An Evidence Brief for Policy

Improving Access to Skilled Attendance at Delivery

Full Report

This policy brief was prepared by the Uganda country node of the Regional East African Health (REACH) Policy Initiative.

11 August 2011

Who is this policy brief for?
Policymakers, their support staff, and people with an interest in the problem that this policy brief addresses

Why was this policy brief prepared?
This policy brief was prepared to summarize the best available evidence about the problem which it addresses and solutions to that problem

This evidence-based policy brief includes:
- A description of a health system problem
- Viable options for addressing this problem
- Strategies for implementing these options

Not included: recommendations

Executive Summary
A shorter version of this Full Report is available in the Executive Summary.

What is an evidence-based policy brief?
Evidence-based policy briefs bring together global research evidence (from systematic reviews) and local evidence to inform deliberations about health policies and programmes

What is a systematic review?
A summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise the relevant research, and to collect and analyse data from this research
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The purpose of this report
This report was prepared to inform deliberations of those engaged in developing policies for increasing skilled care at birth and other stakeholders with an interest in these policy decisions. It summarises the best available evidence regarding the design and implementation of policies on improving skilled attendance at delivery.

It is not intended to prescribe or proscribe specific options or implementation strategies. Rather, its purpose is to allow stakeholders to systematically and transparently consider the available evidence about the likely impacts of different options for improving access to skilled attendance.

How this report is structured
The report is presented in two parts. The first is an executive summary that summarises each section of the brief in consideration of the target audience that may not have time to read the full text of the brief. The second part is a full report which provides details of the problem, available evidence used to address the problem and approaches used in preparation of the brief. The full report contains a one page summary of key messages.

How this report was prepared
This report brings together both global and local evidence to inform deliberations about increasing access to skilled attendance at delivery. We searched for relevant evidence describing the problem, the impacts of options for addressing the problem, barriers to implementing those options, and implementation strategies to address those barriers. The search for evidence focused on relevant systematic reviews regarding the effects of policy options and implementation strategies. We have included information from other relevant studies where systematic reviews were not available or were insufficient. Other documents such as government reports and unpublished literature were also used. (The methods used to prepare this brief are detailed in Appendix 1.)

Why focus on systematic reviews
Systematic reviews of research evidence constitute a more appropriate source of research evidence for decision-making than the latest or most heavily publicized research study. By systematic reviews, we mean reviews of the research literature with an explicit question, an explicit description of the search strategy, an explicit statement about what types of research studies were included and excluded, a critical examination of the quality of the studies included in the review, and a critical and transparent process for interpreting the findings of the studies included in the review.
Systematic reviews have several advantages. (1) Firstly, they reduce the risk of bias in selecting and interpreting the results of studies. Secondly, they reduce the risk of being misled by the play of chance in identifying studies for inclusion or the risk of focusing on a limited subset of relevant evidence. Thirdly, systematic reviews provide a critical appraisal of the available research and place individual studies or subgroups of studies in the context of all of the relevant evidence. Finally, they allow others to appraise critically the judgements made in selecting studies and the collection, analysis and interpretation of the results.

**Uncertainty does not imply indecisiveness or inaction**

Most of the systematic reviews included in this brief conclude that there is “insufficient evidence”. Uncertainty about the potential impacts of policy decisions does not mean that decisions and actions can or should not be taken. However, it does suggest the need for carefully planned monitoring and evaluation when policies are implemented. (3)

**Limitations of this report**

This report is based largely on existing systematic reviews. For options where we did not find an up-to-date systematic review, we have attempted to fill in these gaps using evidence from other documents, through focused searches, personal contact with experts, and external review of the report.

Summarising evidence requires judgements about what evidence to include, the quality of the evidence, how to interpret it and how to report it. While we have attempted to be transparent about these judgements, this brief inevitably includes judgements made by review authors and judgements made by ourselves.
Key messages

The problem:
High Maternal Mortality

Uganda’s maternal mortality has moderately declined from 670 per 100,000 live births in 1990 to 430 per 100,000 live births in 2008. This annual decline of 13 maternal deaths per 100,000 live births is unlikely to achieve the MDG target of 168 per 100,000 live births by 2015. The proportion of pregnant women delivering from public and private non-profit facilities was low at 34% in 2008/09. Increasing skilled birth attendance is desirable to reduce maternal mortality.

Policy options:
1) Providing Intrapartum Care at first level Health Centre
2) Involving the Private-for-Profit sector
3) Maternity Shelters

1. An efficient intrapartum care intervention is to provide for mothers to routinely deliver in a primary level or first level health facility (Health Centre II) with midwives as providers but with other attendants working with them in a team.
2. Many interventions involving the private for-profit sector could be implemented successfully in poor communities with potential improvements in equity particularly for those providers frequently used by low income groups.
3. Maternity waiting facilities may be a relevant option in rural populations with limited access to emergency obstetric care.
   o Given the limitations of the currently available evidence, rigorous evaluation and monitoring of resource use and activities is needed for all the options.

Implementation strategies:
A combination of strategies is needed to effectively implement the proposed options

o Use of Village Health Teams and community mobilisation programs to improve mothers’ knowledge and care-seeking behaviours. Improvement of service demand through community referral and transport schemes as well as financial subsidies. Education and training strategies to improve knowledge and competence of health workers. Optimisation of health worker roles, strengthening of public health infrastructure and investment in public-private partnerships in order to improve access to health services.
The problem

Introduction and framing of the problem:

The theme for this evidence brief for policy was drawn from an explicit priority setting process involving multiple stakeholders.(4) A purposive sample of selected policymakers, lawmakers and researchers was surveyed from the various constituencies actively engaged in the health sector to gauge pertinent issues for the Ugandan health system. An advisory group with representation from health decision makers and researchers synthesized and ranked the problems from the wider stakeholder consultations with maternal and child health (MCH) indicated as the most urgent priority. A further clarification process with key informants from the reproductive health division, department of community health at the Ministry headquarters identified a number of problems including poor access to skilled birth attendance.

Background:

Major new commitments for women's and children's health have been adopted at the recently concluded United Nations (UN) Summit on the Millennium Development Goals (MDGs) to achieve the eight anti-poverty goals by their 2015 target date.(5) MDG 5.A aims to reduce by 75% the maternal mortality ratio between 1990 and 2015; by monitoring two indicators: the proportion of births attended by skilled personnel and the maternal mortality ratio* .(6)

Uganda’s maternal mortality has moderately declined from 670 per 100,000 live births in 1990 to 430 per 100,000 live births in 2008.(7) This translates into an annual decline of 13 maternal deaths per 100,000 live births compared to the 20 maternal deaths per 100,000 live births annual decline that is required to meet the MDG target deadline.

There is national, regional and international consensus in reducing maternal mortality and morbidity from preventable causes. The Safe Motherhood Initiative formally launched in 1987, called for action to improve women’s health and reduce maternal mortality. It differed from previous similar initiatives in that it focused on the well-being of women as an end in itself not withstanding the fact that their death affects their children and other family members. (8)

The Maputo Plan of Action by the African Union Commission promotes universal access to sexual and reproductive health by 2015.(9) In response to the Maputo commitment,

* Maternal mortality ratio: Number of maternal deaths during given time period per 100 000 live births during same time period
the government developed the ‘Roadmap for accelerating the reduction of maternal and neonatal mortality and morbidity in Uganda’(10) to guide policy formulation, planning and program implementation to achieve these outcomes. One of the strategies focuses on improving the availability of, access to, and utilization of quality maternal and newborn care services, particularly at sub-counties including providing skilled attendance at birth.

Broad-based action is needed to reduce maternal morbidity and mortality through improvement of women’s education, income and social status.(11) A health-specific approach requires a functioning health care system to provide adequate coverage of antenatal care, intrapartum care, postpartum care, family planning and safe abortion.(12) Antenatal care allows high-risk screening of mothers and provides opportunity to promote health and health-seeking behaviour.(13) Postpartum care is urgent for the high-risk postpartum period 24-48 hrs after delivery.(14) Family planning could help reduce between 25-40% of maternal deaths through the prevention of unplanned pregnancies.(15) Mortality from unsafe abortion is as high as 12.5% of maternal deaths globally.(16) Safe technologies for induced abortion are available where these are legally, politically and culturally acceptable.(15) Intrapartum care can be provided at both community level and facility level by various health cadres.(15) We discuss facility-led strategies including skilled birth attendance, among the policy interventions in this report.

