

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

X 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

Authors

Harriet Nabudere, MD, MPH[¤]

Delius Asiimwe, BA, MA[¤]

Jacinto Amandua, MD, MMED, MSc[○]

On behalf of the REACH Uganda Skilled Birth Attendance Working Group[§]

[¤] Regional East African Community Health (REACH) Policy Initiative, Uganda and Supporting the Use of Research Evidence (SURE) for policy in African Health Systems Project, College of Health Sciences, Makerere University, Kampala, Uganda

[○] Commissioner for Clinical Services, Ministry of Health Headquarters, Kampala, Uganda

[§] Members of the working group in addition to the named authors include: Dr Jacinto Amandua, Dr Dan Kaye, Dr Jackson Amone, Prof Nelson Sewankambo and Dr Rhona Mijumbi

Address for correspondence

Dr Harriet Nabudere
SURE Project Coordinator
College of Health Sciences, Makerere University
P.O. Box 7072, Kampala
Kampala, Uganda
Email: hnabudere@gmail.com

Table of Contents

Table of Contents.....	ii
Preface.....	iii
Key messages	v
The Problem:.....	v
Policy Options:.....	10
Implementation Considerations:.....	21
Appendices:	27
Glossary, Acronyms and Abbreviations:.....	32
References:.....	33

Preface

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.(1-2) 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 meet 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

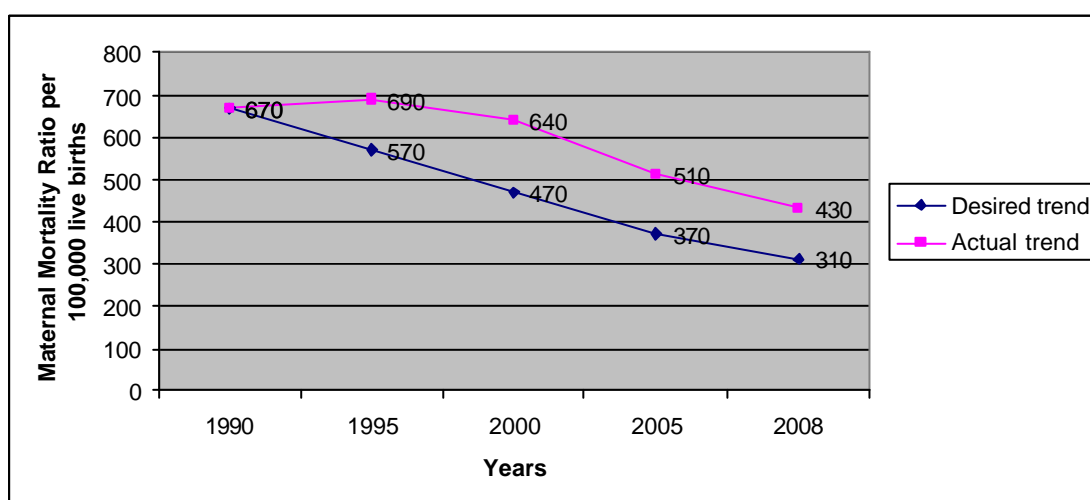
† The Disability Adjusted Life Year or DALY is a health gap measure that extends the concept of potential years of life lost due to premature death (PYLL) to include equivalent years of ‘healthy’ life lost by virtue of being in states of poor health or disability (1). The DALY combines in one measure 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)

Year	Maternal mortality ratio (MMR) (deaths per 100 000 live births)	HIV-related maternal deaths (Percent)	Maternal deaths (Numbers)	Proportion of maternal deaths among deaths of females of reproductive age (PMDF) (Percent)	Lifetime risk of maternal death (1 in:)
2008	430	24.0	6300	11.3	35
2005	510	27.9	6900	11.1	30
2000	640	34.4	7500	10.5	24
1995	690	29.3	7100	11.6	22
1990	670	12.0	5900	16.9	22
Annual % change					
1990-2000		-0.5			
2000-2008		-4.9			
1990-2008		-2.5			
Source: WHO, UNICEF, UNFPA, World Bank Maternal Mortality Estimation Inter-Agency Group, 2008 (7)					

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) :

Country	Maternal Mortality Rate (deaths per 100,000 live births)
Regional Comparisons	
Uganda	430
Kenya	530
United Republic of Tanzania	790
Rwanda	540
Burundi	970
South Africa	410
Democratic Republic of Congo	670
Sudan	750
Northern Country Comparisons	
Sweden	5
United Kingdom	12
United States of America	24
Source: WHO, UNICEF, UNFPA, World Bank Maternal Mortality Estimation Inter-Agency Group, 2008 (7)	

