SURE Rapid Response

What health system strategies have low and middle income countries used to improve their maternal outcomes?

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This rapid response was prepared by the Uganda country node of the Regional East African Community Health (REACH) Policy Initiative.

Key messages

- To meet MDG 5, Uganda's maternal mortality ratio would need to fall to 131 deaths per 100,000 by 2015
- Strategies that other countries have used to lower maternal mortality include:
  - Policies promoting facility based deliveries
  - Skilled birth attendants
  - Quality, availability and accessibility of essential and Emergency Obstetric Care services (EOC) for the rural and poor populations

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SURE
Supporting the Use of Research Evidence

REACH
Regional East African Community Health Policy Initiative

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Who requested this rapid response?

This document was prepared in response to a specific question from a policy maker in Uganda.

! This rapid response includes:

- **Key findings** from research
- **Considerations about the relevance** of this research for health system decisions in Uganda

X Not included:

- Policy or practice related recommendations
- Detailed descriptions

What is SURE Rapid Response Service?

SURE Rapid Responses address the needs of policymakers and managers for research evidence that has been appraised and contextualised in a matter of hours or days, if it is going to be of value to them. The Responses address questions about arrangements for organising, financing and governing health systems, and strategies for implementing changes.

What is SURE?

SURE – Supporting the Use of Research Evidence (SURE) for policy in African health systems - is a collaborative project that builds on and supports the Evidence-Informed Policy Network **(EVIPNet) in** Africa and the Regional East African Community Health **(REACH)** Policy Initiative (see back page). SURE is funded by the European Commission's 7th Framework Programme.
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Glossary

of terms used in this report:
www.evipnet.org/sure/rr/glossary

- Developing Effective 'poor-friendly' Referral Systems
- Critical incident audit
- Maternity waiting areas
- Strengthening Outreach Services and Community Based Approaches
- Targeting public sector subsidies to poor families and disadvantaged areas
- Traditional Birth Attendants
- Clean delivery kits
- Improving Education and Human rights issues for Girls and Women
- Strengthening Monitoring and Evaluation

How this Response was prepared

After clarifying the question being asked, we searched for systematic reviews, single studies, local or national evidence from relevant countries, and other relevant research. The methods used by the SURE Rapid Response Service to find, select and assess research evidence are described here:

www.evipnet.org/sure/rr/methods

Background

Maternal morbidity and mortality worldwide is a major public health problem with unacceptable effects on families and nations. About 9.5 million women suffer pregnancy-related illnesses every year while 1.4 million go through near-miss events (1, 2). The long term consequences of these illnesses and life threatening near-miss events are critical especially with slow recovery and lasting effects and are not only physical, but also psychological, social, and economic (3).

MDG 5 aims at reducing maternal mortality by two thirds by the year 2015 (4). However, between 1990 and 2005 the global maternal mortality ratio declined by only 5%. The maternal mortality ratio for sub- Saharan Africa is estimated at almost 600 per 100,000 live births, which is twice that of South Asia, four times that of Latin America and about 50 times that of industrialized countries (5). Majority of maternal deaths (almost 80%) are due to direct obstetric causes including severe bleeding (hemorrhage), infection, complications of unsafe abortion, eclampsia, and obstructed labor; with other causes being related to the unfavorable conditions created by lack of access to health care, illiteracy and factors related to poverty (6). Most of these maternal deaths seem to occur between the third trimester and the first week after the end of pregnancy with mortality being extremely high on the first and second days after delivery (7).

Maternal mortality is a reflection of the average health status of a community and so it warranties a lot of effort in trying to improve it. The maternal mortality ratio of Uganda was 435 deaths per 100,000 live births in 2006 (8), currently estimated to have fallen by 80 deaths per 100,000 (9). To meet MDG 5, Uganda's maternal mortality ratio would need to fall to 131 deaths per 100,000 by 2015. Many countries were in a similar position that Uganda is in currently with high maternal death

rates but have had a turnaround of events in a very short time, for example, Sri Lanka and Malaysia. This paper will present some of the strategies that other low and middle income countries have employed to improve on the maternal outcomes in their countries.