The Safe Motherhood Interagency Group (IAG) affirmed that ‘The single most critical intervention is to ensure that a health worker with midwifery skills is present at every birth, and transportation is available in case of emergency. A sufficient number of health workers must be trained and provided with essential supplies and equipment, especially in poor and rural communities’(17)

A ‘skilled attendant’ is an ‘accredited health professional – such as a midwife, doctor or nurse – who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns’ (WHO, FIGO, ICM).(18) The skills and competencies expected of a skilled attendant can be provided by various health workers under different country-specific titles and not just the three referred to in the official definition above.(19) The set of skills and abilities required by WHO, ICM and FIGO for an attendant to qualify as ‘skilled’ are elaborated in Appendix 1.

‘Skilled attendance’ on the other hand is defined as ‘the process by which a woman is provided with adequate care during labour, delivery and the postpartum period’. (20) The process requires both a skilled attendant AND an enabling environment which includes adequate supplies, equipment and infrastructure as well as efficient and effective systems of communication and referral. The environment could be expanded to
include political will, policy context, socio-cultural factors, health worker training, supervision and deployment and health systems financing.(21)

Global targets for skilled attendance to monitor progress towards the achievement of maternal mortality goals have been defined by the UN International Conference on Population and Development:(22)

“By 2005, where the maternal mortality rate is very high, at least 40 per cent of all births should be assisted by skilled attendants; by 2010 this figure should be at least 50 per cent and by 2015, at least 60 per cent. All countries should continue their efforts so that globally, by 2005, 80 per cent of all births should be assisted by skilled attendants, by 2010, 85 per cent, and by 2015, 90 per cent.”

Skilled attendance in Uganda stood at 42% in 2006 (23) and was under 50% by 2008.(24)

ICM and FIGO proposed a target for developing countries to have at least one person with midwifery skills for a 5000 population, attending approximately 200 births per year.(18)

The current Ministry of Health policy provides for an enrolled midwife at Health Centre II which at present serves a population of 9,212; this estimate includes both public and private units (the ideal standard is Health Centre II for a population of 5000). (25) The enrolled midwife can only perform antenatal care services but not deliveries and has to refer expectant mothers to Health Centre III to be attended by a registered midwife and a clinical officer. (25-26)

Size of the problem

Maternal and perinatal causes constitute 13.2% of the total disease burden in the country.(27) Maternal causes account for a total 515,000 disability adjusted life years† (DALYs), while perinatal causes account for 1,345,000 DALYs out of a total 14,146,000 DALYs for Uganda.(27)

Maternal causes include obstructed labour, eclampsia, puerperal sepsis, and obstetric haemorrhage among others while perinatal causes include prematurity, low birth weight, birth asphyxia, birth trauma, neonatal infections and other neonatal conditions.

As indicated earlier, Uganda’s maternal mortality is still high at 430 maternal deaths per 100,000 live births in 2008.(7) From 1990 levels of 670 per 100,000 live births, there

† The Disability Adjusted Life Year or DALY is a health gap measure that extends the concept of potential years of life lost due to premature death (PYLL) to include equivalent years of ‘healthy’ life lost by virtue of being in states of poor health or disability (1). The DALY combines in one measure the time lived with disability and the time lost due to premature mortality. One DALY can be thought of as one lost year of ‘healthy’ life and the burden of disease as a measurement of the gap between current health status and an ideal situation where everyone lives into old age free of disease and disability.
has been an annual decline of 13 maternal deaths per 100,000 live births which is unlikely to meet the MDG-2015 target of 168 per 100,000 live births. Uganda’s MMR trends for 1990-2008 are summarized in Table 1.

**Table 1: Maternal mortality for Uganda (1990-2008)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Maternal mortality ratio (MMR) (deaths per 100,000 live births)</th>
<th>HIV-related maternal deaths (Percent)</th>
<th>Maternal deaths (Numbers)</th>
<th>Proportion of maternal deaths among deaths of females of reproductive age (PMDF) (Percent)</th>
<th>Lifetime risk of maternal death (1 in:)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>430</td>
<td>24.0</td>
<td>6300</td>
<td>11.3</td>
<td>35</td>
</tr>
<tr>
<td>2005</td>
<td>510</td>
<td>27.9</td>
<td>6900</td>
<td>11.1</td>
<td>30</td>
</tr>
<tr>
<td>2000</td>
<td>640</td>
<td>34.4</td>
<td>7500</td>
<td>10.5</td>
<td>24</td>
</tr>
<tr>
<td>1995</td>
<td>690</td>
<td>29.3</td>
<td>7100</td>
<td>11.6</td>
<td>22</td>
</tr>
<tr>
<td>1990</td>
<td>670</td>
<td>12.0</td>
<td>5900</td>
<td>16.9</td>
<td>22</td>
</tr>
</tbody>
</table>

**Annual % change**
- 1990-2000: -0.5
- 2000-2008: -4.9
- 1990-2008: -2.5


**Graph 1: Maternal Mortality Trend for Uganda (1990-2008)**
Regional and international cross-country comparisons of MMR are summarized in Table 2.

**Table 2: Cross-Country Comparisons of Maternal Mortality (2008):**

<table>
<thead>
<tr>
<th>Country</th>
<th>Maternal Mortality Rate (deaths per 100,000 live births)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regional Comparisons</strong></td>
<td></td>
</tr>
<tr>
<td>Uganda</td>
<td>430</td>
</tr>
<tr>
<td>Kenya</td>
<td>530</td>
</tr>
<tr>
<td>United Republic of Tanzania</td>
<td>790</td>
</tr>
<tr>
<td>Rwanda</td>
<td>540</td>
</tr>
<tr>
<td>Burundi</td>
<td>970</td>
</tr>
<tr>
<td>South Africa</td>
<td>410</td>
</tr>
<tr>
<td>Democratic Republic of Congo</td>
<td>670</td>
</tr>
<tr>
<td>Sudan</td>
<td>750</td>
</tr>
<tr>
<td><strong>Northern Country Comparisons</strong></td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td>5</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>12</td>
</tr>
<tr>
<td>United States of America</td>
<td>24</td>
</tr>
</tbody>
</table>


The maternal mortality and morbidity statistics by cause for Sub-Saharan Africa and Uganda are shown in Table 3 (28) and Table 4 (29-30)

**Table 3: Major Causes of Maternal Mortality for Sub-Saharan Africa**

<table>
<thead>
<tr>
<th>Complication</th>
<th>Incidence (Rate per 100,000 females 15-44)</th>
<th>Case-fatality rate (percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obstetric haemorrhage</td>
<td>2370</td>
<td>17%</td>
</tr>
<tr>
<td>Eclampsia</td>
<td>1185</td>
<td>17%</td>
</tr>
<tr>
<td>Puerperal Sepsis</td>
<td>2370</td>
<td>11%</td>
</tr>
<tr>
<td>Obstructed labour</td>
<td>1422</td>
<td>9%</td>
</tr>
</tbody>
</table>

Source: Graham et al., 2001 (31)
Table 4: Maternal Morbidity and Near-Miss‡ obstetric events for Uganda:

<table>
<thead>
<tr>
<th>Obstetric Event</th>
<th>Numbers</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemorrhage</td>
<td>96</td>
<td>42%</td>
</tr>
<tr>
<td>Ruptured Uterus</td>
<td>48</td>
<td>21%</td>
</tr>
<tr>
<td>Puerperal Sepsis</td>
<td>37</td>
<td>16%</td>
</tr>
<tr>
<td>Eclampsia</td>
<td>18</td>
<td>8%</td>
</tr>
<tr>
<td>Others</td>
<td>30</td>
<td>13%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>229</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Adapted from: Okong et al. 2006 (29); Kaye et al. 2011 (30)

The proportion of pregnant women delivering from public and private non-profit facilities was low at 34% in 2008/09 dropping from 40% in the previous year. The proportion of facilities providing appropriate emergency obstetric services (EmOC) is also still low with the national met need at 40% and access to postnatal care within the first week of delivery stands at 26%.(25)

The Uganda Demographic and Health Survey (2006) reported percentage of pregnant mothers receiving antenatal care from a skilled provider at least once at 93.5%. Traditional birth attendants assisted at 23% of deliveries and 24.9% of deliveries were assisted by relatives or other unskilled helpers.(23)

The annual health sector performance report for 2009/2010 (32) showed little improvement in some indicators over the previous year with most indicators still under desirable targets particularly facility-based maternal deliveries and out-patient utilisation in public and private non-profit units. The failure to meet the HSSP II target of 50% of deliveries taking place at facility level is largely explained by human resource gaps of midwives, doctors, anaesthetists particularly in the rural areas which compromise the much needed EmOC service provision.

