



AVERTING MATERNAL DEATH AND DISABILITY

A sector-wide approach to emergency obstetric care in Uganda

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Received 1 April 2005; accepted 18 July 2005

KEYWORDS

Uganda;
Emergency obstetric care;
Sector-wide approach;
Policy

Abstract

Purpose: To establish a baseline for the availability, utilization, and quality of EmOC, and to help develop an operational strategy based on the findings. *Methods:* A needs assessment of emergency obstetric care (EmOC) was carried out in 197 health facilities in 19 out of 56 districts in Uganda, covering 38% of the total population. *Findings:* There were a large number of missing signal functions at health facilities and an urgent need to improve the availability of EmOC. *Conclusion:* By using the data from the assessment, it was possible to influence national policy through the health sector-wide approach (SWAp) and place EmOC high on the national agenda. A national strategy and roll out plan to strengthen EmOC is now in place.

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1. Introduction

Uganda has a population of 24.6 million with a rapid population growth rate of 3.4% [1]. It is one of the

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poorest countries in the world with a per capita income in 2004 estimated at US\$250 [1]. Life expectancy remains low at 43 years [1]. Despite this apparently bleak scenario, Uganda has made considerable progress in terms of human development over the last few years. The adult literacy rate now stands at 69%, and there has been a significant decline in the adult HIV prevalence rate since the mid-1990s from about 14% to 5% in 2001 [2].

Nonetheless, substantial progress remains to be seen in the area of maternal health. Uganda, like most countries of the world, has agreed upon the United Nations Millennium Development Goal (MDG) to improve maternal health, which targets the reduction of maternal mortality between 1990 and 2015 by three-quarters. Achieving this goal in Uganda is a challenge – maternal mortality remains high with an estimated maternal mortality ratio of 505 maternal deaths per 100,000 live births, and a lifetime risk of maternal death of 1 in 13 women [3]. Furthermore, many women continue to deliver without a skilled birth attendant. Between 1989 and 2001, the proportion of deliveries assisted by a trained medical professional was essentially stagnant at 38% in 1989 and 39% in 2001 [4,3].

To address the problem of maternal mortality in Uganda, an EmOC needs assessment was conducted in 2003 by the Ugandan Ministry of Health. This paper reports on the findings of the EmOC needs assessment and how the results influenced Uganda's health sector-wide approach (SWAp) to address EmOC to reduce maternal mortality.

2. The SWAp process in Uganda

To achieve sustained improvements in people's health and well-being, development assistance agencies must work in partnership with countries to support their national policies and strategies. As part of these efforts, the sector-wide approach provides an opportunity to develop a partnership among key actors – national governments, development agencies, the public and private sectors, non-governmental organizations, and civil society – to make better use of funds from all sources, and reduce the inefficiencies and waste associated with multiple and parallel projects supported by different agencies [5–7].

Uganda has taken steps to reduce poverty through its Poverty Eradication Action Plan (PEAP), which has guided government policy since its inception in 1997, and supports a pro-poor change in spending patterns. The four major goals of the PEAP are: 1)

fast and sustainable economic growth and structural transformation; 2) good governance and security; 3) increased ability of the poor to raise their incomes; and 4) increased quality of life of the poor [8,9]. The PEAP serves as a reference by which civil society organizations can hold the government accountable, and as a basis for harmonization and coordination among development partners.

The PEAP provides an overall policy framework within which sector-specific strategies are developed and implemented through the SWAp process. All funding for the sector supports the National Health Policy and the Health Sector Strategic Plan, under government leadership, with common procedures for financial management, and common structures for planning, management, and monitoring [10,11]. Uganda's health sector strategic plan, which is part of the overall national Poverty Eradication Action Plan, was initiated by the government in August 2000 with assistance from development partners and implemented through the SWAp process. Development partners contributing to budget support include those from Belgium, Denmark, the European Union, Ireland, Netherlands, Norway, Sweden, the United Kingdom, and the World Bank.

Included among Uganda's development goals is the need to address high maternal mortality as well as further explore the linkages between maternal mortality and poverty. Since prompt access to good quality EmOC can significantly reduce maternal mortality, the health SWAp provided an opportunity to prioritize EmOC by contributing to strategic direction when decisions regarding health sector spending priorities were being made.