Summary of findings

In a recent review of the evidence for the effectiveness of non-clinical interventions to reduce maternal mortality in low-income settings, several conclusions were made: the review concluded that the evidence available was of poor quality and while it partly reflected difficulties in evaluating complex public health interventions, more rigorous study designs were generally possible to evaluate interventions to reduce maternal mortality (10). It was revealed that the intervention evaluations identified had been carried out in less than half of the low-income countries that have got a high maternal mortality ratio and furthermore even in the countries where the studies had been done, there was no evidence on all the relevant topics. This would have an effect on the ability to generalize the evaluation findings to other settings. In addition, more than twice as many interventions attempted to tackle tertiary prevention (preventing death) than secondary (preventing complications) and within tertiary prevention, more interventions tackled delay due to the timeliness and quality of care provided than delays due to decision making to seek care and accessing it. This may be attributed to the medical and health service focus which tend to evaluate quality and timeliness of care rather than infrastructure or social factors. It is noted that interventions that address delays in decision making or accessing care are more likely to be complex, targeting a wider population or community level audience, or addressing structural factors, and these may not be easy to evaluate.

Two earlier reviews had almost similar conclusions (11, 12); in one, the authors noted that the most remarkable finding of the literature review was how little conclusive evidence existed on the impact of safe motherhood interventions in Africa (11). They noted that planners and policy makers who are seeking guidance about which interventions improve maternal outcomes in African settings would in most cases have to assume that findings from other regions were applicable in Africa, because of the lack of these in their own region. In the other, the authors noted that the quantity of evidence on the effectiveness of safe motherhood strategies was as disappointing as the quality of what was available and called for more rigorous research in the area (12).

Nevertheless, some community interventions have been evaluated and the evidence availed to show what strategies different countries and communities have used to reduce their maternal morbidity and mortality.

- **Policies promoting facility based deliveries**

Policies and guidelines that facilitate increased access to facilities for deliveries are very crucial; such policies may include incentives for mothers/families to use facilities for deliveries, and education and information campaigns (13). The basis for such policies and strategies is that several clinical interventions have been shown to reduce maternal mortality in rigorous evaluations and should be pushed for implementation. The delivery of these clinical interventions requires trained health professionals and access to medical equipment and supplies, and that the most efficient organization of such scarce resources is at a health facility, which allows for easier access to skilled health professionals, appropriate equipment, transport and emergency obstetric care. It also allows for economies of scale and economic modelling suggests that although facility-based deliveries require considerably more resources, they are highly cost effective; however these have not been evaluated in comparison to non-facility based deliveries. A systematic review of the evidence on how effective these policies are in reducing maternal deaths is underway and this will help fill the knowledge gap on the effectiveness of these policies (13).

- **Skilled birth attendants**

It is not enough to put policies in place encouraging mothers to use the health facilities without equipping these with the necessary personnel to provide information and health education, assistance in antenatal, delivery and postnatal periods, family planning advice and techniques, and handling of any complications that mothers would be faced with. Facilities need to be equipped with the right numbers and the right mix of skilled attendants as the presence of a skilled birth attendant at delivery is important in averting maternal mortality and morbidity. Use of maternal health care varies greatly both within and between countries, and within countries, urban mothers are usually more likely to deliver with the help of a skilled health worker than are rural or poorer women (14). However, these personnel have also been a reason that facilities are shunned by mothers and their families and only utilized when a mother is in trouble, sometimes when it is too late. Many studies have shown the connection between disrespectful and abusive facility-based childbirth care as described by women users and a decision by these users not to use facility based childbirth services currently or in the future(15) . These attendants need to be trained to have empathy and professionalism especially when taking care of the more vulnerable mothers, so as to increase uptake of facility based services.

- **Improving quality, availability and accessibility of essential and Emergency Obstetric Care services (EOC) for the rural and poor populations**