Cause of the problem

A number of factors hinder expectant mothers from accessing care at health facilities where skilled attendance could be available for their care. Thaddeus and Maine proposed a conceptual framework discussing 3 phases of delay that affect the interval between the onset of obstetric complication and its outcome.(33) These are factors that: (1) delay the individuals’ or family’s decision to seek care; (2) delay in arrival at an adequate health facility; and (3) delay in receiving adequate care at the facility. (34) We have grouped contributors to the problem below as: provider factors; consumer factors and infrastructural factors.

‡ Near-Miss obstetric events: severe, life-threatening complications that women survive
Provider Factors:
Adequate numbers of skilled health workers are needed to achieve the desired maternal and child health indices. Forty-seven percent of the approved positions in the public health sector are vacant even when these have been advertised for recruitment because of low compensation and poor working conditions cited by health workers. (35) Other factors include inadequate housing and lack of social amenities particularly in the rural areas. (35) There is maldistribution of the health workforce with more workers preferring to work in urban areas versus rural areas, private sector rather than public sector because of higher compensation. 71% of doctors and 64% of nurses and midwives work in the central urban region which is inhabited by only 27% of the population. (36)

Consumer Factors:
A literature review by Gabrysch and Campbell (2009) compiled a framework from studies looking at determinants of delivery service use from the mothers' perspective. (37) Several determinants were grouped under four themes: Sociocultural factors including maternal age, marital status, education, ethnicity, religion, family composition and women’s autonomy. Perceived need for care including health knowledge, perceived quality of care, previous facility delivery, pregnancy wanted, antenatal use and birth order. Economic accessibility including occupation and ability to pay. Physical accessibility including region whether urban or rural, distance and communications infrastructure like roads. These are summarised in Appendix 2.

Infrastructural factors:
A Ugandan survey conducted in 54 districts covering 553 health facilities (health centres III, IV and hospitals) assessed the availability of emergency obstetric care signal functions*, the state of health infrastructure and availability of basic drugs and supplies. (38) Health centres II, IV and hospitals are indicated to provide delivery services. Fewer than 20% of the facilities surveyed had a delivery room, running water, electricity, staff accommodation and ambulance for referral and only 25% had radio communication. Missing signal functions at health centre IIIs included assisted vaginal delivery (95%) and most health centre IVs were not offering blood transfusion (86.9%) and caesarian section (90.7%). The Uganda service provision survey, 2007 (39) found ninety percent of facilities offering delivery services had up-to-date registers, staff supervision was universal, however, only a third had routine training for staff. Only a third of units had basic equipment and supplies for conducting a normal delivery and less than 50% had emergency transportation to a referral centre. Emergency support for newborns such as

* Emergency Obstetric Care signal functions include: Administration of parenteral antibiotics; Administration of parenteral oxytocic drugs; Administration of parenteral anticonvulsants for pre-eclampsia and eclampsia; Manual removal of the placenta; Removal of retained products of conception; Assisted vaginal delivery; Blood transfusions; Surgery (caesarean section)
newborn respiratory support and external heat source is lacking in the majority of units but routine weighing of newborns and Vitamin A for the mother is common in most units.

The evidence for skilled care at birth:

It is important to review the scientific rationale behind prioritizing skilled care at birth before decision-makers can explore how this intervention could be scaled up in the Ugandan context.

One of the major reasons for the global scientific consensus on skilled attendance is the concentration of maternal deaths; approximately two-thirds occurring in late pregnancy through to 48 hours after delivery.\(^{40}\)

The primary involvement of a skilled attendant is indicated from the onset of labour up to 48 hours after delivery to prevent, appropriately manage and/or refer the major causes of maternal mortality during this period which include: obstructed labour, eclampsia, puerperal sepsis and obstetric haemorrhage.\(^{41}\)

Both historical and epidemiological evidence exists in support of skilled birth attendance.

The historical evidence, drawn predominantly from developed contexts such as Sweden, England and Wales shows a relationship between increase in skilled attendance with reduction in maternal mortality at a population level.\(^{42}\) Sweden instituted a policy to train large numbers of professional midwives who conducted mostly home deliveries with reduction in maternal deaths from above 600 per 100,000 live births in 1870 to below 100 per 100,000 in 1950.\(^{42}\) These achievements occurred before technological advances such as mass scale antibiotic use, caesarian sections and blood transfusions.\(^{42}\) Observational studies of this nature are generally considered ‘weak’ evidence because of other social, economic and political changes occurring at the same time that could have had an influence in reducing maternal mortality.

Maine and colleagues (1996) provide evidence from a scientifically ‘stronger’ epidemiological study using intervention and control village clusters conducted at a demographic surveillance site in Matlab, Bangladesh.\(^{43}\) The intervention group had an increased number of trained community midwives posted at rural sub-centres; a functional referral system with stand-by transport to a health centre and to a district hospital. This arrangement of adequate numbers of skilled attendants working within an enabled health system showed a marked decline in maternal mortality in the intervention area. (see Table 5)
### Table 5:

**Direct Obstetric deaths in the intervention and control areas during the pre-intervention period (1984-86) and post-intervention period (1987-89), by cause and the difference between periods, Matlab, Bangladesh**

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>Intervention Area</th>
<th>Control Area</th>
<th>Difference</th>
<th>Intervention Area</th>
<th>Control Area</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spontaneous abortion</td>
<td>3</td>
<td>1</td>
<td>-2</td>
<td>1</td>
<td>0</td>
<td>-1</td>
</tr>
<tr>
<td>Induced abortion</td>
<td>6</td>
<td>0</td>
<td>-6</td>
<td>4</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Antepartum haemorrhage</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Pre-eclampsia or eclampsia</td>
<td>5</td>
<td>1</td>
<td>-4</td>
<td>3</td>
<td>1</td>
<td>-2</td>
</tr>
<tr>
<td>Prolonged or Obstructed labour</td>
<td>3</td>
<td>0</td>
<td>-3</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Postpartum haemorrhage</td>
<td>2</td>
<td>1</td>
<td>-1</td>
<td>6</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Postpartum sepsis</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Other direct</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>1</td>
<td>-4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
<td><strong>6</strong></td>
<td><strong>-14</strong></td>
<td><strong>20</strong></td>
<td><strong>20</strong></td>
<td><strong>0</strong></td>
</tr>
</tbody>
</table>

Source: Maine et al., 1996 (44)

Graham and colleagues proposed a tentative statistical model to complement the above evidence. (21) This correlational model focused on skilled attendance impacting on the four main causes of maternal death listed in tables 3 and 4 above and deduced a reduction of 16% to 33% in maternal mortality assuming competent skilled attendants as well as an enabling environment for them to perform the necessary obstetric care.

The other impetus in favour of skilled attendance was the poor evaluation from the training programmes for traditional birth attendants (TBAs) to show improvements in maternal health.(45-46) TBAs assist 23% of deliveries in Uganda and are a significant provider of care particularly in the rural settings.(23) A cross-sectional study supportive of TBA training was conducted in Mukono district and showed that they can acquire satisfactory knowledge to identify and refer mothers at risk but are limited by logistical and infrastructural barriers to do so.(47)
Policy Options:

The three policy options presented in this section could be adopted independently or complementary to the other to improve maternal outcomes. We have endeavored to source for the best current knowledge on these interventions although there is still need for more rigorous research for at least two of the proposed options. The Ministry of Health is deliberating operationalising Health Centres II for deliveries. The evidence for this is elaborated to support these decisions. Maternal waiting shelters and working with the private-for-profit sector to facilitate deliveries in health facilities are promising complementary interventions.

Policy Option 1:

Providing Intrapartum Care at first level Health Centre:

Intrapartum care refers to the provision of delivery services and immediate postpartum care for mothers and their newborn babies. As mentioned earlier, most maternal deaths occur during labour, delivery and immediate 48 hrs postpartum. Most complications cannot be predicted or prevented and require timely diagnosis and appropriate management by skilled attendants to prevent death or morbidity. This necessitates the need for routine delivery by mothers in an adequately functioning health facility providing basic emergency obstetric care with referral access for comprehensive EmOC at higher level facilities.