3. Needs assessment on the status of EmOC

3.1. Main objectives

At the SWAp's 7th Joint Review Mission held in October 2002, it was agreed that a strategy and program were needed to increase both the number of supervised deliveries and access to emergency obstetric care. As a first step in this process, it was recommended that a needs assessment on the status of EmOC in Uganda be carried out, and UNICEF agreed to support this endeavor. The objectives of the EmOC needs assessment were the following:

1. To establish a baseline for availability, utilization, and quality of EmOC

Table 1 Organization of health infrastructure in Uganda

Facility level	Population served	Staffing	Services
National teaching hospital	22,000,000	Wide range of specialists available	Full range of services; also function as teaching hospitals
Regional referral hospital	2,000,000	Limited specialists available	Wide range of services; also function as teaching hospitals in some areas
District hospital	500,000	Some specialists available	Medicine, surgery, pediatrics, ObGyn, dentistry, anesthesia, radiology, clinical laboratory, and community health
Health center IV	100,000	At least 1 medical officer, 2 clinical officers, 1 registered midwife, 1 enrolled nurse, 1 enrolled midwife, 1 comprehensive nurse, 2 nursing assistants, 1 laboratory technician, 1 laboratory assistant, 1 health inspector, 1 dispenser, 1 public health dental assistant, 1 anesthetic officer, 1 assistant health educator, 1 records assistant, 1 accounts assistant, and 2 support staff	All services of HC III plus surgery and blood transfusions
Health center III	20,000	1 clinical officer, 1 enrolled nurse, 2 enrolled midwives, 1 nursing assistant, 1 health assistant, 1 laboratory assistant, and 1 records officer	All services of HC II and inpatient care and environmental health
Health center II	5000	1 enrolled nurse, 1 enrolled midwife, and 2 nursing assistants	Outpatient care, antenatal care, immunization, and outreach

Source: [14,15].

2. To develop an operational strategy based upon the findings.

3.2. Methodology

With support from AMDD, the Ugandan Ministry of Health, UNICEF and other partners carried out an EmOC needs assessment during February and March 2003 (the service statistics involved covered the period between January and December 2002), using the UN process indicators for monitoring obstetric services [12].

The country was divided into 4 zones: Central, Eastern, Western, and Northern. In each zone, 5 districts were purposefully selected for the needs assessment by taking into consideration districts with high total fertility rates (according to the 1991 Census), and by maintaining a balance between

districts with inaccessible and accessible transport and communication services. However, due to insecurity during the survey period, 1 of the 20 selected districts was eventually excluded. Thus, data were collected from 19 (out of a total of 56) districts, covering a population of 9.4 million and representing 38% of Uganda's population [13].

The health infrastructure in Uganda includes national referral hospitals (public), regional referral hospitals (public), district/rural hospitals (both public and private), as well as health centers (both public and private). Health centers are graded as II, III, or IV, according to the administrative zone served and by the types of services that are provided [14,15] (see Table 1). Health centers II (HC II) serve a parish and provide outpatient care, antenatal care, immunization and outreach. Health centers III (HC III) serve a sub-county and provide all

Table 2 The UN process indicators for EmOC

Process indicator	Definition
Availability of EmOC	Number of facilities that provide EmOC per 500,000 population
Geographic distribution of facilities	Facilities must be well distributed at the provincial or district levels
Percentage of all births in EmOC facilities	Percentage of all expected births in EmOC facilities
Met Need for EmOC	Percentage of women estimated to have obstetric complications who are treated at EmOC facilities
Cesarean deliveries as a percentage of all births	Cesarean deliveries as a percentage of all expected births in the population
Case fatality rate	Percentage of women, with direct obstetric complications admitted to a facility, who die

Source: [12].

Table 3 Availability of comprehensive and basic EmOC, 19 districts, Uganda, 2002 ($n=197$)

Type of health facility	No. surveyed	Availability of comprehensive EmOC	Availability of basic EmOC
Hospital	32	21 (65.5%)	11 (34.4%)
Health center IV	36	2 (5.6%)	2 (5.6%)
Health center III	129	N/A	5 (3.9%)
Total	197	23	18

the services of HC II, plus inpatient care and environmental health. In theory, a HC III should be able to function as a Basic EmOC facility.¹ Health centers IV (HC IV) serve a health sub-district and provide all the services of HCs III, plus surgery, supervise the lower level HCs II and III, collect and analyze data on health, and plan for the health sub-district. In theory, a HC IV should be able to function as a Comprehensive EmOC facility.² However, the actual staffing levels and services provided at health facilities often fall short of the guidelines described above.