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

Complication	Incidence (Rate per 100,000 females 15-44)	Case-fatality rate (percentage)
Obstetric haemorrhage	2370	17%
Eclampsia	1185	17%
Puerperal Sepsis	2370	11%
Obstructed labour	1422	9%
Source: Graham et al., 2001 (31)		

Table 4: Maternal Morbidity and Near-Miss‡ obstetric events for Uganda:

Obstetric Event	Numbers	Percentage
Haemorrhage	96	42%
Ruptured Uterus	48	21%
Puerperal Sepsis	37	16%
Eclampsia	18	8%
Others	30	13%
Total	229	100%

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 III, 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

Cause of death	Intervention Area			Control Area		
	1984-86	1987-89	Difference	1984-86	1987-89	Difference
Spontaneous abortion	3	1	-2	1	0	-1
Induced abortion	6	0	-6	4	4	0
Antepartum haemorrhage	0	1	1	0	2	2
Pre-eclampsia or eclampsia	5	1	-4	3	1	-2
Prolonged or Obstructed labour	3	0	-3	1	2	1
Postpartum haemorrhage	2	1	-1	6	7	1
Postpartum sepsis	0	1	1	0	3	3
Other direct	1	1	0	5	1	-4
Total	20	6	-14	20	20	0

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 48hrs postpartum.(40) Most complications cannot be predicted or prevented and require timely diagnosis and appropriate management by skilled attendants to prevent death or morbidity.(48) 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.(15)

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.(25)

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.(49) 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.(23) 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.(23, 26, 37) The department

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

Who Delivers	Where Birth Takes Place		
	Home	Health facility (bEmOC) e.g. health centre II	Health facility (cEmOC) e.g. hospital
Non-professional	<u>Model 1:</u> Rural China (MMR 115) Brazil (MMR 120)		
Professional	<u>Model 2:</u> Malaysia (1970s to early 1980s) (MMR 50) Netherlands (1955-1970) MMR 12	<u>Model 3:</u> Malaysia (mid-1980s to 1990s) (MMR 43) Sri Lanka (MMR 30)	<u>Model 4:</u> UK (MMR 9) USA (MMR 12) Urban China (MMR 20) Mexico City (MMR 114)
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

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

Source: Amandua, 2011 (26)

Table 8:

Constructing and equipping a new Health Centre II with bEmOC readiness

NO	PARTICULARS	NUMBER	COST (UGX)
1	Emergency Delivery Units	1	143,000,000
2	Delivery Equipment	1 Set	60,000,000
3	Placenta Pit	1	1,800,000

4	Medical Waste Pit	1	1,800,000
5	Midwife (Salary per year)	1	3,420,000
6	Consumables		5,000,000
	TOTAL		215,020,000

Source: Amandua, 2011 (26)

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

NO	PARTICULARS	NUMBER	COST (UGX)	TOTAL (UGX)
1	Existing old	1,136	112,020,000	127,332,000,000
2	Existing new	400	112,020,000	44,800,000,000
3	Gap	1,667	215,020,000	358,405,000,000
	TOTAL			530,537,000,000

Source: Amandua, 2011 (26)

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

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

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

Type of Intervention	Number of Studies included in the review
Training	26
Social Marketing	14
Pre-packaging of drugs	2
Provision of Vouchers	4
Contracting-Out	3
Franchising	6
Regulation	2
Accreditation	1

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:

Effects of maternity waiting homes on maternal outcomes and perinatal mortality in rural Zimbabwe