Public health facilities in Uganda exist at 6 levels; health centres II are the first level currently providing primary outpatient services, followed by health centres III for primary care with inpatient services. Secondary and tertiary services are provided by health centres IV, general hospitals, regional and national referral hospitals accordingly.

Health centres II (HC II) compared to higher level facilities provide a higher coverage of the intended target group of intrapartum women.

Current facility-based provision of Intrapartum Care:

The basic package of services (MOH, 1997) puts deliveries at health centres III under sub-county administration with an average distance of 20km from the household. 93.5% of pregnant women receive antenatal care from enrolled midwives posted at health centres II (average distance of 5km) who are not authorised to provide intrapartum care at this level. Consequently, only 42.1% of women deliver in health facilities indicated at a much further average distance of 20km. There are barriers related to costs, time and distance for a mother in labour to access skilled care, hence the decision to deliver with traditional birth attendants (23% of mothers), with relatives and other unskilled helpers (24.9%) and 10% with no assistance.
of Clinical Services (MOH) advocates for optimal utilization of skills already existing at HC II for enrolled midwives to be facilitated to perform deliveries in addition to providing antenatal care, family planning and other services. (26) This proposal highlights fruitful efforts by local authorities in Nakapiripirit and Lyantonde districts to implement deliveries at HC IIs in their jurisdictions. (26)

**Impact of Intrapartum Care at first level Health Centre:**

There are no randomized controlled trials that have been undertaken to compare the health centre intrapartum care strategy versus alternative distribution mechanisms for effect on maternal mortality. (15) The next level of evidence is available from country case studies by Koblinsky and colleagues which shows that:

➔ The most efficient intrapartum care strategy is one where mothers routinely deliver in a primary level or first level health facility, with midwives as providers but with other attendants working with them in a team. (50)

Developing countries which achieved significant declines in maternal mortality over the past few decades were considered in terms of where the women gave birth (in a facility or at home) and who conducted the deliveries (a professional or lay attendant, e.g CHWs). These included transitional middle income countries such as; Sri Lanka, Malaysia, China, Brazil, Mexico compared to high income settings; for example, the United Kingdom and United States of America.

The data were grouped into four models of organizational care described below:

**Model 1: Home delivery by a non-professional trained briefly**
Lay provider recognizes complications and organizes access to essential obstetric care.

**Model 2: Home delivery by a professional**
Professional recognizes complications, provides basic EmOC and organizes access to functioning EmOC.

**Model 3: Delivery by a professional in health facility with basic EmOC**
Professional recognizes complications and provides basic EmOC at first level facility e.g health centre II; facility organizes access to comprehensive EmOC

**Model 4: Delivery by a professional in health facility with comprehensive EmOC**
Professional recognizes complications and provides basic and comprehensive essential obstetric care

Table 6 below highlights examples of programs in the various countries with resulting maternal mortality outcomes.
Successful models 2 and 3 programs made use of well-trained midwives, generally women, with access to drugs for bEmOC, protocols for identifying problem pregnancies and deliveries and means of referral to a cEmOC centre such as a hospital. Model 2 requires relatively high numbers of midwives to perform deliveries at household level and has considerable resource implications. Model 3 with midwives at first level health centres is most feasible for the Ugandan context.

Model 4 is largely demand-driven occurring in industrialized settings, has a higher cost investment, with risks of over-medicalisation of maternity care and may not reduce MMR to below 100. It is not feasible for rural settings.

Model 1 registered some success but no evidence for reducing MMR to below 100.

Table 6: Country examples and MMRs for different models of service delivery

<table>
<thead>
<tr>
<th>Who Delivers</th>
<th>Where Birth Takes Place</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Home</td>
</tr>
<tr>
<td>Non-professional</td>
<td>Model 1:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional</td>
<td>Model 2:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Model 4:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Koblinsky et al., 1999 (50)

A list of currently accepted intrapartum care strategies that could be provided to mothers and their babies at health centres II is shown in Appendix 3. Three reviews confirm their effectiveness for reducing maternal and neonatal deaths. (15, 51) These are currently notified for health centres III and above. They include: diagnosis of labour, detection and management of maternal and neonatal complications.
Relevance of Research Findings to the Ugandan Context:

Applicability:
The relevant data are drawn from middle income economies (and high income ones). However, this covers a period of between 20 to 50 years of gradual economic progress including a time when countries such as China and Malaysia were low income but managed to sustain a downward trend in maternal mortality. There was underlying strong political support, long-term planning and good coordination between all levels of care.

Equity Considerations:
The health centre intrapartum care strategy is best placed to serve the majority of mothers from rural, underserved regions of the country. Its’ potential for universal coverage through a pre-established public health infrastructure could help reduce the equity gap in maternal deaths between the urban and rural women, offset catastrophic health payments, death and disability disproportionately borne by poor mothers.

Scaling up Considerations:
There are insufficient data to compare cost-effectiveness between the four models of care.
There are cost implications for national scaling up of health services at health centres II. The cost of improving old or constructing new public HC IIs to provide delivery services is shown in tables 7, 8 and 9 below. (26) The old HC IIs need emergency delivery units to be added to the existing structures, while this is catered for in the designs for HC IIs.

Table 7:
Upgrading of one (older design) Health Centre II for bEmOC readiness

<table>
<thead>
<tr>
<th>NO</th>
<th>PARTICULARS</th>
<th>NUMBER</th>
<th>COST (UGX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Emergency Delivery Units</td>
<td>1</td>
<td>60,000,000</td>
</tr>
<tr>
<td>2</td>
<td>Delivery Equipment</td>
<td>1 Set</td>
<td>40,000,000</td>
</tr>
<tr>
<td>3</td>
<td>Placenta Pit</td>
<td>1</td>
<td>1,800,000</td>
</tr>
<tr>
<td>4</td>
<td>Medical Waste Pit</td>
<td>1</td>
<td>1,800,000</td>
</tr>
<tr>
<td>5</td>
<td>Midwife (Salary per year)</td>
<td>1</td>
<td>3,420,000</td>
</tr>
<tr>
<td>6</td>
<td>Consumables</td>
<td></td>
<td>5,000,000</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td></td>
<td>112,020,000</td>
</tr>
</tbody>
</table>

Source: Amandua, 2011 (26)

Table 8:
Constructing and equipping a new Health Centre II with bEmOC readiness

<table>
<thead>
<tr>
<th>NO</th>
<th>PARTICULARS</th>
<th>NUMBER</th>
<th>COST (UGX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Emergency Delivery Units</td>
<td>1</td>
<td>143,000,000</td>
</tr>
<tr>
<td>2</td>
<td>Delivery Equipment</td>
<td>1 Set</td>
<td>60,000,000</td>
</tr>
<tr>
<td>3</td>
<td>Placenta Pit</td>
<td>1</td>
<td>1,800,000</td>
</tr>
<tr>
<td>NO</td>
<td>PARTICULARS</td>
<td>NUMBER</td>
<td>COST (UGX)</td>
</tr>
<tr>
<td>----</td>
<td>---------------------</td>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>1</td>
<td>Existing old</td>
<td>1,136</td>
<td>112,020,000</td>
</tr>
<tr>
<td>2</td>
<td>Existing new</td>
<td>400</td>
<td>112,020,000</td>
</tr>
<tr>
<td>3</td>
<td>Gap</td>
<td>1,667</td>
<td>215,020,000</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NO</th>
<th>PARTICULARS</th>
<th>NUMBER</th>
<th>COST (UGX)</th>
<th>TOTAL (UGX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Medical Waste Pit</td>
<td>1</td>
<td>1,800,000</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Midwife (Salary per year)</td>
<td>1</td>
<td>3,420,000</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Consumables</td>
<td></td>
<td>5,000,000</td>
<td>215,020,000</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td></td>
<td></td>
<td>215,020,000</td>
</tr>
</tbody>
</table>

Source: Amandua, 2011 (26)

Table 9: Total Costs for old and new Health Centres II with bEmOC readiness

**Monitoring and Evaluation:**
Monitoring and evaluation programs could track indicators for maternal mortality, near-miss obstetric events, perinatal and neonatal mortality and monitor costs of inputs and processes to generate new evidence on cost-effectiveness of the interventions on maternal and neonatal outcomes in the Ugandan context.