To draw the sample of health facilities to be surveyed for the needs assessment, all facilities in each selected district were enumerated. Random selection was done in each category of health facility using the following criteria: one of the hospitals considered a district hospital was included in the sample; 50% of all the HCs IV in the selected district were included in the study; 50% of all the HCs III in the selected district were included; both public and private health facilities were covered in proportion to their number and level of service delivery. For the 19 selected districts, the EmOC needs assessment surveyed a total of 197 health facilities (both public and private), which included 32 hospitals, 36 HCs IV, and 129 HCs III.

3.3. Results

The findings from the needs assessment are shown in Tables 3–7 and are based on the UN Process Indicators for monitoring obstetric services [12]. Issued by UNICEF, WHO, and UNFPA, the indicators are used to identify the availability, use, and (to some extent) quality of emergency obstetric care (see Table 2). The UN indicators were developed

¹ A Basic EmOC facility is one that is performing all of the following 6 signal functions: administration of injectable antibiotics, oxytocic drugs, and anticonvulsants; manual removal of placenta; removal of retained products; and assisted vaginal delivery.

² A Comprehensive EmOC facility is one that is performing all signal functions in Basic EmOC as well as cesarean section and blood transfusion.

Table 4 Availability of EmOC services, 19 districts, Uganda, 2002 ($n=197$)

Type of health facility	Minimum recommended for population size	Current status	Gap
Comprehensive EmOC	19	23	+4
Basic EmOC	76	18	-58

based on an understanding that most maternal deaths could be prevented if women receive prompt, adequate treatment for major obstetric complications. Thus, a short list of key medical procedures that are necessary to save the lives of women with obstetric complications was developed. Eight of these procedures are used as “signal functions” to distinguish facilities that are actually providing Basic or Comprehensive EmOC from those that are not.

Tables 3 and 4 show the amount of EmOC services available. For every 500,000 population, there should be at least 1 Comprehensive and 4 Basic EmOC facilities. Thus, for the catchment population of the surveyed districts, there should be 19 Comprehensive and 76 Basic EmOC facilities. The needs assessment found that there were 23 Comprehensive and 18 Basic EmOC facilities available, indicating a sizeable gap in the availability of Basic EmOC services. Out of 19 districts surveyed, only 8 (42%) had some facilities that meet the criteria for EmOC facilities.

Tables 5 and 6 show the missing signal functions in health centers III and IV. Health center IV facilities are providing more signal functions than are HC III facilities. Almost all HCs IV, and most HCs III, are providing parenteral antibiotics and oxytocics. In contrast, most of these kinds of facilities are not providing assisted vaginal delivery, which can often avert the need for cesarean section. In fact, only a few health centers were functioning at

Table 5 Missing EmOC signal functions at health centers IV, Uganda, 2002 ($n=36$)

Signal function	Number of facilities with missing function	Percentage
Parenteral antibiotics	5	14
Parenteral oxytocics	4	11
Parenteral sedatives	23	64
Manual removal of placenta	17	47
Removal of retained products	18	50
Assisted vaginal delivery	32	89
Blood transfusion	34	94
Cesarean section	34	94

Table 6 Missing EmOC signal functions at health centers III, Uganda, 2002 (*n* = 129)

Signal function	Number of facilities with missing function	Percentage
Parenteral antibiotics	31	24
Parenteral oxytocics	32	25
Parenteral sedatives	82	64
Manual removal of placenta	81	63
Removal of retained products	103	80
Assisted vaginal delivery	122	95

the expected level (Basic EmOC for HCs III and Comprehensive EmOC for HCs IV).

