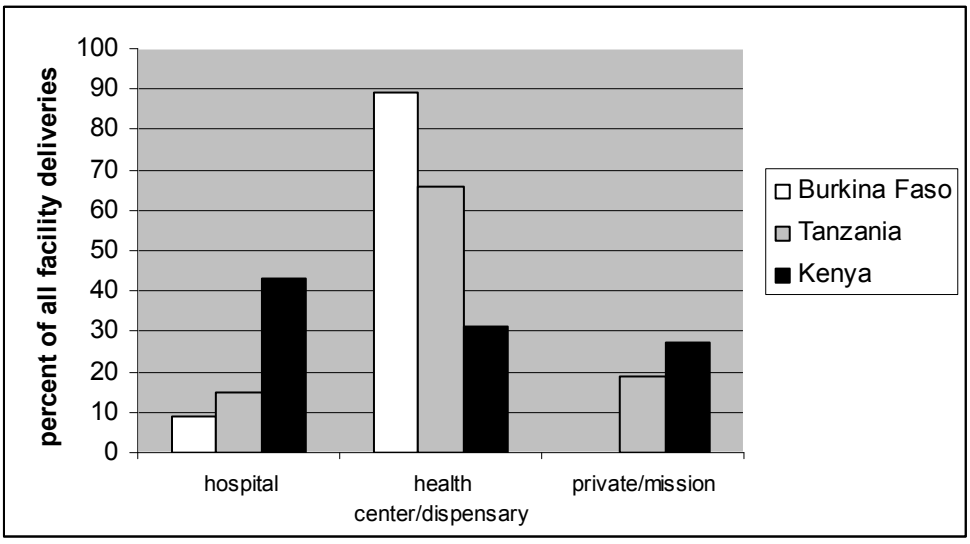
Figure 2. Changes in Delivery at Skilled Care Facilities



* Intervention Districts

Important differences were observed between the three countries in patterns of using the health system (Figure 3). In Burkina Faso and Tanzania, the majority of facility deliveries were at health centres and dispensaries. In contrast, in Kenya, the majority of institutional deliveries took place in hospitals or private facilities; 43% percent of deliveries facility births were at government hospitals and 27% at private facilities. The higher cost of the government hospitals and private facilities contributes to the very high out-of-pocket costs incurred by women in the Kenya districts for delivery care. As described above, efforts to upgrade the capacity of mid- and lower-level facilities in Kenya were generally successful, however, it may be that more time is needed to increase women's confidence and use of these sites, and to shift deeply entrenched patterns of utilising the health system.

Figure 3. Distribution of Births across the Health System in Intervention Districts



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 all four intervention 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.

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 oxytoxics; and the administration of IV fluids.
- ***Health centre level***: the provision of basic essential obstetric care, including the administration of oxytoxics 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.

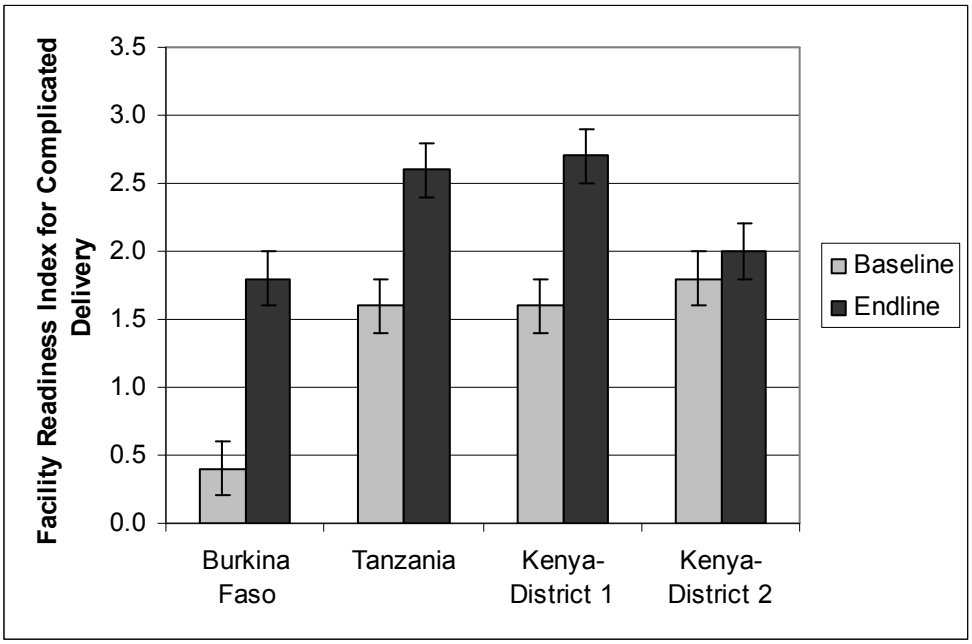
Project interventions to improve the availability of EOC were similar to those described earlier for normal delivery care—i.e. strengthening provider skills, addressing gaps in essential equipment, and improving the referral system through the provision of mobile telephones to all rural health facilities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