**Policy Option 2:**
**Working with the Private-for-Profit sector to provide Intrapartum Care at first level Health Centre:**

The private sector includes formally or informally-trained health providers who may be for-profit (PFP) or not-for-profit (PNFP). The informal private sector normally operates outside the oversight of the public health and tax regulations and is notoriously difficult to monitor, hence work with. (52)

In 2009, Ugandans private expenditure on health as a factor of the total health expenditure was 81%. (53) Therefore it is important to harness these provider groups whose role has been sustained largely from poor public health sector investment and governance.

The strategies discussed here refer to the formal private sector; the evidence is specific for the for-profit sector. The private-for-profit providers control 40% of Health Centre IIs, nearly three times that of the PNFP sector for this level of care (14%) which is being targeted for increasing access to professional care at delivery for expectant mothers.(25) (see Policy Option 1)

The coverage of health facilities in the country by ownership and level of care are shown in Table 10. (25)
Table 10: Ownership of Health Facilities by Level of Care

<table>
<thead>
<tr>
<th>Level of Care</th>
<th>Government</th>
<th>Private-Not-For-Profit</th>
<th>Private-for-Profit</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitals</td>
<td>65</td>
<td>59</td>
<td>22</td>
<td>146</td>
</tr>
<tr>
<td>Health Centre IV</td>
<td>165</td>
<td>15</td>
<td>8</td>
<td>188</td>
</tr>
<tr>
<td>Health Centre III</td>
<td>866</td>
<td>244</td>
<td>72</td>
<td>1182</td>
</tr>
<tr>
<td>Health Centre II</td>
<td>1634</td>
<td>484</td>
<td>1399</td>
<td>3517</td>
</tr>
<tr>
<td>Total</td>
<td>2730</td>
<td>802</td>
<td>1501</td>
<td>5033</td>
</tr>
</tbody>
</table>

Source: Ministry of Health, 2011 (54)

Current Government Collaboration with the Private Sector:

The draft national policy on public private partnership in health is in its final stages of development.(55) Government recognizes the importance of private health providers and has contributed sustained support to the private-not-for-profit sector over the years through secondment and posting of personnel, provision of funds and supplies in particularly relation to national priority health programs such as immunisation and maternal health care.(56) Existing collaboration with the private-for-profit sector by comparison, has been more ad hoc through arrangements between public health authorities and interested eligible PFPs in a few districts. This has taken the form of provision of immunisation, family planning equipment and supplies, other health commodities and sharing of PFP theatre services.(56)

Impact of working with the private-for-profit sector for healthcare delivery:

Patouillard and colleagues’ (2007) systematic review on working with the private sector to improve utilization of quality health services by the poor is very insightful but with some limitations as there were few impact evaluations that could allow robust conclusions to be drawn. (57) The review identified 52 studies on working with private for-profit providers in low and middle-income countries. The identified interventions by number of studies are shown in Table 11 below.

Table 11: Summary of Included Studies and Interventions

<table>
<thead>
<tr>
<th>Type of Intervention</th>
<th>Number of Studies included in the review</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>26</td>
</tr>
<tr>
<td>Social Marketing</td>
<td>14</td>
</tr>
<tr>
<td>Pre-packaging of drugs</td>
<td>2</td>
</tr>
<tr>
<td>Provision of Vouchers</td>
<td>4</td>
</tr>
<tr>
<td>Contracting-Out</td>
<td>3</td>
</tr>
<tr>
<td>Franchising</td>
<td>6</td>
</tr>
<tr>
<td>Regulation</td>
<td>2</td>
</tr>
<tr>
<td>Accreditation</td>
<td>1</td>
</tr>
</tbody>
</table>
The quality of the evidence across all of the interventions was reported as low and the review did not include enough information to allow analysis using the GRADE framework. Interventions likely to be useful for the provision of delivery services have been summarized below (58).

The review found:

- Low quality evidence suggesting that many interventions involving the private for-profit sector can be implemented successfully in poor communities.
- Positive equity impacts can be inferred from interventions involving providers who are predominantly used by poor people.
- Stronger evidence of the equity impacts of interventions for working with the private-for-profit sector is needed for more robust conclusions to be drawn.

**Provision of vouchers**
A voucher is a form of demand-side subsidy that the recipient can use as part or full-payment for a product or service from identified providers. The distribution of vouchers can be targeted to improve access for an identified population group such as the poorest households or pregnant women. Vouchers can either be competitively redeemed, where they are exchangeable at a number of different providers or non-competitive where they are assigned to one particular provider.

Three studies focused on vouchers alone and a fourth one also included social marketing (59-62).

- The studies showed significant increases in the utilization of services, and positive changes in the ratio of utilization in the lowest compared to the highest socioeconomic quintiles (i.e. the equity ratio). Vouchers for free insecticide-treated mosquito nets and net treatment (integrated into a mass measles vaccination campaign) increased the equity ratio for net coverage from 0.66 to 1.19 in urban Zambia.

**Franchising**
Franchising refers to a contractual arrangement between a health service provider and a franchise organisation, which aims to improve access to quality-controlled and price-controlled services. Franchisees are trained in standardized practices for which prices are predefined, and benefit from advertising of the logo or franchise name. The franchisees are monitored by the franchise organisation, which in public health is generally a government or donor-sponsored non-governmental organisation which subsidises the network.

Six studies were identified from Pakistan, Ethiopia, India, Nepal and Madagascar. Franchised services included reproductive health and family planning, diagnosis and management of sexually transmitted infections, and HIV counselling (63-65).
Both the effectiveness of the interventions and their impact on poor and disadvantaged populations were mixed.

Clients were significantly more satisfied with the quality and quantity of franchised private for-profit services in some countries and less satisfied in others.

Franchising benefited relatively poor groups in Nepal, Ethiopia, and India. However, in urban Pakistan wealthier groups were more likely to use franchised services.

**Contracting-out**

Contracting-out is a purchasing mechanism used to acquire specified services of a defined quality at an agreed price from a specific private for-profit provider and for a specific period of time. Governments may purchase clinical or non-clinical services from private for-profit providers to complement public provision.

Three studies were identified: contracting-out of hospital services in South Africa (1), and primary healthcare services in South Africa (1) and Lesotho (1). The primary care studies provided data on the socioeconomic status of the study populations.(66-67)

- Public hospitals had better structural quality of care but contracted hospitals had better quality of nursing care. No significant differences were found in mortality rates between contracted and public hospitals.
- The primary care study in South Africa showed that patients with hypertension were less likely to have their blood pressure recorded when they sought care at contracted practices than at public health facilities. However, the study in Lesotho found the quality of services of contracted providers to be similar to that of public providers.
- The contracted primary care services were used by very poor communities.

**Training**

Training interventions can take various forms, including formal training sessions, vendor-to-vendor education, distribution of guidelines and job-aids. Training is often integrated into other interventions, such as franchising, accreditation and social marketing. Twenty six studies on training were identified, covering different types of private for-profit providers: doctors (4), midwives (2), pharmacy workers (8), drug retailers (6), and a mix of provider types (6). (68-70) Training aimed to improve the quality of treatment for a range of different conditions, including childhood illness (7), sexually transmitted infections (5), reproductive health services (5) and malaria. Only one study provided data on socioeconomic status.

- The training of private for-profit practitioners led to improvements in treatment quality for a range of different conditions. For instance, an intervention in Ghana to improve the management of sexually transmitted infections in private for-profit pharmacies found that when offered treatment, 38% of simulated clients received appropriate medication at intervention pharmacies compared with 18% at control pharmacies.
Training private for-profit practitioners on the management of childhood illness in Pakistan benefited a generally poor population.

Relevance of Research Findings to the Ugandan Context:

Applicability and Equity:
Very few studies provided information about relative equity improvements. The socioeconomic distribution of impacts was mixed, with positive equity effects shown in some but not all programmes. However, many of the interventions worked successfully in poor communities. Regarding the local context, private-for-profit providers frequented by poor people should be specifically targeted to maximize on positive equity effects and impact.

Costs and Cost-Effectiveness:
There is no evidence from the review implying good value for money investing in private-for-profit providers compared to the public sector or private-not-for-profit providers for outcomes favoring the poor.

Monitoring and Evaluation:
Robust systems and resources would be needed for supervision, monitoring and evaluation of private-for-profit providers to assess quality of care and utilization of services by the poor, document costs and returns on investment in this sector.