As Table 7 shows, only 5% of births took place in EmOC facilities, although the recommended level is at least 15%. Met Need for EmOC was 5%, whereas it should be at least 100% since all women with obstetric complications should be treated. As a proportion of all expected births in the population, cesarean sections should account for not less than 5% and not more than 15%. In Uganda, the corresponding figure was about 1%, which is far below the recommended minimum. Finally, the case fatality rate (CFR) is a crude indication of the quality of care and refers to maternal deaths among women with obstetric complications admitted to the EmOC facilities. The CFR was 1.5%, which is greater than the maximum acceptable level of 1%. Taken together, these findings suggest that once they get to the health facility, women's survival is fair, but in light of low Met Need, only a small proportion of those with complications actually reach these facilities. However, as has been found in the Malawian study on UN process indicators [16] poor record keeping may have contributed to the relatively low case fatality rate observed in spite of the limited EmOC services.

4. Discussion

The sector-wide approach provided a significant opportunity to address maternal mortality in Uganda. Findings from the needs assessment clearly showed that coverage of EmOC in Uganda must be improved. Consequently, it was possible to use the data from the needs assessment, particularly the information on the large number of missing signal functions at health facilities, to influence national policy and place EmOC high on the national agenda. Using data from a needs assessment carried out by credible institutions gave an

added advantage when advocating for EmOC, and thus made it easier for development partners to support leveraging resources for EmOC. Preliminary results from the needs assessment were presented to the 8th Joint Review Mission in April 2003, which resulted in greater focus on EmOC as a priority for the 2003–2004 annual plan. At the SWAp 9th Joint Review Mission in November 2003, the final results from the needs assessment were presented, leading to the recommendation by the SWAp Joint Review Mission that an EmOC needs assessment be completed in the 37 districts that were not included in the original needs assessment. Moreover, it was agreed that a roll out of EmOC in all districts should be initiated. UNICEF and USAID agreed to provide funds for the EmOC needs assessment in the 37 districts. A national strategy and plan for EmOC roll out have been developed. This includes on-the-job training, addressing management issues, reorganization of services at the facility level, improving community linkages, and monitoring of signal functions.

During the process of incorporating EmOC as a high priority in the health SWAp, it became clear that, to effectively tackle the reduction of maternal mortality, there is a need to improve coordination among key stakeholders and build strong partnerships, including partnerships with the private sector. The foundation for facilitating this process is strong government leadership and support. EmOC is also benefiting from the support of development partners in Uganda. Positive steps have been taken by UNICEF, WHO, and UNFPA to achieve greater collaboration in supporting the government to roll out the EmOC strategy within the SWAp process.

To strengthen the effectiveness of efforts by development partners to improve EmOC, it is important for staff in the various agencies, including UNICEF, to be actively involved throughout the process—participating in sector working groups, contributing and commenting on sector strategy papers, reading SWAp documents, participating in Joint Review Missions, and providing consistent

Table 7 UN process indicators of quantity and quality of EmOC, Uganda, 2002

Indicator	Actual level (%)	Recommended level (%)
Proportion of all births in EmOC facilities	5	≥ 15
Met Need for EmOC	5	100
C-section as a percentage of expected births	1	5–15
Case fatality rate in EmOC facilities	1.5	< 1

support for SWAp activities. These efforts are critical to ensuring that EmOC remains high on the national agenda.

5. Conclusion

The experience from Uganda in using a sector-wide approach to address the reduction of maternal deaths is no small achievement—it is proof that a coordinated commitment and effort on the part of the government and other development partners can indeed lead to real, positive changes in national policy addressing maternal mortality. Including maternal mortality in the SWAp process provided a way in which key interventions to reduce maternal death and disability could be highlighted nationally, prioritized, and supported with the allocation of resources.

Nevertheless, to ensure that these changes in national policy translate into a sustainable impact on maternal mortality, the Roll Out Plan for EmOC must be implemented. First, district health workers' skills in EmOC need to improve so that they can effectively manage and treat obstetric complications. Competency-based training to strengthen the technical capacity of local health providers will improve their knowledge, skills, ability, and confidence to provide good quality EmOC.

National capacity to continuously monitor and evaluate program implementation using the UN Process Indicators also needs to be established. Hospital staff should be trained on how to use these process indicators and proper data management systems should be in place. Important first steps in this process include standardizing definitions of obstetric complications and encouraging the maintenance of appropriate record-keeping.

Finally, advocacy efforts must be continued to sustain the current high level of support for EmOC. An advocacy tool known as REDUCE has already been developed for Uganda to stimulate policy dialog and strategic planning that will ensure greater prioritization of EmOC. The REDUCE process uses computer models to estimate the human and economic consequences of maternal mortality, and generates data that provides sound arguments for giving higher priority to maternal mortality reduction in policy formulation, strategy development, and resource allocation [17].

