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CLINICAL ARTICLE

Advance distribution of misoprostol for the prevention of postpartum hemorrhage in South Sudan



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ABSTRACT

Objective: To determine if high uterotonic coverage can be achieved in South Sudan through a facility- and community-focused postpartum hemorrhage (PPH) prevention program. **Methods:** The program was implemented from October 2012 to March 2013. At health facilities, active management of the third stage of labor (AMTSL) was emphasized. During prenatal care and home visits, misoprostol was distributed to pregnant women at approximately 32 weeks of pregnancy for the prevention of PPH at home births. Data on uterotonic coverage and other program outcomes were collected through facility registers, home visits, and postpartum interviews. **Results:** In total, 533 home births and 394 facility-based births were reported. Misoprostol was distributed in advance to 787 (84.9%) pregnant women, of whom 652 (82.8%) received the drug during home visits. Among the women who delivered at home, 527 (98.9%) reported taking misoprostol. A uterotonic for PPH prevention was provided at 342 (86.8%) facility-based deliveries. Total uterotonic coverage was 93.7%. No adverse events were reported. **Conclusion:** It is feasible to achieve high coverage of uterotonic use in a low-resource and postconflict setting with few skilled birth attendants through a combination of advance misoprostol distribution and AMTSL at facilities. Advance distribution through home visits was key to achieving high coverage of misoprostol use.

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1. Introduction

Postpartum hemorrhage (PPH) accounts for 34% of maternal deaths in Africa [1]. To prevent PPH, use of a uterotonic during the third stage of labor is recommended for all women [2]. Oxytocin is the preferred uterotonic and is an essential component of active management of the third stage of labor (AMTSL) [2]. Oxytocin requires refrigeration, a skilled provider, and sterile equipment, which limits its use in low-resource settings. In low-income countries, 37% of women deliver without a skilled birth attendant (SBA) [3] and therefore receive neither AMTSL nor oxytocin.

Where oxytocin use is not feasible, lay community health workers are recommended to administer misoprostol for PPH prevention [2].

Misoprostol, a prostaglandin E1 analog, is a heat-stable and inexpensive uterotonic in tablet form increasingly used in PPH prevention [4], particularly in home births. Misoprostol has been shown to prevent and reduce PPH in a community-based setting [5,6], and community health workers have effectively distributed and/or administered misoprostol at home births [7].

PPH is presumed to be a leading cause of maternal death in South Sudan, which has the world's highest maternal mortality ratio (2054 maternal deaths per 100 000 live births) [8]. The health system in newly independent South Sudan is challenged by limited infrastructure, inequitable distribution and poor retention of trained healthcare providers, and restricted access to care because of poverty, illiteracy, and poor-quality roads [9]. Most (59.7%) pregnant women in South Sudan receive no prenatal care and only 17.2% deliver with a doctor or nurse-midwife [10]. Only 11.5% of births occur at health facilities [10]. Uterotonic use for PPH prophylaxis as part of AMTSL is not part of the national standard for delivery care in facilities. Oxytocin is provided only for treatment of PPH.

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The Basic Package of Health Services [11] developed by South Sudan's Ministry of Health promotes primary health care at multiple levels in the health system. Basic emergency obstetric and newborn care is provided at primary healthcare centers, but few are staffed by SBAs (doctors and nurses). Primary healthcare units—the lowest-level facilities—are staffed by maternal and child health workers, who conduct deliveries but are not SBAs. Home health promoters are a new village-level cadre of volunteer community health workers who provide education and limited services.

To reduce maternal deaths, the South Sudan Ministry of Health launched a PPH prevention program in 2012. It aimed to provide a uterotonic—oxytocin or misoprostol in a facility and misoprostol at home birth—for PPH prophylaxis and achieve high (>90%) coverage of all births. The aim of the present study was to evaluate the program performance in terms of uterotonic coverage for facility and home births at the population level, adverse effects and serious adverse effects of misoprostol use, effectiveness of counseling, and program acceptability. The data were requested by the Ministry of Health to plan program expansion.

2. Materials and methods

From October 2012 to March 2013, an observational study was undertaken regarding the PPH prevention program implemented in Mundri East County in Western Equatoria State. This county was selected because of its good performance in health services delivery, existing Integrated Service Delivery Project (ISDP) activities, US Agency for International Development support, and sufficient nongovernmental organization capacity. The Department of Reproductive Health (now the Directorate of Reproductive Health) of the Ministry of Health led implementation of the program. Support was provided by Jhpiego (Washington, DC, USA) through the Maternal and Child Health Integrated Program (MCHIP), the ISDP, and the Sudan Health Transformation Program, Phase Two. Venture Strategies Innovations procured misoprostol from Cipla Pharmaceuticals (Mumbai, India), and Systems for Improved Access to Pharmaceuticals and Services (SIAPS) strengthened the Ministry of Health's drug management system for distribution and local accounting. The Mundri Relief and Development Association managed implementation of the program at the district level.