A systematic review of evidence for the effectiveness of emergency obstetric care interventions in reducing maternal mortality primarily in developing countries found a firm evidence base for

promoting emergency obstetric care as a key strategy (16). The evidence for this strategy is often difficult to separate from the evidence for the 'skilled attendant at delivery' strategy, largely because these two strategies coexist, although skilled attendance and emergency obstetric care availability and use do not always vary together. Historical analysis of maternal mortality ratio trends in Western Europe suggests that having skilled attendance at delivery before the availability of emergency obstetric care lowers maternal mortality ratio to an extent, but it remains high. Combining skilled attendants at delivery with emergency obstetric care in Western Europe and the United States rapidly and dramatically transformed maternal mortality such that it disappeared as a public health concern within a few years (16). This strategy requires strengthening of policies promoting it coupled with capacity building and training of providers for improved quality of care. Furthermore there is a need for availing drugs, equipment and supplies, and improving logistics. India has used this strategy with improved outcomes (17). It pays additional incentives to providers to provide twenty-four hour emergency obstetric care and provides transport subsidies to poor women seeking this care and the Regional Prevention of Maternal Mortality Network (RPMMN) in Africa has shown that this can be done within existing resources from communities, government and the private sector (17).

- **Critical incident audit**

Knowing the cause of deaths is equally as important as rates. It does not help to record so many deaths without knowing what their cause is; the value of this is not debatable because without this basic information, the magnitude of the problem would not be known and so no action would be taken. These audits also have an advantage that is rarely considered; the detailed enquiries into adverse outcomes provides information that can be conveyed to the families involved, which helps them understand what happened (1). It is now a common requirement in most institutions for mortality audits to be performed however it is still not yet clear what the effectiveness of these meetings is. Several reports based on before and after studies indicate dramatic improvements but there are none talking about sustainability or even the negative effects and costs of this strategy (1). For example, the risk of litigation arising from a death review is not known, and neither is the effect on interpersonal relationships and hospital morale.

It is further noted that these peri-natal mortality audits mainly affect the intra-partum management of women and not much outside it possibly because the feedback is directed to the clinicians directly involved.

In addition, the issue of compulsory publication of the institutions peri-natal audits might be a stimulus for effecting an improvement in the quality of care, however the effects of mandatory publication of results are unknown. A systematic review to assess whether critical incident audit and feedback is effective in reducing the maternal mortality ratio and severe maternal morbidity among other things concluded that Maternal and peri-natal death reviews should continue to be held, until further information about them is available (1).

- **Developing Effective 'poor-friendly' Referral Systems**

It is well known that many of the poor outcomes of maternal conditions are due to a delay in referral, both self and institutional. Self referral may be improved by improving the knowledge of mothers through health education during and outside antenatal services. However institutional referral by health facilities and health workers for complications calls not only for sensitization of communities and the private sector on their roles but also for the improvement of communication (roads and telecommunication) in rural, poor areas. Furthermore it is inevitable to strengthen partnerships between traditional birth attendants and skilled formal providers as the former actually see more mothers than the latter. There is also need to build linkages with other reproductive health, nutrition, gender and adolescent health interventions which may be crucial in identifying at risk mothers or maybe able to pass on important information to mothers and their families. Cuba was able to improve its maternal outcomes by offering an intervention that included building a strong referral system and establishing maternity waiting homes to enhance it for rural women (17).

- **Maternity waiting areas**

A maternity waiting home is a facility within easy reach of a hospital or health center, which provides emergency obstetric care. Women would check into this facility towards the end of their pregnancy and await labor. Once the labor starts they are moved to the health facility to be assisted by a skilled birth attendant. As a strategy to improve maternal health, it aims to identify women with high-risk pregnancies and encourage them to give birth in hospital.

Women staying at this facility have access to antenatal care either by visiting the routine antenatal care program in the attached health facility or the maternity waiting home being visited regularly by a nurse, midwife or doctor. The time spent at the facility is also used to give health education about pregnancy, giving birth and neonatal care. This strategy has been implemented in varying ways in several areas; a systematic review to assess the effects of a maternity waiting facility on maternal and peri-natal health found that there was insufficient evidence to determine the effectiveness of this strategy (18). Despite this there is evidence in single studies that needs to be further searched on with rigorous methods. A cluster survey carried out in Zimbabwe, examined the use of maternal care services and found that the use of a maternity waiting home increased the likelihood of hospital delivery nearly six fold. Despite a survey in the same district five years earlier in which two thirds of the women stated that they would use a maternity waiting home if provided, only one third of all respondents, however, did use the maternity waiting home citing problems which included the fact that the maternity waiting home were too small and crowded, the toilets needed improvement and there was shortage of water and firewood, absence of food provision and no help with cooking, lack of transport for referrals