Capacity to Provide and Provision of Complicated Delivery Care Services

A composite EOC Readiness Index was derived from the facility survey to appraise the capacity of each facility to handle obstetric complications (Figure 4). 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 in Kenya, especially in Homabay. In Burkina Faso, improvements were observed at the health centre level, while in Tanzania, the largest improvements in capacity to provide complicated delivery care were observed at health centres and dispensaries

In Kenya and Tanzania, little change was observed in the availability of obstetric drugs and supplies for complicated deliveries. These gaps were most prevalent at mid- and lower-level health facilities, which operate on different procurement systems than hospitals. In addition, in all four intervention districts, only small improvements were observed in provider knowledge and skills related to delivery complications—a result that was surprising given that the vast majority of maternity care providers had been trained in either LSS or EMOC. Similarly in Burkina Faso there was only a small improvement in provider skills, and at endline, the district hospital still referred the majority of recent obstetric complications to the regional hospital.

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



Utilization of Complicated Delivery Care Services

In Burkina Faso and Tanzania, there was an increase in the percent of deliveries at a facility among women who reported signs of complications (32% and 15% percentage points increase, respectively). In addition, delivery at a health facility was much higher among women reporting complications in the Burkina Faso and Tanzania intervention districts (66% and 85%, respectively) than use among all women (57% and 68% respectively). Another notable finding from Burkina Faso was a significant increase in the percentage of poor women with complications delivering at a health facility from 15% to 66%. In Kenya, amongst women reporting complications there was no increase in facility deliveries over time or compared to all women.

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-being and immunisations of the infant). LSS and EMOC trainings included content on postpartum care. A postpartum care register was also designed and introduced at all health facilities in Tanzania, and in Homabay and Migori. All providers in these districts 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 in Kenya and Tanzania 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 in Kenya.

Capacity to Provide and Provision 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 improved modestly in Tanzania and to a larger extent in Kenya and Burkina Faso. The availability of a range of contraceptives was good at baseline and did not change in Kenya. In Tanzania, contraceptive supplies were good at baseline and improved, however, in Burkina Faso, only contraceptive pills and condoms were in stock at health facilities. The availability of health education materials, such as information on postpartum care and family planning was fair at baseline and remained the same in Kenya, while it improved in both Burkina Faso and Tanzania.

Large increases were observed in the proportion of health facilities that were routinely providing postpartum care services in all four intervention districts, including check-ups for mothers and newborns. 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 all four districts in the proportion of babies that had a postpartum check-up from a health professional, close to 100% now up from as low as 60% in Migori and 63% in Burkina Faso.

The use of maternal postpartum care improved as well, especially in Burkina Faso, from 40% at baseline to 57% at endline. In Homabay and Migori, where women's use of maternal postpartum care was extremely low (6% and 8%, respectively), use increased to 16% and 12%. In Tanzania, the percent of women having a postpartum check-up increased from 24% to 27%.

5. Exposure to Skilled Care Promotion Interventions

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. In Kenya, 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 derived 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 been 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.