Policy Option 3: Maternity Waiting Homes

A Maternity Waiting Home (MWH) is a residential facility within easy reach of a hospital or health centre which provides emergency obstetric care. (EmOC) (71) High-risk mothers are accommodated at MWHs during the final weeks of their pregnancy, historically to reduce maternal and perinatal mortality, and now increasingly to improve maternal and neonatal health through education and counseling.(71) Maternity waiting homes or shelters aim to improve physical access to emergency obstetric care for women in labour in remote areas and have been instituted in some parts of the Uganda as early as the 1960s. (71) While anecdotal evidence suggests that MWHs save mothers’ and childrens’ lives, sufficient research evidence of their impact on maternal and neonatal outcomes is still needed.

Status of Maternity Waiting Homes in Uganda:

The Ministry of Health has been supportive of ‘Waiting Shelters’, as they are referred to in the local context although there is no formal policy to scale these up. (26, 72) Both public and private health providers have maintained waiting shelters such as Kalongo and Lacor hospitals in northern Uganda, Kagando and Kisizi hospitals in south western Uganda.(26) The national referral hospital, New Mulago, does not have formal waiting
shelters as such but has a policy of retaining mothers at risk such as twin pregnancies towards the end of gestation to enable access to emergency obstetric care. (73)

**Impact of Maternity Waiting Homes:**

A good quality systematic review by van Lonkhuijzen and colleagues (2009) investigating effects of waiting facilities on maternal and neonatal outcomes did not find any randomized controlled trials in low resource settings for inclusion.(74) However, findings from other study designs on the effectiveness of MWHs were described in general terms. Some studies reported a favourable effect of maternity waiting homes on outcomes for women and their newborns, but others found that utilisation levels are low due to access barriers.(75)

Most of the studies evaluating the effect of MWHs compared women who stayed at the waiting homes with women who came to the health facilities or hospitals directly, as it was not possible to compare birth outcomes with women who stayed at home. These conditions create a significant potential for bias as factors influencing health seeking behaviour in either group could be very different.

The review found that:

- Maternity waiting facilities may be a relevant option in rural populations with limited access to emergency obstetric care
- There is insufficient evidence to evaluate the effectiveness of waiting facilities in low resource settings and high quality studies for this are still needed.

One of the studies set in Zimbabwe evaluated a MWH over a 2 year period.(76-77) Table 12 shows a summary of the results.

**Table 12:**

<table>
<thead>
<tr>
<th>Delivery Outcomes</th>
<th>Women who did not stay at a MWH (n = 2915)</th>
<th>Women who stayed at a MWH (n = 1573)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obstructed labour</td>
<td>1%</td>
<td>0.06%</td>
</tr>
<tr>
<td>Caesarian Section</td>
<td>15%</td>
<td>18%</td>
</tr>
<tr>
<td>Craniotomies</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Hysterectomies</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Perinatal death rate per 1000 births (Risk Ratio = 1.7)</td>
<td>32.2</td>
<td>19.1</td>
</tr>
</tbody>
</table>

Source: Chandramohan 1994; Chandramohan 1995
A study from Zambia showed no difference in maternal mortality ratio and perinatal death rate between the MWH group and non-MWH group. (78)

Spaans and colleagues concluded that MWHs improve access to hospital care in a Zimbabwean study which analysed both institutional births as well as home births. (79) Women at high-risk such as first-time mothers and those with a history of previous caesarian surgery were more likely to be delivered in hospital due to the intervention of a MWH.

Relevance of Research Findings to the Ugandan Context:
There are no high quality data available from low-resource settings regarding equity, economic considerations, monitoring and evaluation for this policy intervention.(75)

Applicability:
MWHs are likely to be useful in remote and/or rural areas with sufficient regional capacity for emergency obstetric care, and where it is possible to offer homes that are safe, affordable, and attractive to women.

Equity:
MWHs have a potential to reduce inequalities between rural and urban populations. However, if there are financial or other barriers affecting the usage of such facilities, inequalities in access to care may increase amongst poorer women in rural areas.

Costs and Cost-Effectiveness:
The costs of MWHs include those related to transportation, the cost of the homes, staffing, food and supplies, and emergency obstetric care. Although user fees may cover some of these costs, user fees are also likely to reduce utilisation levels and, therefore, effectiveness.

Monitoring and Evaluation:
The data described above are retrospective cohort studies of the impacts of MWHs but these studies have a high risk of bias because the women who used these homes were not suitably compared to the women who did not. Thus there is a need for randomised trials to evaluate their impacts on maternal and neonatal outcomes and costs.
Implementation Considerations:

The discussed options are health focused interventions to attend to the high burden of maternal ill-health. Pregnant mothers are vulnerable socially and economically which impacts on their decision making for health and access to health services. A broader multi-sectoral approach is needed to fully address this problem.

Enablers providing a conducive environment for increasing access to skilled birth attendance include:

- Political support from national and local authorities to improve maternal and child health
- A pre-existing public health infrastructure established in both rural and urban areas
- A thriving and functional private sector for health
- A strong public private partnership for health between the government and the private sector
- There are already small scale attempts at implementing some of the suggested interventions such as maternity waiting homes and provision of intrapartum care at health centres II by local authorities in both public and private sectors.

Evidence regarding barriers to increasing access to skilled birth attendance and strategies to address them is summarised in Table 13.
### Table 13:
**Identified barriers to increasing access to skilled birth attendance and proposed strategies:**

<table>
<thead>
<tr>
<th>Recipients of Care</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Barrier</strong></td>
</tr>
<tr>
<td>Knowledge and care seeking behavior of expectant mothers</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Socio-cultural factors and negative perceptions are factors associated with low utilization of health based interventions by mothers. Societal and familial expectations often influence women's choices to seek care and may lead to delays in seeking essential professional care. Community has inadequate information on birth preparedness and emergency readiness, danger signs of pregnancy, delivery and after child birth as well as risks and danger signs in newborns.
<table>
<thead>
<tr>
<th><strong>Barrier</strong></th>
<th><strong>Competency of expectant mothers</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic constraints</td>
<td>Economic constraints are associated with low utilization of health based interventions by mothers.(23, 80) Life-saving practices are not always followed due to poverty, cultural beliefs, lack of household food security and poor access to health care. Social responsibilities such as need for women to provide for their families and care for young children sometimes stand in their way of using needed services including refusing hospital admission when complications requiring admissions are detected during antenatal visits.(81)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Implementation strategies</strong></th>
<th><strong>Evidence</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternity waiting homes</td>
<td>Maternity Waiting Home (MWH) facilities could be established to help women stay at the end of their pregnancy with arrangements to be assisted by skilled birth attendant once labour starts. MWH may increase women’s access to services such as ANC, regular visits by skilled health worker, health education on pregnancy, birthing education and neonatal care. However a number of barriers such as limited physical infrastructure, food provision, cost of delivery, staying away from home for an extended period of time, location of MWH in relation to the hospital and attitude of providers may prevent women from utilizing MWH. (74)</td>
</tr>
<tr>
<td>Community referral and transport schemes</td>
<td>Schemes that are used vary widely and may include paying for travel costs, establishing a transportation plan, and providing various means of transport, including loan for a truck, and ambulance transport using bicycles, motorcycles, vehicles. Enhanced communication between community-based health workers and medical professional as well as primary and referral level facilities is a key factor in accessing services. Community referral and transport schemes may increase rates of facility delivery, reduce referral time and improve access to emergency obstetric care for women with obstetric complications Challenges include high costs of vehicles and maintenance , establishing effective communication system in remote settings and sustainability within a resource constrained health system.(83) (84-85)</td>
</tr>
</tbody>
</table>
Financial Subsidies and Increasing service demand
Subsidizing costs to reduce costs of living at MWH.
Increasing community demand for obstetric care. (83)

There is no evidence that subsidies would attract more pregnant women to utilize MHW. But high costs are a deterrent to MHW utilization. (74)
There is moderate evidence that community mobilization programs can reduce early neonatal and perinatal mortality and increase skilled birth attendance. (83)

Providers of Care

<table>
<thead>
<tr>
<th>Knowledge, Competency and Attitudes of Health Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of supervision of health workers in charge of maternal waiting homes and staff attitude during ANC and delivery are among the key determinants of using waiting shelters. (74)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Implementation strategies</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational meetings and training</td>
<td>The effects are most likely to be similar to other types of continuing medical education, such as audit and feedback, and educational outreach visits. Strategies to increase attendance at educational meetings and using mixed interactive and didactic formats may increase the effectiveness of educational meetings. Multifaceted interventions may not be any more effective than educational meetings, outreach visits or audit and feedback alone. (86-90)</td>
</tr>
</tbody>
</table>