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

Recipients of Care							
Barrier	<p>Knowledge and care seeking behavior of expectant mothers</p> <p>Socio-cultural factors and negative perceptions are factors associated with low utilization of health based interventions by mothers.(23, 80)</p> <p>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.(81)</p>						
	<table border="1"> <thead> <tr> <th style="text-align: left;"><i>Implementation strategies</i></th> <th style="text-align: left;"><i>Evidence</i></th> </tr> </thead> <tbody> <tr> <td> <p>Village Health Teams</p> <p>Village Health Teams (VHT) and scale up of Community Integrated Management of Childhood Illness (IMCI) strategy could be used to provide accurate health information and mobilize mothers for health action, checks for danger signs of pregnancies and provide linkages to maternity waiting homes and or referring each mother for appropriate use of health services.</p> </td> <td> <p>Village Health Team (VHT) is an elaborate strategy implemented by Ministry of Health to mobilize individuals and households for better health; such as referring all pregnant women for checks before and after birth.(82)</p> <p>However there is very limited evidence that pregnant women will stay in MWH when advised to do so due to other social, management and economic barriers.(74)</p> </td> </tr> <tr> <td> <p>Community Mobilisation programs</p> <p>Increasing community demand for obstetric care.</p> </td> <td> <p>There is moderate evidence that community mobilization programs can reduce early neonatal and perinatal mortality and increase skilled birth attendance. (83)</p> </td> </tr> </tbody> </table>	<i>Implementation strategies</i>	<i>Evidence</i>	<p>Village Health Teams</p> <p>Village Health Teams (VHT) and scale up of Community Integrated Management of Childhood Illness (IMCI) strategy could be used to provide accurate health information and mobilize mothers for health action, checks for danger signs of pregnancies and provide linkages to maternity waiting homes and or referring each mother for appropriate use of health services.</p>	<p>Village Health Team (VHT) is an elaborate strategy implemented by Ministry of Health to mobilize individuals and households for better health; such as referring all pregnant women for checks before and after birth.(82)</p> <p>However there is very limited evidence that pregnant women will stay in MWH when advised to do so due to other social, management and economic barriers.(74)</p>	<p>Community Mobilisation programs</p> <p>Increasing community demand for obstetric care.</p>	<p>There is moderate evidence that community mobilization programs can reduce early neonatal and perinatal mortality and increase skilled birth attendance. (83)</p>
<i>Implementation strategies</i>	<i>Evidence</i>						
<p>Village Health Teams</p> <p>Village Health Teams (VHT) and scale up of Community Integrated Management of Childhood Illness (IMCI) strategy could be used to provide accurate health information and mobilize mothers for health action, checks for danger signs of pregnancies and provide linkages to maternity waiting homes and or referring each mother for appropriate use of health services.</p>	<p>Village Health Team (VHT) is an elaborate strategy implemented by Ministry of Health to mobilize individuals and households for better health; such as referring all pregnant women for checks before and after birth.(82)</p> <p>However there is very limited evidence that pregnant women will stay in MWH when advised to do so due to other social, management and economic barriers.(74)</p>						
<p>Community Mobilisation programs</p> <p>Increasing community demand for obstetric care.</p>	<p>There is moderate evidence that community mobilization programs can reduce early neonatal and perinatal mortality and increase skilled birth attendance. (83)</p>						

Financial Subsidies and Increasing service demand

Subsidizing costs to reduce costs of living at MWH.

There is no evidence that subsidies would attract more pregnant women to utilize MWH. But high costs are a deterrent to MWH utilization. (74)

Increasing community demand for obstetric care. (83)

There is moderate evidence that community mobilization programs can reduce early neonatal and perinatal mortality and increase skilled birth attendance. (83)

Providers of Care

Knowledge, Competency and Attitudes of Health Workers

Barrier

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)

Implementation strategies**Evidence****Educational meetings and training**

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.

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)

Health Systems Constraints

Barrier	<p>Inadequate financial resources</p> <p>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)</p>
----------------	--

<i>Implementation strategies</i>	<i>Evidence</i>
<p>Financial Strategies</p> <p>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.</p>	<p>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)</p> <p>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)</p>

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

<i>Implementation strategies</i>	<i>Evidence</i>
<p>Optimising health worker roles</p> <p>Optimization of health worker roles could improve the delivery of maternal and child health care.(92)</p> <p>Streamlining supplies by the National Medical stores is a pre-requisite for optimal functioning of public facilities.</p>	<p>There is evidence to support role expansion between various health cadres.(92)</p>

Barrier	<p>Inadequate facilities</p> <p>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)</p> <p>Long distances and poor drug availability are among the most significant factors affecting access to health care. (23, 80)</p>
----------------	---

<i>Implementation strategies</i>	<i>Evidence</i>
<p>Strengthening Health Infrastructure</p> <p>Strengthening the public and private health infrastructure to provide a continuum of care to mothers and new born babies. (25, 93)</p>	<p>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)</p>

Barrier	<p>Public-Private healthcare partnership</p> <p>Partnership between public and private-for-profit sectors in delivery of health care to achieve public goals is limited.(56)</p>
----------------	---

<i>Implementation strategies</i>	<i>Evidence</i>
<p>Strengthening Public-Private collaboration</p> <p>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.</p> <p>Effective public private partnerships can increase access, improve equity and raise quality of service.</p>	<p>There are numerous operational advantages of working with pre-existing, self-sustaining outlets that are widely used by the target populations. (25, 94)</p> <p>However, there is some evidence that care provided by private sector may be of low technical quality and rarely addresses equity issues.(57)</p>

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)

Appendix 2.

