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AVERTING MATERNAL DEATH AND DISABILITY

Uterotonic use at home births in low-income countries: A literature review

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ABSTRACT

Objectives: This literature review compiles data on rates of use, indications, types of provider, mode of administration, and dose of uterotonics used for home births in low-income countries, and identifies gaps meriting further research. *Methods:* Published and unpublished English language articles from 1995 through 2008 pertaining to home use of uterotonics were identified via electronic searches of medical and social science databases. In addition, bibliographies of articles were examined for eligible studies. Data were abstracted and analyzed by the objectives outlined for this review. *Results:* Twenty-three articles met the inclusion/exclusion criteria. Use rates of uterotonics at home births ranged widely from 1% to 69%, with the large majority of observations from South Asia. Descriptive studies suggest that home use of uterotonics before delivery of the baby are predominantly administered by nonprofessionals to accelerate labor, and are not perceived as unsafe. *Conclusions:* To achieve maximum benefit and minimal harm, programs that increase access to uterotonics for postpartum hemorrhage prevention must take into account existing practices among pregnant women. Further research regarding access to uterotonics and intervention studies for provider behavior change regarding uterotonic use is warranted.

1. Introduction

Home use of uterotonics at birth administered by a person without medical qualifications has been considered unsafe. Safety concerns include administration of the drug, dosage, its use to initiate or accelerate labor, and the inability to monitor the woman and fetus and respond to complications [1,2]. Recent developments in the mode of administration and packaging of oxytocin and availability of misoprostol have increased interest in expanding uterotonic drug use for postpartum hemorrhage (PPH) prevention by nonprofessional birth attendants trained in its use.

The World Health Organization (WHO) now recommends use of uterotonics by a health worker trained in their administration as a part or in the absence of active management of the third stage of labor for PPH prevention, but does not recommend distribution of misprostol to community level health workers or family members for prevention or treatment of PPH [3,4]. Current WHO recommendations state that oxytocin is the drug of choice owing to its relative benefit in preventing blood loss compared with misoprostol, and to its lower rates of adverse effects. Misoprostol, in 200-μg tablets, is now widely available throughout low-income countries. The published literature suggests that it is currently registered for obstetric and gynecologic use in Brazil, Peru, Egypt, France, Russia, Spain, India, Nepal, Bangladesh, Ghana, Kenya, Nigeria, Sudan, Tanzania, Uganda, and Zambia [5], although in some of these countries, misoprostol is registered only as a program drug. Furthermore, a community-based randomized controlled trial (RCT) in India has shown significant decreases in PPH with semi-skilled birth attendants (auxiliary nurse midwives) providing misoprostol tablets as a part of expectant management of the third stage of labor at home births and in low-level facilities [6]. Studies using misoprostol in a home birth setting are underway in Bangladesh, Pakistan, Afghanistan, and Ethiopia [7]. Current, published information on cost is not available, but previous studies have found that misoprostol can be inexpensive (in 2008 the majority of estimates ranged from US $0.27 to $1.73 per 600-μg dose [4,8,9]. Additionally, misoprostol is heat stable and in tablet form is a good candidate for use in remote areas.

Traditionally, two issues have complicated use of oxytocin for PPH prevention at home; the drug requires refrigeration and administration via injection, which in many countries requires a medical professional. However, oxytocin administered via the Uniject device (PATH, Seattle, USA) with a time/temperature indicator alleviates many of these barriers. Uniject is a drug delivery device that assures accurate dosage with a nonreusable needle [10]. It has been used extensively by nonmedical personnel in vaccination campaigns [11]. The time/temperature indicator is a sticker adhered to the package of the Uniject device which changes color when the drug has been exposed to temperatures high enough to decrease its effectiveness [12]. Studies have shown that oxytocin contains more than 85% of the chemically-active drug when stored below 30 °C for one year [13]. Thus, by managing re-supply with access to some refrigeration or

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even coolers, it is now feasible to consider using oxytocin in Uniject in a broader array of settings.

Given that (1) just under half of births in low-income countries occur at home [14]; (2) PPH is among the leading causes of maternal death; (3) PPH has an effective preventive intervention; (4) two options exist for this intervention at home births; and (5) this intervention can be harmful to the woman and fetus when used before delivery of the baby; it is critical that healthcare programmers and researchers understand the context of home deliveries into which uterotonics are introduced to maximize benefit and minimize harm.

A recent literature review exploring uterotonic use in low-income countries resulted predominantly in hospital-based findings [15]. To explore use of uterotonic drugs at home births in low-income countries, a broader search of the literature targeting both medical and social sciences was required. The objectives of this paper are to document the prevalence, provider-types, indication, mode of administration, and access to uterotonics used at home births in low-income countries, and to highlight gaps in the literature indicating where further research is needed.