Educational meetings e.g. training workshops, educational outreach, support supervision by a higher health cadre to MWH and feedback (a summary of performance over a specified period of time given in a written or verbal format) can be used alone or in combination with each other and other interventions to improve health.
Health Systems Constraints

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Inadequate financial resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate investment for basic infrastructure of public facilities, medicines, equipment and supplies has impacted negatively on service quality.(91) Private expenditure on health is as high as 81% of the total health expenditure.(53) The National health insurance scheme is yet to be effected. (25)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Implementation strategies</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Strategies</td>
<td></td>
</tr>
<tr>
<td>Financial strategies to increase community demand for obstetric care include elimination of user fees, community based insurance schemes, community loan funds, conditional cash transfers, voucher schemes contracting out and pay for performance.</td>
<td>There is low quality evidence for strategies to increase demand for services. These need to be accompanied by actions to ensure that the supply side can cope with the increased demand.(83) Selective prioritization is essential in resource mobilization and allocation in low income countries. National budget and donor support provide flexible funding sources permitting government to allocate resources to agreed priorities.(25)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Inadequate human resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>The availability, access and quality of health services are affected by insufficient numbers of trained staff and uneven distribution of available skilled personnel.(32)</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Implementation strategies</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimising health worker roles</td>
<td>There is evidence to support role expansion between various health cadres.(92)</td>
</tr>
<tr>
<td>Optimization of health worker roles could improve the delivery of maternal and child health care.(92)</td>
<td></td>
</tr>
<tr>
<td>Streamlining supplies by the National Medical stores is a pre-requisite for optimal functioning of public facilities.</td>
<td></td>
</tr>
<tr>
<td>Barrier</td>
<td>Implementation strategies</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| **Inadequate facilities**                   | Lower grade facilities which provide limited care services despite being closer to the rural communities where maternal and child mortality risks are highest. There is imbalance in the distribution of health facilities between rural and urban regions particularly for higher level centres which provide delivery services. (93)  
Long distances and poor drug availability are among the most significant factors affecting access to health care. (23, 80) |                                                                                                                                              |
| **Strengthening Health Infrastructure**     | Strengthening the public and private health infrastructure to provide a continuum of care to mothers and new born babies. (25, 93)               | There is moderate evidence on securing limited space or restructuring existing public and private health facilities to accommodate Maternity Waiting facilities for EmOC. (74, 93)  
Separate units may be elected in areas that do not have ample facilities. The public private partnership for health policy is in its final stages and provides a framework for sharing responsibilities and service delivery. (56) |
| **Public-Private healthcare partnership**   | Partnership between public and private-for-profit sectors in delivery of health care to achieve public goals is limited.(56)                        |                                                                                                                                              |
| **Strengthening Public-Private collaboration** | The private sector that includes for profit and not-for-profit providers may be used to deliver health services on behalf of the public sector. The schemes that are used vary and may include social marketing, use of vouchers, pre-packaging of drugs, franchising, training, regulation, subsidies, accreditation and contracting-out.  
Effective public private partnerships can increase access, improve equity and raise quality of service. | There are numerous operational advantages of working with pre-existing, self-sustaining outlets that are widely used by the target populations. (25, 94)  
However, there is some evidence that care provided by private sector may be of low technical quality and rarely addresses equity issues.(57) |
Appendices:

Appendix 1.
Skilled attendant: the required skills and abilities

Core skills and abilities

All skilled attendants must have the core midwifery skills.* The additional skills required will vary from country to country, and possibly even within a country, to take account of local differences such as urban and rural settings.

All skilled attendants, at all levels of the health system, must have skills and abilities to perform all of the core functions listed below.

- Communicate effectively cross-culturally in order to be able to provide holistic “women-centred” care. To provide such care skilled attendants will need to cultivate effective interpersonal communication skills and an attitude of respect for the woman’s right to be a full partner in the management of her pregnancy, childbirth and the postnatal period.
- In pregnancy care, take a detailed history by asking relevant questions, assess individual needs, give appropriate advice and guidance, calculate the expected date of delivery and perform specific screening tests as required, including voluntary counselling and testing for HIV.
- Assist pregnant women and their families in making a plan for birth (i.e. where the delivery will take place, who will be present and, in case of a complication, how timely referral will be arranged).
- Educate women (and their families and others supporting pregnant women) in self-care during pregnancy, childbirth and the postnatal period.
- Identify illnesses and conditions detrimental to health during pregnancy, perform first-line management (including performance of life-saving procedures when needed) and make arrangements for effective referral.
- Perform vaginal examination, ensuring the woman’s and her/his own safety.
- Identify the onset of labour.
- Monitor maternal and fetal well-being during labour and provide supportive care.
- Record maternal and fetal well-being on a partograph and identify maternal and fetal distress and take appropriate action, including referral where required.
- Identify delayed progress in labour and take appropriate action, including referral where appropriate.
- Manage a normal vaginal delivery.
- Manage the third stage of labour actively.**
- Assess the newborn at birth and give immediate care.
- Identify any life threatening conditions in the newborn and take essential life-saving measures, including, where necessary, active resuscitation as a component of the management of birth asphyxia, and referral where appropriate.

* Core midwifery skills have been defined by the International Confederation of Midwives in a document entitled Essential Competencies for Basic Midwifery Practice, available at http://www.internationalmidwives.org

** Active management of the third stage of labour includes: using oxytocic drugs, clamping and cutting the cord, and applying controlled cord traction.
Identify haemorrhage and hypertension in labour, provide first-line management (including lifesaving skills in emergency obstetric care where needed) and, if required, make an effective referral.

Provide postnatal care to women and their newborn infants and post-abortion care where necessary.

Assist women and their newborns in initiating and establishing exclusive breastfeeding, including educating women and their families and other helpers in maintaining successful breastfeeding.

Identify illnesses and conditions detrimental to the health of women and/or their newborns in the postnatal period, apply first-line management (including the performance of life-saving procedures when needed) and, if required, make arrangements for effective referral.

Supervise non-skilled attendants, including TBAs where they exist, in order to ensure that the care they provide during pregnancy, childbirth and early postpartum period is of sound quality and ensure continuous training of non-skilled attendants.

Provide advice on postpartum family planning and birth spacing.

Educate women (and their families) on how to prevent sexually transmitted infections including HIV.

Collect and report relevant data and collaborate in data analysis and case audits.

Promote an ethos of shared responsibility and partnership with individual women, their family members/supporters and the community for the care of women and newborns throughout pregnancy, childbirth and the postnatal period.

Skilled attendants working at the primary care levels in remote areas with limited access to facilities should also be able to do the following:

- Use vacuum extraction or forceps in vaginal deliveries.
- Perform manual vacuum aspiration for the management of incomplete abortion.
- Where access to safe surgery is not available, perform symphysiotomy for the management of obstructed labour.

Advanced (optional) functions that may also need to be performed by selected skilled attendants working at a referral facility include, but are not limited to, the following:

- Perform Caesarean sections.
- Manage complications during pregnancy and childbirth.
- Administer blood transfusions.