Factors associated with skilled delivery service use:

Sociocultural factors		
Determinant	Rationale	Findings
Maternal age	Older women: more experienced in using services, more confident, more say in household. Young women: more modern	No difference, or older women more likely to use services in all multivariate studies examined.
Marital status	Single mothers more autonomous: more use. But maybe poorer and stigmatized: less use.	No association or either direction.
Ethnicity, religion, traditional beliefs	Certain cultural backgrounds, beliefs, norms and values as well as discrimination may decrease care-seeking.	Mixed results. Large differences in some studies, none in others.
Family composition	Small children at home and no extended family to help should decrease use.	Some found less skilled care if higher number of births in previous five years.
Mother's education	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.	Consistently strong and dose-dependent positive effect on delivery service use.
Husband's education	Knowledge, modern attitudes, better communication between spouses, higher autonomy for wife, higher earnings, etc. should increase service use.	Higher husband's education consistently increases skilled attendance; effect often smaller than effect of mother's own education.
Women's autonomy	Decision-making power, mobility, control over resources, access to transport should increase use.	Most found some aspects to increase skilled attendance, but others found no effect.
Perceived need		
Determinant	Rationale	Findings
Information availability	Information about risks of childbirth and about service availability in radio or TV should increase use.	Information access associated with more skilled attendance in some studies but not in others.
Health knowledge	Knowledge about risks of childbirth and the benefits of skilled care should increase wish to use services.	Expected association in some but not in other studies.
Pregnancy wanted	Higher value attached to desired child justifies expenses for skilled attendance.	Expected association in some but not in other studies.
Perceived quality of care	Perceived poor personal and medical quality of care, clash with culture and fear of procedures may decrease use.	Qualitative studies generally find that perceived low quality decrease s use, some describe interaction with distance and cost. Very few quantitative studies.
ANC use	Familiarity with services, encouragement by health workers increases delivery service use.	Usually those attending ANC much more likely to receive skilled delivery care.
Previous facility delivery	Familiarity with services increases their use.	Nearly always very strongly associated with index facility delivery.
Birth order	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.	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.

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.
Economic accessibility		
Determinant	Rationale	Findings
Mother's occupation	Own earnings, range of movement, information should increase use. Decreased use expected if work is poverty-induced.	No effect in several studies, association in either direction. Often less use of skilled attendance among women farmers.
Husband's occupation	Higher financial resources and health insurance with some occupations should increase service use.	In several but not in all studies increased skilled attendance if higher status occupations.
Ability to pay	Costs for transport, care, opportunity costs decrease use by the poor.	Poorer women less likely to have skilled attendance, in some studies no effect.
Physical accessibility		
Determinant	Rationale	Findings
Region, urban/rural	Social and service environment differences between regions. In rural areas generally worse services and infrastructure, more poverty, more traditional beliefs, which all decrease use.	Nearly always moderate to large differentials with less service use in rural areas.
Distance, transport, roads	Distance as disincentive and actual obstacle to reach facilities, enhanced by lack of transport and poor roads.	Less service use when further away or no difference.
Source: Gabrysch and Campbell, 2009 (95)		

Appendix 3. 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

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:

1. Mulrow C. Rationale for Systematic Reviews. *BMJ*. 1994;309:597-9.
2. Bero L, Jadad A. How consumers and policymakers can use systematic reviews for decision making. *Ann Intern Med* 1997;127:37-42.
3. Oxman A, Bjørndal A, Becerra-Posada F, Gibson M, Block MG, Haines A. A framework for mandatory impact evaluation to ensure well informed public policy decisions. *The Lancet*. 2010;375:427–31.
4. Nabudere H, Asiimwe D. Priority Setting for Health Policy and Health Systems Uganda (2010-2015). Kampala, Uganda: REACH Uganda, College of Health Sciences, Makerere University, Sciences CoH;2010 19 August 2010.
5. UN. Keeping the promise: United to achieve the Millennium Development Goals. New York: United Nations 2010 20-22 September 2010.
6. UN. United Nations Millennium Development Goals. New York: United Nations; 2000 [cited 2011 17 March]; Available from: <http://www.un.org/millenniumgoals/maternal.shtml>.
7. WHO, UNICEF, UNFPA, Bank W. Trends in Maternal Mortality: 1990 to 2008. Estimates developed by WHO, UNICEF, UNFPA and the World Bank. Geneva: World Health Organisation 2010.
8. Starrs A. Preventing the Tragedy of Maternal Deaths: A Report of the International Safe Motherhood Conference, Nairobi, Kenya. 1987 February 1987.
9. AU. Plan of Action on Sexual and Reproductive Health and Rights (Maputo Plan of Action). Addis Ababa: African Union; 2006.
10. MoH. Roadmap for Accelerating the Reduction of Maternal and Neonatal Mortality and Morbidity in Uganda 2007-2015. Kampala: Ministry of Health; 2007.
11. Filippi V, Ronsmans C, Campbell OMR, Graham WJ, Mills A, Borgh J, et al. Maternal health in poor countries: the broader context and a call for action. *The Lancet*. 2006 28 Oct 2006;368(9546):1535-41.
12. De Brouwere V, Van Lerberghe W, editors. Safe Motherhood Strategies: a Review of the Evidence. Antwerp: ITG Press; 2001.
13. Carroli G, Rooney C, Villar J. How effective is antenatal care in preventing maternal mortality and serious morbidity? An overview of the evidence. *Paediatr Perinat Epidemiol*. 2001;15(Suppl 1):1–42.
14. Li X, Fortney J, Kotelchuck M, Glover L. The postpartum period: the key to maternal mortality. *Int J Gynaecol Obstet*. 1996;54:1–10.
15. Campbell OM, Graham WJ. Strategies for reducing maternal mortality: getting on with what works. *The Lancet*. 2006 7 Oct 2006;368(9543):1284-99.
16. The Alan Guttmacher Institute. Abortion Worldwide: A Decade of Uneven Progress. New York: The Alan Guttmacher Institute.; 1999 [11 July 2011]; Available from: <http://www.guttmacher.org/pubs/Abortion-Worldwide.pdf>.
17. Starrs. The Safe Motherhood Action Agenda: Priorities for the next decade. Report on the Safe Motherhood Technical Consultation. Colombo, Sri Lanka: Inter-Agency Group, Family Care International; Inter-Agency Group for Safe Motherhood 1997.
18. UNFPA. Consensus and Concerns. Regional Workshop on Skilled Birth Attendants in South and West Asia. Islamabad, Pakistan 2004 19-21 April 2004.

19. WHO. Making pregnancy safer: the critical role of the skilled attendant. A joint statement by WHO, ICM and FIGO. Geneva: WHO2004.
20. SMIAG. Skilled Birth Attendance at Delivery: A Review of the Evidence. New York: Safe Motherhood Interagency Group2000.
21. Graham WJ, Bell JS, Bullough CH. Can skilled attendance at delivery reduce maternal mortality in developing countries? *Studies in Health Services Organisation and Policy*. 2001(17):97-130.
22. UN. Proposals for key actions for the further implementation of the Programme of Action of the International Conference on Population and Development1999 May 11, 1999.
23. UBOS. Uganda Demographic and Health Survey 2006. In: Statistics UBo, editor. Kampala: UBOS; 2006.
24. Bhutta Zulfiqar A, Chopra M, Axelson H, Berman P, et.al. Countdown to 2015 decade report (2000-10): taking stock of maternal, newborn, and child survival. *Lancet, The*. 2010 June 5, 2010;375:2032-44.
25. MoH. Health Sector Strategic and Investment Plan. Kampala: Ministry of Health; 2010.
26. Amandua J. Concept Paper on Institutionalizing Deliveries at Health Centre IIs. Kampala: Ministry of Health, Services C;2011 February 25, 2011.
27. WHO Disease and injury country estimates (2004) [database on the Internet]. World Health Organisation. 2009. Available from: http://www.who.int/healthinfo/global_burden_disease/2004_report_update/en/index.html.
28. Graham W, Bell J, Bullough C. Can skilled attendance at delivery reduce maternal mortality in developing countries ? *Studies in Health Services Organisation and Policy*. 2001;17:97-129.
29. Okong P, Byamugisha J, Mirembe F, Byaruhanga R, Bergstrom S. Audit of severe maternal morbidity in Uganda - implications for quality of obstetric care. *Acta Obstetrica et Gynecologica Scandinavica*. 2006;85:797-804.
30. Kaye D, Kakaire O, Osinde MO. Maternal morbidity and near-miss mortality among women referred for emergency obstetric care in rural Uganda. *International Journal of Gynecology and Obstetrics*. 2011;114:76-88.
31. Graham W, Bell JS, Bullough C. Major Causes of Maternal Mortality for Sub-Saharan Africa 2001.
32. MoH. Annual Health Sector Performance Report: Financial Year 2009 - 2010. Kampala: Ministry of Health; 2010.
33. Thaddeus S, Maine D. Too Far to Walk: Maternal Mortality in Context. *Social Science in Medicine*. 1994;38(8):1091-110.
34. Thaddeus S, Maine D. Too far to walk: Maternal mortality in context *Social Science and Medicine*. 1994 April;38(8):1091-110
35. MoH. Uganda Health Workforce: Satisfaction and Intent to Stay among Current Health Workers. Kampala: Ministry of Health2009.
36. MoH. Uganda Human Resources for Health Policy. Kampala: Ministry of Health; 2006.
37. Gabrysch S, Campbell OM. Still too far to walk: Literature review of the determinants of delivery service use. *BMC Pregnancy and Childbirth*. 2009 August 11, 2009;9(34).