In a rural district in Ghana, 90%of respondents were willing to stay in a maternity waiting home when advised to do so, yet the introduction of a similar facility in another district failed. There appeared to be strong financial barriers with home delivery proving to be less expensive in comparison. Costs of living were cited to be higher in a maternity waiting home and women could not take care of their families and their farms. Furthermore the location of the maternity waiting home was a problem too because it was still some way from the hospital and arranging transport at night was difficult. In Nicaragua, being away from the family was also considered the main drawback of staying in a maternity waiting home. In southern Malawi in interviews, 55% of women who had used a maternity waiting home were satisfied with their stay. They perceived the easy access to skilled attendance during delivery, receiving treatment during ANC, and the development of new companionship, as important advantages of using a maternity waiting home. However, concerns were raised about lack of supervision by midwives and poor staff attitude during ANC and delivery In Zaire, maternity waiting homes near a hospital were rarely used. During focus group discussions it emerged that many women felt that the risk associated with staying in the maternity waiting home, with no food and no one to help, was greater than the risk of staying at home Focus group discussions also took place in Lao before a maternity waiting home was established. Many potential barriers were identified such as lack of privacy, inability to use traditional birthing practices, lack of respect from health staff, and cost of reaching the hospital In Peru, MWHs are reported to be successful. Women are allowed to bring their families with them and introduction of the maternity waiting home was combined with a 'cultural adaptation' of the health care services, including the option of vertical delivery which was set down in a nationwide protocol.

From these studies it is clear that careful planning is required for successful introduction of a maternity waiting home. Even when women have a positive attitude towards staying in a maternity waiting home, barriers might prevent them from doing so. Direct and indirect costs might be too high. Also, the perceived level of care in both the maternity waiting home and the facility in which they are going to give birth is an important factor that will influence decision making.

- **Strengthening Outreach Services and Community Based Approaches**

These are intended to sensitize communities on safe motherhood practices and develop alternative outreach strategies that take the maternal and child health services to the poorer communities in their homes through community based skilled birth attendants, mobile teams for prenatal and Expanded Programs on Immunization, community-based distribution of contraceptives, maternity waiting homes and rural midwifery programs. Sri Lanka and Malaysia successfully reduced maternal mortality in a relatively short time because of increased community outreach through a national network of health centers (17).

Community-based intervention packages: for example, community support groups, community mobilization, antenatal and postnatal home visitation

A systematic review whose objective was to assess the effectiveness of community-based intervention packages in reducing maternal morbidity and mortality among other things found that intervention packages that consisted of building support groups and those that mobilized community and made home visits during antenatal and postnatal periods had non-significant impact on maternal mortality. However, packages that provided training to Traditional Birth Attendants, who then made home visits during the antenatal period and during delivery, had a significant impact on reducing maternal deaths (7).

This review also found community-based intervention packages to reduce maternal morbidity on average by 25%. When the effect of community-based intervention was estimated for complications of pregnancy, it had no impact in reducing any of the complications during pregnancy, including ecclampsia, obstructed labour, puerperal sepsis, haemorrhage and spontaneous abortion. Significant impact was observed for referral to health facilities for any complication during pregnancy. The authors further found that although community-based intervention packages had a non-significant impact on healthcare seeking for maternal morbidities, they had a positive impact on healthcare seeking for neonatal morbidities and that they had no impact on increasing birth attendance by a healthcare provider overall or on institutional deliveries.

- **Targeting public sector subsidies to poor families and disadvantaged areas**

Poorer areas usually need more financial and human resources to improve accessibility and improve quality of services as compared to their less disadvantaged counterpart areas (17). Mexico's Programa Nacional de Education, Salud y Alimentation (PROGRESA) improved service utilization by providing an intervention that consisted of monetary assistance, education health services and nutritional assistance to poor mothers (17). It is believed that the transfer of money to women improved their status and decision making power over their health. Another way may be to introduce community-financing schemes and promoting private services for those who can afford it while assuring public funds are used to finance transportation and care for the poor. Bolivia's National Insurance Program for Mothers and Children provides covered services for maternal and newborn care (17).