We hope our experience in Uganda in the use of a sector-wide approach to improving emergency obstetric care will serve as an impetus for development partners in other countries that are also striving to reduce maternal death and disability.

The process through which EmOC gaps are being addressed is inclusive and has both national level efforts as well as bottom-up collaboration at the district level as has been recognized in the Malawi study [18]. This will inevitably contribute to the long term availability and quality of EmOC services.

Acknowledgments

The authors acknowledge the research assistants, district health teams, and service providers who spent valuable time during the data collection exercise, the Ministry of Health Uganda, UNFPA, WHO, UNICEF, and USAID staff for their support during the study. Special thanks go to Marilen Danguilan, UNICEF, New York; Sourou Gbangbade, Grace Kodindo, and Deborah Maine from AMDD, for their technical guidance and support. Finally, acknowledgement goes to Columbia University and the Bill and Melinda Gates Foundation for financial support for the survey. The views and opinions expressed in this article are not necessarily those of UNICEF, the Ministry of Health in Uganda or the funding agencies.

References

- [1] World Bank. World development indicators. New York: World Bank; 2004.
- [2] United Nations Development Program. Human development report: 2003 millennium development goals: a compact among nations to end human poverty. Washington: Oxford University Press; 2003.
- [3] Uganda Bureau of Statistics (UBOS) and ORC Macro. Uganda Demographic and Health Survey 2000–2001. Calverton: UBOS and ORC Macro; 2001.
- [4] Uganda Ministry of Health, Uganda Ministry of Planning and Economic Development, Makerere University, and IRD/Macro Systems Inc. Uganda demographic and health survey 1988/1989. Columbia: IRD/ Macro Systems Inc.; 1989.
- [5] Cassels A. A guide to sector-wide approaches for health development. Geneva: World Health Organization; 1997 [WHO/ARA/97.12].
- [6] Goodburn E, Campbell O. Reducing maternal mortality in the developing world: sector-wide approaches may be the key. *Br Med J* 2001;322:917–20.
- [7] Dmytraczenko T, Rao V, Ashford L. Health sector reform: how it affects reproductive health. Measure Communication/PHRplus; 2004 [Policy Brief].
- [8] World Bank, Uganda country brief; 2004. [http://www.worldbank.org/ug/ctry_brief.htm].
- [9] Uganda Ministry of Finance Planning and Economic Development. Poverty Eradication Plan: Executive Summary, 2004 [<http://www.finance.go.ug/peap.html>].
- [10] World Bank. Voices and Choices at a Macro Level: Uganda Process Case Study; 2004 [<http://www.worldbank.org/participation/web/webfiles/uganda.htm>].

- [11] Yates R. Voting with their feet: what lessons can be learnt from increased consumption of public services in Uganda? *Health Policy Dev* 2003;2(1):48-51.
- [12] UNICEF/WHO/UNIPA. Guidelines for monitoring the availability and use of obstetric services. New York: UNICEF; 1997.
- [13] Uganda Ministry of Health and UNICEF. Status of emergency obstetric care in Uganda. A national needs assessment of EmOC process indicators. New York: UNICEF, 2003.
- [14] Uganda Ministry of Health; 2004 [http://www.health.go.ug/health_units.htm].
- [15] Hussein J, Goodburn EA, Lema V, Graham W. Monitoring obstetric services: putting the 'UN Guidelines' into practice in Malawi: 3 years on. *Int J Gynecol Obstet* 2001; 75(1):63-73.
- [16] Ssengooba F, Neema S, Mbonye A, Sentubwe O, Onama V. Maternal health review Uganda. Makerere University Institute of Public Health, Health Systems Development Programme; 2003.
- [17] SARA/AED. E-note #38: REDUCE—a user-friendly policy development and advocacy computer model for the reduction of maternal mortality, morbidity, and disability; 2004 [<http://sara.aed.org/enotes/enote38.htm>].
- [18] Fortney JA. Editor's comment: monitoring obstetric services: putting UN guidelines into practice in Malawi. *Int J Gynaecol Obstet* 2001;74(1):118.