38. Mbonye AK, Asimwe JB. Factors associated with skilled attendance at delivery in Uganda: Results from a national health facility survey. *International Journal of Adolescent Medical Health*. 2009;22(2).
39. MoH. Uganda Service Provision Assessment Survey 2007. In: Health Mo, editor. Kampala: Ministry of Health; 2008.
40. AbouZahr C. Maternal mortality overview. In: *Health Dimensions of Sex and Reproduction*. Geneva: World Health Organization.1998.
41. AbouZahr C. Global burden of maternal death and disability. *British Medical Bulletin*. 2003;Vol. 67:1 -11.
42. Lerberghe V, De Brouwere V. Of blind alleys and things that have worked: history's lessons on reducing maternal mortality. *Studies in Health Services Organisation & Policy*. 2001;17:7 -33.
43. Maine D, Akalin MZ, Chakraborty J, de Francisco A, Strong M. Why did Maternal Mortality decline in Matlab? *Studies in Family Planning*. 1996 July to August, 1996;27(4):179-87.
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.
45. De Brouwere V, Van Lerberghe W, editors. *Safe Motherhood Strategies: a Review of the Evidence*. Antwerp: ITG Press; 2001.
46. Sibley L, Sipe T. What can a Meta analysis tell us about traditional birth attendant training and pregnancy outcomes? *Midwifery*. 2004;20:51-60.
47. Chalo R, Salihu H, Nabukera S, Zirabamuzaale C. Referral of high-risk pregnant mothers by trained traditional birth attendants in Buikwe County, Mukono District, Uganda. *Journal of Obstetrics and Gynaecology*. 2005 August;25(6):554 – 7.
48. Ronsmans C, Graham W. Maternal mortality: who, when, where, and why. *The Lancet*. 2006 30 Sep 2006;368(9542):1189-200.
49. MOH. *The Basic Package of Health Services*. Kampala1997.
50. Koblinsky M, Campbell O, Heichelheim J. Organizing delivery care: what works for safe motherhood? *Bulletin of the World Health Organization*. 1999 May 1999;77(5):399-406.
51. Adam T, Lim SS, Mehta S, Bhutta ZA, Fogstad H, Mathai M, et al. Achieving the millennium development goals for health: Cost effectiveness analysis of strategies for maternal and neonatal health in developing countries. *BMJ*. 2005 12 Nov 2005;331(7525).
52. Berman P. Organization of ambulatory care provision: a critical determinant of health system performance in developing countries. *Bulletin of the World Health Organization*. 2000;78:791–802.
53. MOH. Uganda National Health Accounts. World Health Organisation 2011 April 2011.
54. MOH. *Health Facility Inventory*. Kampala: Ministry of Health; 2011.
55. Musila T. Senior Health Planner, Ministry of Health, Uganda. In: Author L, editor. Kampala: REACH Uganda, College of Health Sciences, Makerere University; 2011.

56. MoH. National Policy on Public Private Partnership in Health (final draft). Ministry of Health, Government of Uganda. 2010 May.
57. Patouillard E, Goodman CA, Hanson KG, Mills AJ. Can working with the private for-profit sector improve utilization of quality health services by the poor? A systematic review of the literature. *International Journal for Equity in Health*. 2007;6(17).
58. Wiysonge C. Can working with private for-profit providers improve utilization and quality of health services for the poor? A SUPPORT Summary of a systematic review. 2008 August.
59. Grabowsky M, Farrell N, Hawley W, Chimumbwa J, Hoyer S, Wolkon A, et al. Integrating insecticide-treated bednets into a measles vaccination campaign achieves high, rapid and equitable coverage with direct and voucher-based methods. *Trop Med Int Health*. 2005;10(11):1151-60.
60. Meuwissen L, Gorter A, Knottnerus J. Perceived quality of reproductive care for girls in a competitive voucher programme. A quasi-experimental intervention study, Managua, Nicaragua. *Int J Qual Health Care*. 2006;18(1):35-42.
61. Meuwissen L, Gorter A, Knottnerus A. Impact of accessible sexual and reproductive health care on poor and underserved adolescents in Managua, Nicaragua: a quasi-experimental intervention study. *J Adolesc Health* 2006;38(1):56.
62. Sandiford P, Gorter A, Salvetto M. Vouchers for health: using voucher schemes for output-based aid. *Public Policy for the Private Sector*, an online journal of the World Bank. 2002.
63. Stephenson R, Tsui A, Sulzbach S, Bardsley P, Bekele G, Giday T, et al. Franchising reproductive health services. *Health Serv Res*. 2004;39:2053-80