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

Husband Involvement Index
- Woman recalled discussing with husband where to deliver
- Woman reported husband made the decision where to deliver
- Husband said he discussed with his wife where she would deliver
- Husband reported discussing with his wife how to pay for the delivery

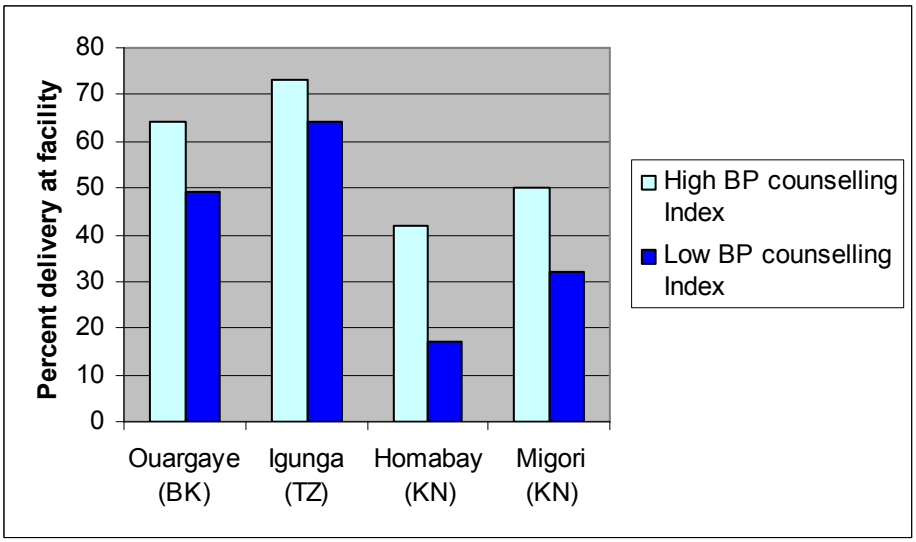
Planning and Discussion
- Discussed with her husband or family where she would deliver the baby
- Discussed with her husband or family how to pay for the delivery
- If the woman or anyone in her family put aside money to pay for the delivery

Analysis showed improvements in all intervention districts in most indexes between baseline and endline. In all four intervention districts, the Birth Preparedness Counselling Index showed that there were significant improvements in the content of antenatal counselling on birth preparedness, with more women reporting that they had heard about birth preparedness from a health professional, advised where to deliver during antenatal care visits and informed about danger signs and where to go for complications. The greatest change in counselling

content occurred in Burkina Faso, where, at baseline, women received little counselling on these topics. At endline, women in Burkina Faso reported receiving the highest levels of counselling compared to the other two countries.

Women who have higher levels of BP counselling were more likely to deliver at a facility (Figure 5). When comparing the place of delivery of women who received "higher exposure" to counselling to women with "lower exposure", rates of facility delivery were 64% and 49% in Burkina Faso (p<.001), 42% and 17% in Homabay (p<.001), 50% and 32% in Migori (p<.001) and 73% and 64% in Tanzania (p<.05).

Figure 5. Delivery at a Facility and Birth Preparedness Counselling



In the three districts where the community-level behaviour change activities were implemented (Ouargaye, Igunga and Homabay), the Campaign Exposure Index showed significant increases in exposure to information about birth preparedness from community-level sources, such as community events, local leaders, drama and printed materials. Those women who reported higher levels of exposure to the community events were more likely to deliver at a facility. In Migori , where no behaviour change campaign was implemented, there was no change in the Campaign Exposure Index. As with the Birth Preparedness Counselling Index, the Campaign Exposure Index showed the greatest change in community exposure in Burkina Faso, with relatively modest changes in the Homabay and Tanzania. The Campaign Exposure Index scores increased in the comparison district Diapaga (Burkina Faso) but not in Urambo (Tanzania).