Source: (19)
### Sociocultural factors

<table>
<thead>
<tr>
<th>Determinant</th>
<th>Rationale</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal age</td>
<td>Older women: more experienced in using services, more confident, more say in household. Young women: more modern</td>
<td>No difference, or older women more likely to use services in all multivariate studies examined.</td>
</tr>
<tr>
<td>Marital status</td>
<td>Single mothers more autonomous: more use. But maybe poorer and stigmatized: less use.</td>
<td>No association or either direction.</td>
</tr>
<tr>
<td>Ethnicity, religion, traditional beliefs</td>
<td>Certain cultural backgrounds, beliefs, norms and values as well as discrimination may decrease care-seeking.</td>
<td>Mixed results. Large differences in some studies, none in others.</td>
</tr>
<tr>
<td>Family composition</td>
<td>Small children at home and no extended family to help should decrease use.</td>
<td>Some found less skilled care if higher number of births in previous five years.</td>
</tr>
<tr>
<td>Mother’s education</td>
<td>Knowledge, access to written information, modern culture, more confident, higher earnings, control over resources, better communication with husband and providers, etc. should all increase use.</td>
<td>Consistently strong and dose-dependent positive effect on delivery service use.</td>
</tr>
<tr>
<td>Husband’s education</td>
<td>Knowledge, modern attitudes, better communication between spouses, higher autonomy for wife, higher earnings, etc. should increase service use.</td>
<td>Higher husband’s education consistently increases skilled attendance; effect often smaller than effect of mother's own education.</td>
</tr>
<tr>
<td>Women’s autonomy</td>
<td>Decision-making power, mobility, control over resources, access to transport should increase use.</td>
<td>Most found some aspects to increase skilled attendance, but others found no effect.</td>
</tr>
</tbody>
</table>

### Perceived need

<table>
<thead>
<tr>
<th>Determinant</th>
<th>Rationale</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information availability</td>
<td>Information about risks of childbirth and about service availability in radio or TV should increase use.</td>
<td>Information access associated with more skilled attendance in some studies but not in others.</td>
</tr>
<tr>
<td>Health knowledge</td>
<td>Knowledge about risks of childbirth and the benefits of skilled care should increase wish to use services.</td>
<td>Expected association in some but not in other studies.</td>
</tr>
<tr>
<td>Pregnancy wanted</td>
<td>Higher value attached to desired child justifies expenses for skilled attendance.</td>
<td>Expected association in some but not in other studies.</td>
</tr>
<tr>
<td>Perceived quality of care</td>
<td>Perceived poor personal and medical quality of care, clash with culture and fear of procedures may decrease use.</td>
<td>Qualitative studies generally find that perceived low quality decreases use, some describe interaction with distance and cost. Very few quantitative studies.</td>
</tr>
<tr>
<td>ANC use</td>
<td>Familiarity with services, encouragement by health workers increases delivery service use.</td>
<td>Usually those attending ANC much more likely to receive skilled delivery care.</td>
</tr>
<tr>
<td>Previous facility delivery</td>
<td>Familiarity with services increases their use.</td>
<td>Nearly always very strongly associated with index facility delivery.</td>
</tr>
<tr>
<td>Birth order</td>
<td>First birth: more difficult, help from natal family, high value on pregnancy, or unplanned/unwanted. High order births: previous experience, confidence if no problems previously, difficulty to leave home with several small children, poorer families.</td>
<td>No difference or first births and lower order births more likely to have skilled attendance than high order births in the vast majority of studies examined.</td>
</tr>
</tbody>
</table>
Complications

Pregnancy complications (? ANC advice), complications during delivery, previous complications (? women aware, medical risk) should increase use of skilled attendance.

Qualitative studies: important factor, decreases importance of other barriers. Few quantitative studies, several found that women with complications are more likely to seek skilled care.

<table>
<thead>
<tr>
<th>Determinant</th>
<th>Rationale</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother’s occupation</td>
<td>Own earnings, range of movement, information should increase use. Decreased use expected if work is poverty-induced.</td>
<td>No effect in several studies, association in either direction. Often less use of skilled attendance among women farmers.</td>
</tr>
<tr>
<td>Husband’s occupation</td>
<td>Higher financial resources and health insurance with some occupations should increase service use.</td>
<td>In several but not in all studies increased skilled attendance if higher status occupations.</td>
</tr>
<tr>
<td>Ability to pay</td>
<td>Costs for transport, care, opportunity costs decrease use by the poor.</td>
<td>Poorer women less likely to have skilled attendance, in some studies no effect.</td>
</tr>
</tbody>
</table>

Effective interventions for intrapartum care:

- Diagnose labour
- Ensure clean delivery technique and environment
- Assistance to woman during labour and birth (including supportive companion)
- Detect maternal complications early
- Refer maternal complications early
- Detect newborn complications early
- Refer newborn complications early
- Advice on contraception
- Hygienic cord care
- Ensure newborn warmth
- Support early breastfeeding; advice promoting early and exclusive breastfeeding
- Detect newborn infections early
- Resuscitate newborn (ambu bag) if required
- Partograph (labour surveillance)
- Detect foetal complications early (meconium and heart); treat or refer
- Active management of third stage (oxytocics)
- Arrange organised transport to referral facilities

Economic accessibility

<table>
<thead>
<tr>
<th>Determinant</th>
<th>Rationale</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region, urban/rural</td>
<td>Social and service environment differences between regions. In rural areas generally worse services and infrastructure, more poverty, more traditional beliefs, which all decrease use.</td>
<td>Nearly always moderate to large differentials with less service use in rural areas.</td>
</tr>
<tr>
<td>Distance, transport, roads</td>
<td>Distance as disincentive and actual obstacle to reach facilities, enhanced by lack of transport and poor roads.</td>
<td>Less service use when further away or no difference.</td>
</tr>
</tbody>
</table>

Source: Gabrysch and Campbell, 2009 (95)
Appendix 4. How this policy brief was prepared

The methods used to prepare this evidence brief are described in detail at these references.(96-101)

The problem that this evidence brief addresses was identified through an explicit priority setting process involving policymakers and other stakeholders, further clarification with key informant interviews of relevant policymakers, review of relevant documents, discussion with the REACH Uganda Skilled Attendance Working Group and external review of a preliminary description of the problem. Research describing the size and causes of the problem was identified by reviewing government documents, routinely collected data, electronic literature searches, contact with key informants, and reviewing the reference lists of relevant documents that were retrieved.

Strategies used to identify potential options to address the problem included considering interventions described in systematic reviews and other relevant documents, considering ways in which other jurisdictions have addressed the problem, consulting key informants and brainstorming. Potential barriers to implementing the policy options were identified through brainstorming using a detailed checklist of potential barriers to implementing health policies.(101)

We searched electronic databases using index terms or free text in PubMed, Health Systems Evidence, Cochrane Library, Campbell Collaboration, DARE, HTA databases, SUPPORT evidence summaries, HINARI for full text articles of citations identified. Grey Literature sources searched include: AFRO health workforce observatory, OpenSIGLE, WHOLIS, Google Scholar, national reports and government documents. We supplemented these searches by checking reference lists of identified studies, communication with authors to find other relevant published or unpublished studies. The final selection of reviews for inclusion was based on consensus by the authors.

One of the authors summarised included reviews using an approach developed by the Supporting the Use of Research Evidence (SURE) in African Health Systems project (www.evipnet.org/sure).(99)

Drafts of each section of the report were discussed with the REACH Uganda Skilled Attendance Working Group.
**Glossary, Acronyms and Abbreviations:**

- WHO - World Health Organisation
- ICM - International Confederation of Midwives
- FIGO - International Federation of Gynaecology and Obstetrics
- AU – African Union
- EVIPNet - Evidence-Informed Policy Network (www.evipnet.org)

GRADE (Grading of Recommendations Assessment, Development and Evaluation) – a system for rating the quality of evidence and the strength of recommendations (www.gradeworkinggroup.org)

REACH - Regional East African Community Health (REACH) Policy Initiative (www.eac.int/health)

SURE – Supporting the Use of Research Evidence (SURE) in African Health Systems (www.evipnet.org/sure)

IAG - Safe Motherhood Interagency Group

UN – United Nations

**Maternal Death**
The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes (102)

**Maternal mortality ratio**
Number of maternal deaths during given time period per 100 000 live births during same time period

**Maternal mortality rate**
Number of maternal deaths in given time period per 100 000 women of reproductive age, or woman-years of risk exposure, in same time period.

**Lifetime risk of maternal death**
Probability of maternal death during a woman's reproductive life, usually expressed in terms of odds

**Emergency Obstetric Care (EmOC) signal functions:**
**Basic EmOC:**
Administration of parenteral antibiotics; Administration of parenteral oxytocic drugs; Administration of parenteral anticonvulsants for pre-eclampsia and eclampsia; Manual removal of the placenta; Removal of retained products of conception; Assisted vaginal delivery;
**Comprehensive EmOC:**
Basic EmOC plus Blood transfusions; Surgery (caesarean section)
References:

44. Maine D. Direct Obstetric deaths in the intervention and control areas during the pre-intervention period (1984-86) and post-intervention period (1987-89), by cause and the difference between periods, Matlab, Bangladesh. In: Direct Obstetric deaths in the intervention and control areas during the pre-intervention period (1984-86) and post-intervention period (1987-89) bcatdbp, editor. 1996.
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94. MOH. The Second National Health Policy: Promoting People's Health to Enhance Socio-economic Development Kampala: Ministry of Health; July 2010.
95. Gabrysch. Factors associated with skilled delivery service use. 2009.