64. Agha S, Karim A, Balal A, Sossler S. A quasi-experimental study to assess the performance of a reproductive health franchise in Nepal. *Commercial Market Strategies*. 2003.
65. Plautz A, Meekers D, Neukom J. The impact of the Madagascar TOP Réseau social marketing program on sexual behaviour and use of reproductive health services. PSI Research Division Working Paper No 57 Washington, DC , PSI; 2003. 2003.
66. Broomberg J, Masobe P, Mills A. To purchase or to provide? The relative efficiency of contracting out versus direct public provision of hospital services in South Africa. *Private health providers in developing countries: serving the public interest?* Edited by: Bennett S, McPake B, Mills A London , Zed Books; 1997. 1997.
67. Mills A, Palmer N, Gilson L, McIntyre D, Schneider H, Sinanovic E, et al. The performance of different models of primary care provision in Southern Africa. *Soc Sci Med*. 2004;59(5):931-43.
68. Adu-Sarkodie Y, Steiner M, Attafuah J, Tweedy K. Syndromic management of urethral discharge in Ghanaian pharmacies. *Sex Transm Infect*. 2000;76(6):439-42.
69. Greer G, Akinpelumi A, Madueke L, Plowman B, Fapohunda B, Tawfik Y, et al. Improving management of childhood malaria in Nigeria and Uganda by improving practices of patent medicine vendors. *BASICS II and USAID*. 2004.
70. Marsh V, Mutemi W, Muturi J, Haaland A, Watkins W, Otieno G, et al. Changing home treatment of childhood fevers by training shop keepers in rural Kenya. *Trop Med Int Health*. 1999;4(5):383-9.

71. WHO. Maternity Waiting Homes: A review of experiences. World Health Organisation, Division of Reproductive Health, Safe Motherhood unit, Maternal and Newborn Health 1996.
72. Amandua J. Commissioner for Clinical Services, Ministry of Health, Uganda. In: Skilled Birth Attendance Working Group RU, editor. Kampala: College of Health Sciences, Makerere University; 2011.
73. Kaye D. Consultant Obstetrician and Gynaecologist, National Referral Hospital, New Mulago. In: Skilled Birth Attendance Working Group RU, editor. Kampala: College of Health Sciences, Makerere University; 2011.
74. van Lonkhuijzen L, Stekelenburg J, van Roosmalen J. Maternity waiting facilities for improving maternal and neonatal outcome in low-resource countries. *Cochrane Database of Systematic Reviews* [serial on the Internet]. 2009; (3): Available from: <http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD006759/frame.html>
75. Dudley L. Do maternity waiting facilities improve maternal and perinatal outcomes in low resource settings? A SUPPORT Summary of a systematic review. 2010 December
76. Chandramohan D, Cutts F, Chandra R. Effects of a maternity waiting home on adverse maternal outcomes and the validity of antenatal risk screening. *International Journal of Gynecology & Obstetrics and Gynecology*. 1994;46(3):279–84.
77. Chandramohan D, Cutts F, Millard P. The effect of stay in a maternity waiting home on perinatal mortality in rural Zimbabwe. *Journal of Tropical Medicine and Hygiene*. 1995;98(4):261–7.
78. Lonkhuijzen Lv, Stegeman M, Nyirongo R, Roosmalen Jv. Use of maternity waiting home in rural Zambia. *African Journal of Reproductive Health*. 2003;7(1):32–6.
79. Spaans W, Roosmalen Jv, Wiechen CV. A maternity waiting home experience in zimbabwe. *International Journal of Gynecology & Obstetrics*. 1998;61(2):179–80.
80. Mbonye AK, Asimwe JB. Factors associated with skilled attendance at delivery in Uganda: Results from a national health facility survey *Int J Adolesc Med Health* 2010;22(2).
81. MOH. Roadmap for Accelerating the Reduction of Maternal and Neonatal Mortality and Morbidity in Uganda (2007-2015). In: Health Mo, editor. Kampala: Ministry of Health; 2007.
82. MOH. Village Health Team: A handbook to improve health in communities. Kampala: Ministry of Health.
83. Lee AC, Lawn JE, Cousens S, Kumar V, Osrin D, Bhutta ZA, et al. Linking families and facilities for care at birth: What works to avert intrapartum-related deaths? *International Journal of Gynecology and Obstetrics*. 2009 October;107(Suppl 1):S65-85, S6-8.
84. Pariyo GW, Mayora C, Okui O, Sengooba F, Peters DH, Serwadda D, et al. Exploring new health markets: experiences from informal providers of transport for maternal health services in Eastern Uganda. *BMC International Health and Human Rights*. 2011;11((Suppl 1):S10).
85. Ekirapa-Kiracho E, Waiswa P, Rahman MH, Makumbi F, Kiwanuka N, Okui O, et al. Increasing access to institutional deliveries using demand and supply side