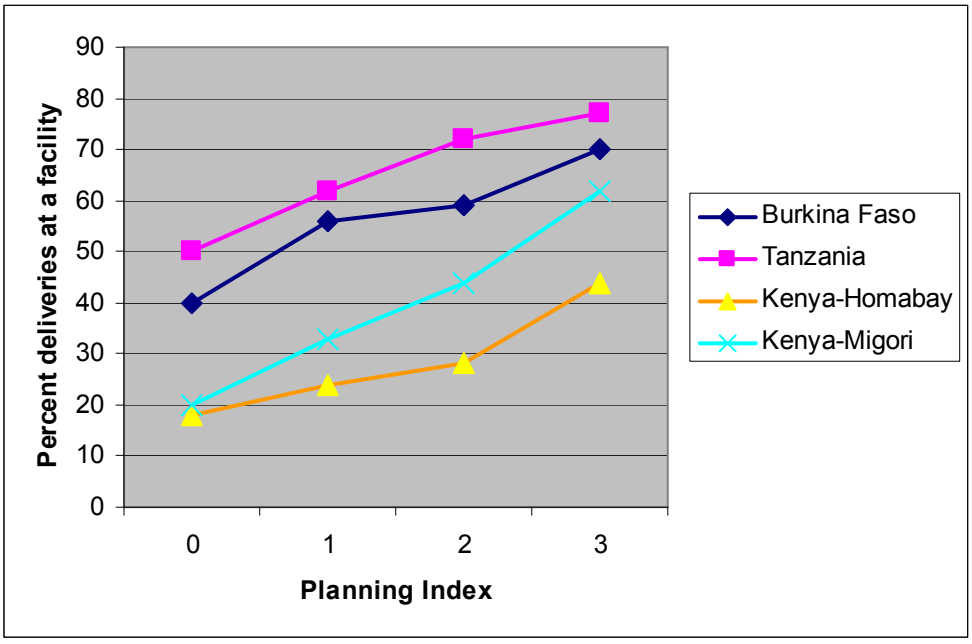
The SCI community-level behaviour change communication campaigns also emphasised signs of obstetric complications and the importance of seeking care in addition to preparing for childbirth. The Safe Motherhood Awareness Index showed increases in knowledge about complications and birth preparedness in intervention and comparison districts in both Burkina Faso and Tanzania. Generally, however, women with higher knowledge and awareness about safe motherhood were not more likely to deliver in a health facility. Higher Safe Motherhood Awareness Index scores were associated with increased use of health facilities in only two districts: Burkina Faso (p<0.01) and Migori, Kenya (p<.01).

Family decision-making patterns also appear to be strongly linked to seeking skilled care. In all three countries, women were considerably more likely to seek skilled delivery care at a

health facility when the husband was the key decision-maker, compared to the woman or her mother in law. However, there were considerable differences in household decision-making patterns between the three countries. In Burkina Faso, at endline, 70% of women reported their husband was the primary decision-maker about care during childbirth, as did 45% of women in Tanzania. In contrast, in Kenya about half of the women in both districts identified themselves as the main decision-makers about care during childbirth, and the husband was the decision-maker in only 25% of families. Women in Tanzania had the highest Husband Involvement Index (1.6) with the greatest change from baseline (0.4 to 1.6, p<.001).

Both facility-based counselling and community-level campaign activities encouraged household planning and discussion about childbirth. The Planning and Discussion Index showed significant increases in household preparation for birth in all intervention districts, including Migori where only facility-based activities took place. Univariate and multivariate analysis showed that household discussion and planning was strongly associated with skilled care-seeking during delivery (Figure 6). When comparing the place of delivery of women who had higher discussion and planning scores to women with lower discussion and planning scores, rates of facility delivery were 65% and 48% in Burkina Faso (p<.001), 37% and 21% in Homabay (p<.001), 50% and 26% in Migori (p<.001) and 74% and 56% in Tanzania (p<.05).

Figure 6. Delivery at a Facility and Household Discussion and Planning in Intervention Districts



In summary, women in the intervention districts reported being counselled more on birth preparedness during antenatal care, and were more likely to have been exposed to project messages in the community. There was also a greater degree of household planning and discussion in all districts at the end of the project. The changes were greater in the intervention districts then in the comparison districts, where often no change or a decrease was observed.