The Institutional Review Board of Johns Hopkins Bloomberg School of Public Health (Baltimore, MD, USA) approved the program. The Ministry of Health did not view the activity as research and did not require review by an institutional review board in South Sudan. Pregnant women who participated in the program provided oral consent, obtained using consent forms in the local language.

A comprehensive approach to PPH prevention was implemented. At the 15 health facilities included (Table 1), the focus was on AMTSL, and a simplified PPH management protocol (uterotonics and manual removal of the placenta) was introduced. The routine provision of a uterotonic (either oxytocin or misoprostol) as part of AMTSL for PPH prophylaxis was emphasized for all deliveries. At the start of the program, six SBAs were trained in AMTSL for PPH prevention and simplified management. Maternal and child health workers were trained to administer misoprostol for AMTSL.

The prevention of PPH at home births was introduced through prenatal-care services and home visits by 135 female home health promoters. Most home health promoters were newly recruited and trained; they had received no prior training. Training occurred from August to November, 2012, and trained home health promoters immediately began enrolling women in their area. Most home health promoters were trained by October, so the implementation period was defined as October 1, 2012, to March 31, 2013 (6 months).

The prevention of PPH at home births included education and advance distribution of misoprostol (three 200- μ g tablets, total dose of 600 μ g to be taken once orally) for pregnant women at approximately 32 weeks of pregnancy during prenatal-care consultations and home

Table 1
Population and maternal health parameters for South Sudan and Mundri East County.^a

Variable	Data
South Sudan	
PNC coverage	
Women receiving first prenatal visit ^b	40.3%
Women receiving four prenatal visits ^b	17.0%
Facility-based births ^b	11.5%
Mundri East County	
Total population	53 799
Expected number of births annually	1848
Crude birth rate ^c	34.4
Total number of villages	14
Total number and types of facilities	
PHCU	10
PHCC	4
Hospital	1

Abbreviations: PHCC, primary healthcare centers; PHCU, primary healthcare units; PNC, prenatal care.

^a Data from the Ministry of Health.

^b The Sudan Household Health Survey 2006 [8].

^c Number of live births per year, per 1000 population.

visits by home health promoters. Prenatal-care providers (SBAs and maternal and child health workers) were trained on PPH-related counseling (including the importance of facility-based delivery and danger signs during pregnancy, including PPH) and advance distribution of misoprostol.

Key counseling messages provided during prenatal-care consultations and home visits included: bleeding after birth (PPH) is dangerous; misoprostol can prevent PPH if taken immediately after the last neonate is born; misoprostol should never be taken before birth; and PPH requires immediate treatment. Misoprostol was provided after women accurately repeated the messages.

Pregnant women were enrolled at facilities during prenatal care and at home by home health promoters. Those with a pregnancy duration of 32 weeks or more who were aged at least 15 years were screened. Exclusion criteria included a known history of allergy to prostaglandins, known chronic disease (e.g. cardiac disease or diabetes), and a previous cesarean delivery. Prenatal-care providers and home health promoters were trained to obtain consent and enroll women.

The home health promoters used mapping to identify pregnancies in their catchment area. They provided birth preparedness education and PPH-related information using counseling cards for women during the seventh month of pregnancy. The home health promoters visited women again in their eighth month to counsel about PPH and the use of misoprostol, take consent, and distribute the drug.

Because there was no community-based information reporting system and literacy of home health promoters varied, pictorial recording sheets were developed. The prenatal-care providers and home health promoters tracked misoprostol distribution using specific registers and retrieved empty or unused misoprostol packets. The home health promoters were also trained to administer misoprostol if they were present at a delivery. They were informed by their community of a recent delivery and they visited all women within 48 hours after delivery as part of their community health worker responsibilities. The home health promoters recorded information on birth outcomes and misoprostol use and submitted it to the facilities for routine monitoring.

Monitoring and supervision occurred throughout implementation. Routine supervisory visits were conducted by study staff/supervisors. A sample of SBAs and maternal and child health workers was observed with the aid of checklists while they educated pregnant women and distributed misoprostol during prenatal care, and while they provided AMTSL to clients or on anatomic models. A sample of home health promoters was observed using a checklist during home visits. The home health promoters came monthly to their affiliated facility for discussion, role play, data quality control, and misoprostol resupply.

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