- **Traditional Birth Attendants**

In developing countries, almost two-thirds of births occur at home and only half are attended by a trained birth attendant (19). Training of traditional birth attendants (TBAs) as a major public health strategy to reduce the burden of mortality and morbidities related to pregnancy and childbirth has been promoted for more than three decades. However, the evidence of the impact of this strategy on maternal and neonatal outcomes is still limited (20). A systematic review looking at the effects of training on traditional birth attendant and maternal behaviours thought to mediate positive

pregnancy outcomes concluded that the potential of traditional birth attendant training to reduce peri-natal mortality was promising especially when combined with improved health services (21). The review noted that the potential of traditional birth attendant training to significantly reduce peri-natal, and possibly maternal deaths is in the context of rural homebirth where traditional birth attendant s, women and families have access to an improved health system with a clinical outreach component with appropriate referral to improved health services being a key factor. One of the trials in this systematic review found a 26% difference in maternal deaths in favor of women in the intervention cluster (although the population assessed was small). Shown below is some of the evidence from this review.

- **Clean delivery kits**

According to the World Health Organization, 15% of maternal deaths are due to infection. Programs that provide clean delivery kits hope to reduce infections among mothers delivering at home and in health centers, as well as among their infants. Kits include such items as soap for washing of hands and vagina, clean razors and cord ties for cutting the umbilical cord, plastic sheets for creating a clean delivery surface, and a pictorial instruction sheet for directing mothers and their attendants on how to use the items in the kit. Single-use delivery kits, when combined with education about clean delivery, can have a positive impact on the health of women and their newborns by significantly decreasing the likelihood of developing puerperal sepsis or cord infection. The effect of this strategy is not yet entirely clear. A study in Tanzania found significant reductions in infections among women who used the kits and were taught World Health Organization recommended hygienic procedures, and an even larger reduction among their infants; it showed that women who used the kit for delivery were 3.2 times less likely to develop puerperal sepsis than women who did not use the kit (22). However the design of this study was a cause for concern leaving the validity of the findings in doubt. Furthermore, it is difficult to identify which part of the strategy was responsible for the outcome, that is between the kits, the hygiene lessons, or a combination of the two.

- **Improving Education and Human rights issues for Girls and Women**

This strategy aims at providing knowledge and education about maternal health to women and their families to promote better health-seeking behaviours. Improvement is made of access to education for girls of poor families in order to delay early child bearing and improve women's empowerment. Korea, Thailand, and India (Kerala and Tamil Nadu) are examples of countries that have invested in girls' education and have improved maternal health outcomes (17).

Human Rights: maternal mortality is linked to women's social and economic status, and their level of dependency. Poverty is a major contributory factor behind maternal deaths, and in fact, providing maternal health care is a necessary component of poverty alleviation strategies (23). It has been

shown that there is inequitable distribution of decisive interventions like skilled attendance at birth than what you would find with say antenatal care or child immunization. Human rights are also at the center of the abortion subject and at the provision of youth friendly reproductive health services to young people, including counseling and care on contraception, sexually transmitted services and unintended pregnancy. Further application of rights issues concerns violence against women. An increasing body of evidence indicates that many negative maternal and peri-natal health outcomes are linked to discrimination, coercion and violence against women, frequently inflicted by their intimate husbands and by health personnel (23, 24). Violence during pregnancy can lead to such serious consequences as infections, unsafe abortions, miscarriages, low birth weight, suicide and homicide. Therefore, efforts to address gender-based violence must be included in national and global strategies for reducing maternal mortality (23). Above all there is need for further research and advocacy for more involvement of men in maternal health.

- **Strengthening Monitoring and Evaluation**

For all current and future strategies that the health authorities introduce, there should be identified appropriate indicators and tools that will provide information on special groups like the poor; for example, differentiated process indicators (availability of emergency obstetric care services, deliveries by skilled attendants by income group) maternal audits at health facility and community level, and reproductive age surveys where vital registration is good. Conduct benefit-incidence analysis. Honduras has introduced maternal mortality epidemiological surveillance based on Centre for Disease Control/Pan American Health Organization guidelines (17).

Conclusion

Several strategies that other countries have employed to lower maternal mortality and morbidity are presented here. The evidence acts as guidance as strategies are quite context sensitive and may be used on their own or as a part of an intervention package involving several strategies. Even if they may not be directly transferrable, country-level success stories are useful in showing the feasibility of the goal of reducing maternal mortality.

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Conflicts of interest
None known.

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