6. Association of Demographic and Intervention Factors with Women's Use of Institutional Delivery Care

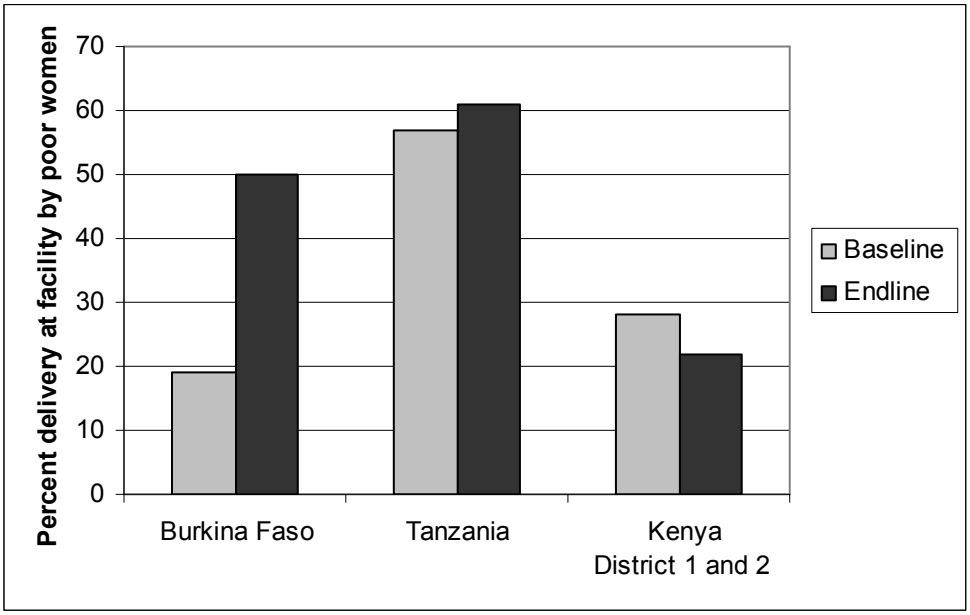
The importance of the various exposure indexes described above as determinants of women's decision to deliver at a facility was examined in a multivariate model. Key socio-demographic variables (education, age, wealth, and distance to a facility providing maternity care) were included in the model to control for possible interaction.

With the inclusion of demographic factors, three exposure indexes consistently remained significant: husband involvement in decision-making, discussion and planning within the family, and having received counselling on birth preparedness during ANC. Exposure to the birth preparedness message during community events was not significantly associated with an increased likelihood of delivery in a facility; nor was awareness and knowledge of the importance of skilled delivery care. Those women who reported that their husbands were involved in care-related discussions and planning were much more likely to deliver at a facility than those whose husbands were less involved in decision-making, underscoring the crucial role that the support of male partners may play in skilled care-seeking behaviours. Husband involvement was highest in Burkina Faso and Tanzania, the countries with the highest levels of delivery at a skilled care facility.

In addition, analysis confirmed that care-seeking in the intervention districts was influenced by a range of demographic factors similar to those identified in previous studies. Generally, younger women were more likely to deliver at a health facility, as were women who live closer to a facility.

The demographic factor of most interest was that of wealth status of women and families. An important objective of the project was to make skilled care available to all women, regardless of socio-economic status. The data on use of skilled care demonstrates that the project was effective in improving access amongst poor women (defined as the lowest two wealth quintiles) in Burkina Faso and Tanzania (see Figure 7). In Burkina Faso, before the intervention only 19% of poor women sought skilled delivery care, compared to about 34% of the wealthy women (defined as the three highest wealth quintiles). In the endline survey, use of skilled maternity care increased among all income groups, and the access gap between the poorest and richest groups narrowed substantially; 50% of the poor women used skilled care, compared to 60% of wealthy women. In Tanzania, there was also an increase in delivery at a facility by poor women. In contrast, in both districts in Kenya, there was a significant decrease (28% to 22%, p=.001 for two districts combined) in the percentage of poor women who delivered at a facility. A plausible explanation for the low levels of skilled care utilisation in Kenya overall could be the high burden of cost of delivery to poor women.

Figure 7. Changes in use of Skilled Maternity Care Among Poor women



7. 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 in Kenya in particular 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, especially in Burkina Faso. There was little overall change in the provision of basic or comprehensive essential obstetric care (EOC) functions in Kenya or Tanzania—which could be the result of result of either low caseloads or gaps in essential drugs and supplies. The provision of basic EOC improved in Burkina Faso, however, the high number of obstetric referrals from the district hospital in Ouargaye to the regional hospital remained a concern.

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, especially in Kenya and Tanzania.

Modest 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 either LSS or EMOC, intensive two- to three-week competency-based trainings. 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 happened in Kenya and Tanzania, or the loss of 30% of trained providers between the end of the project and the project evaluation in Burkina Faso. 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

While it is important to improve the quality and availability of maternity care and ensure its accessibility to women, other non-health systems factors appear to be involved in changing care-seeking behaviours. However, few variables were significantly associated with skilled care-seeking *in all three* settings—a finding that is similar to other analyses of women's use of facility-based delivery care. Household preparation and planning for delivery—namely whether the woman and family members had discussed place of delivery, how to pay for care, and had set aside funds for delivery—was the only variable significantly associated with skilled care-seeking, independent of wealth and education, in all four intervention districts.