incentives: early results from a quasi-experimental study. *BMC International Health and Human Rights*. 2011;11((Suppl 1):S11).

86. Forsetlund L, Bjørndal A, Rashidian A, Jamtvedt G, O'Brien M, Wolf F, et al. Continuing education meetings and workshops: effects on professional practice and health care outcomes. *Cochrane Database of Systematic Reviews*. 2009 April 15;2(CD003030).

87. O'Brien M, Rogers S, Jamtvedt G, Oxman A, Odgaard-Jensen J, Kristoffersen D, et al. Educational outreach visits: effects on professional practice and health care outcomes. *Cochrane Database of Systematic Reviews*. 2007 October 17(4):CD000409.

88. Jamtvedt G, Young J, Kristoffersen D, O'Brien M, Oxman A. Audit and feedback: effects on professional practice and health care outcomes. *Cochrane Database of Systematic Reviews*. 2006 April 19(2):CD000259.

89. Rowe A, Savigny D, Lanata C, Victora C. How can we achieve and maintain high-quality performance of health workers in low-resource settings? *The Lancet*. 2005 September 17;366(9490):1026-35.

90. Siddiqi K, Newell J, Robinson M. Getting evidence into practice: what works in developing countries? *International Journal for Quality in Health Care*. 2005 October 17. Epub. May 4.(5):447-54.

91. MOH. Annual Health Sector Performance Report (2009-2010). Kampala: Ministry of Health; 2010.

92. Nabudere H, Asiimwe D, Mijumbi R. Task shifting in maternal and child health care: an evidence brief for Uganda. *Int J Technol Assess Health Care*. 2011 April;27(2):173-9.

93. MOH. Situational Analysis of newborn health in Uganda: Current status and opportunities to improve care and survival. Kampala: Ministry of Health; 2008.

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.

96. Lavis JN, Wilson MG, Oxman AD, Lewin S, Fretheim A. SUPPORT Tools for evidence-informed health Policymaking (STP) 4: Using research evidence to clarify a problem. *Health Research Policy and Systems*. 2009 16 December 2009;7(Suppl 1:S4).

97. Supporting the Use of Research Evidence (SURE) in African Health Systems. SURE guides for preparing and using policy briefs: 4. Clarifying the problem. .

98. Lavis JN, Wilson MG, Oxman AD, Grimshaw J, Lewin S, Fretheim A. SUPPORT Tools for evidence-informed health Policymaking (STP) 5: Using research evidence to frame options to address a problem. *Health Research Policy and Systems*. 2009 16 December 2009;7 Suppl 1:S5.

99. Supporting the Use of Research Evidence (SURE) in African Health Systems. SURE guides for preparing and using policy briefs: 5. Deciding on and describing options to address the problem. .

100. Fretheim A, Munabi-Babigumira S, Oxman AD, Lavis JN, Lewin S. SUPPORT Tools for Evidence-informed Policymaking in health 6: Using research evidence to address how an option will be implemented. *Health Research Policy and Systems*. 2009 16 December 2009;7 Suppl 1:S5.

101. Supporting the Use of Research Evidence (SURE) in African Health Systems. SURE guides for preparing and using policy briefs: 6. Identifying and addressing barriers to implementing the options. .
102. WHO. International Statistical Classification of Diseases and Related Health Problems. . Geneva: World Health Organisation; 2007. Available from: <http://apps.who.int/classifications/apps/icd/icd10online/>.