2. Methods

A structured review of the published and unpublished literature was undertaken to identify prevalence, access, indication, method, and type of provider associated with uterotonic drug use for home births in low-income countries. Broad search terms including home childbirth, home birth, oxytocin, misoprostol, ergometrine, oxytocics, uterotonics, labor, delivery, birth, and homecare services were used. Ten databases were searched: PubMed, CINAHL, Scopus, EMBase, Medical Anthropology, JSTOR, Popline, Proquest Dissertation Database, Soc Abstracts, and Global Health. Articles were included if they were published from 1995 through 2008 to ensure that the reports reflected recent data, if they were in English or with an English translation, and with data pertaining to the objectives. Articles were excluded if they referred to uterotonic use in hospitals, did not have primary data, addressed birth practices before 1995, or took place in a high-income country.

3. Results

The literature searches identified 974 articles, of which 81 remained after review of abstracts. An additional 44 articles were identified from reference lists. After full-text review of all articles, 23 met the inclusion and exclusion criteria (Fig. 1). Of 23 studies, 7 were trials or quasi-experimental studies that distributed uterotonics as an intervention, 4 were cross-sectional or prospective studies of uterotonic use, 10 were qualitative descriptions of uterotonic use at home births, and 2 described herbal uterotonic preparations for home deliveries. There were 15 references from South/Southeast Asia (10 from India), 6 were from Sub-Saharan Africa, and 2 studies were from Latin America.

3.1. Prevalence of uterotonic use at home birth

Table 1 provides rates of uterotonic use in studied populations. Only oxytocin use for accelerating labor (augmentation) was noted. All studies addressing prevalence of uterotonic use at home deliveries took place in South Asia. Prevalence of oxytocin use ranged from 1.5%–78.4% and varied by maternal and provider factors. The quality of studies varied. Most were published in peer-reviewed journals, but 3 came from a review article listing sources of unpublished data presented at meetings [16]. These unpublished studies give ranges of oxytocin prevalence of between 48.0% and 68.9% [16].

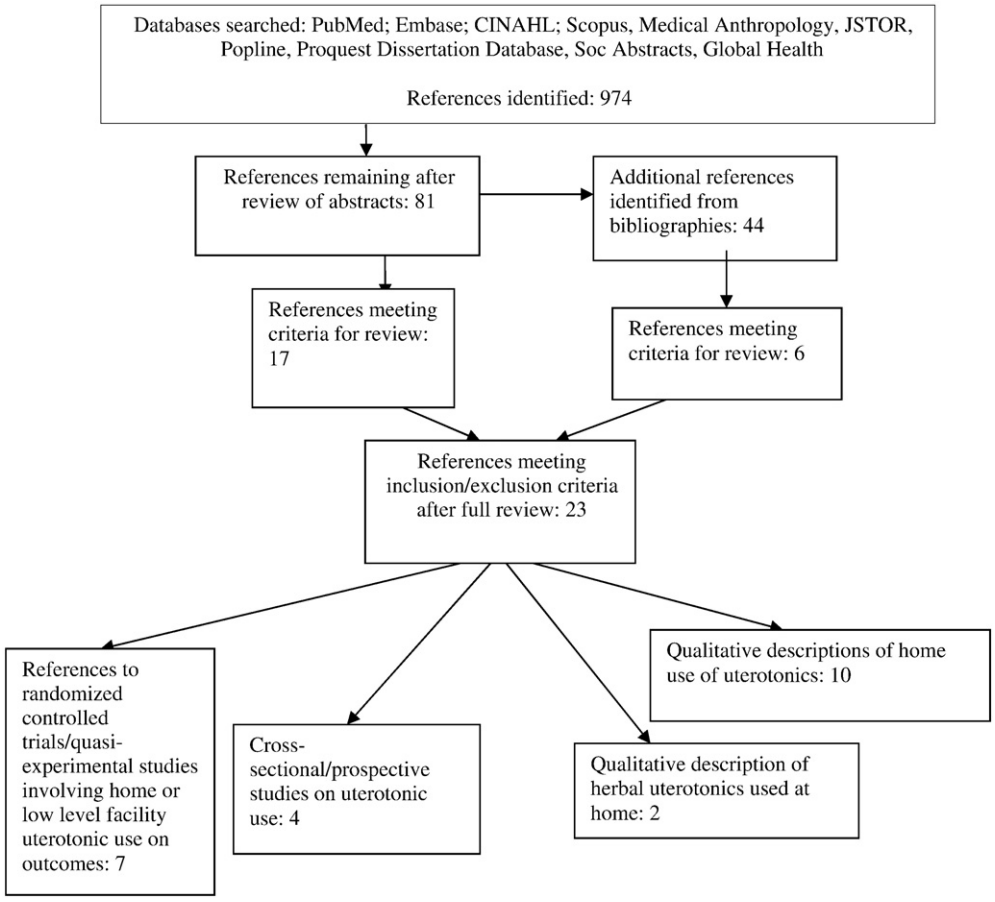

Fig. 1. Identification and inclusion process for literature searches.