Counselling on birth preparedness during antenatal care also appeared to be strongly associated with skilled care-seeking through multivariate analysis in both Burkina Faso and Kenya, but not in Tanzania, where care-seeking rates were very high at the outset of the project. Knowledge and awareness of birth complications appeared less important in care-seeking, as was exposure to community-level campaigns promoting birth preparedness. Although there were significant levels of exposure to community-level behaviour change campaigns in the three districts where these activities were carried out, in multivariate regression analysis, they were not significantly associated with care-seeking decisions in any district—even in Burkina Faso where the largest increases in exposure and changes in knowledge levels were observed.

The fact that no increase in skilled care-seeking was observed in Homabay, Kenya where both supply and demand-related interventions were implemented highlights the complexities of influencing childbirth practices. Although positive changes were observed in both facility capacity and women's exposure to interventions promoting the use of skilled maternity care, these not result in women's increased use of the health system for delivery care. In addition, there was little change in the distribution of births across the health system; despite improvements in the readiness and capacity of mid- and lower-level facilities, the endline results show that hospitals in the two Kenya districts continue handle a much greater proportion of deliveries than in the other two countries—a factor that contributes to greater barriers faced by women in the Kenya districts in terms of distance and costs. These barriers may be particularly important in Homabay district, which has higher levels of poverty than Migori and a weaker transportation infrastructure.

A more in-depth review of social and economic factors is needed to explain the outcomes in Kenya. The cost of delivery is very high in both districts of Kenya when compared to those in

Burkina Faso and Tanzania and multivariate regression showed that wealth was significantly associated with skilled care-seeking in both districts. Interestingly, however, education was only significant in Migori, and not in Homabay—a district whose population is much more homogenous in terms of ethnicity than any of the other intervention areas. This raises interesting questions about the feasibility of introducing new care-seeking concepts and behaviours in areas where the population has little exposure to diverse traditions and practices. In such contexts, there may be stronger social pressure to maintain certain care-seeking practices—a factor that is difficult to measure or evaluate.

Also interesting is the fact that compared to both Burkina Faso and Tanzania where husbands are often the main decision-makers about maternity care-seeking, household decision-making is more diffuse in Kenya with a range of family members being involved; women are more likely to make decisions about maternity care-seeking, and they are less likely than men to decide to seek facility-based care.

8. Conclusion and Recommendations

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. Equally important were increases in use of skilled maternity care in two of the intervention districts, especially among the poorest women. These results and the experience of the Skilled Care Initiative highlight a number of key issues for broader efforts to increase rates of skilled attendance during childbirth in rural, underserved districts, including the need to:

- **Ensure the provision of focused antenatal care (FANC), including individualized birth preparedness counselling on place of delivery**. Women who receive quality antenatal care and counselling on place of delivery and danger signs during pregnancy are more likely to deliver at a health facility. Given the fact that the vast majority of women in Africa 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.
- **Focus on routine elements of maternal health services, in addition to complications**. Gaps in the content of routine services, such as antenatal care, normal delivery care, and postpartum care reduce the potential benefits of these health interventions in terms of promoting skilled care throughout pregnancy, childbirth, and the postpartum period, and in terms of detecting complications and providing appropriate management. As such missed opportunities can cost women their lives, it is crucial to ensure that strategies to improve maternal health focus on routine maternal health services, in addition to care for emergency complications.
- **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 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 maternal health services**. Out-of-pocket costs for maternity care—whether sanctioned by official policies or not—can constitute a significant barrier to women's use of services. The costs of complicated delivery care can impoverish a poor household. Increased financing of maternal health services is critical to reduce the main costs of care-seeking, whether they are service-delivery charges or out-of-pocket expenditures on required drugs, supplies, and laboratory fees.
- **Improve the training and deployment of skilled attendant cadres**. Overall, there are shortages of skilled attendants, which have negative consequences for the availability and quality of maternity care. Facilities providing maternal health care need sufficient staffing to ensure round-the-clock care and provide quality client-centred services, 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.
- **Targeted strategies to increase household planning and male involvement in maternal health.** The level of household discussion, planning, and preparation for childbirth is a key determinant of use of skilled care, as is husband/male partner support and involvement in care-seeking decisions. Strategies aimed at engaging communities in maternal health should focus on such determinants, rather than broader awareness-raising about maternal health risks and complications.

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.