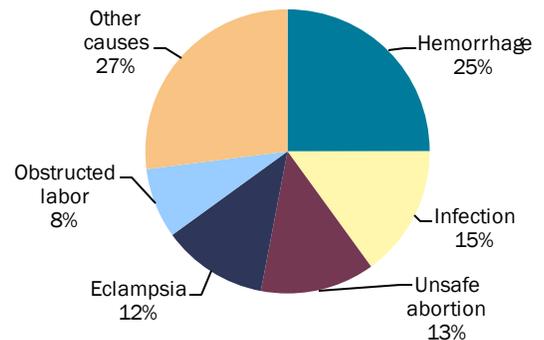


# PREVENTION OF POSTPARTUM HEMORRHAGE AT HOME BIRTH

## A COMMUNITY-FOCUSED APPROACH USING BIRTH PREPAREDNESS AND MISOPROSTOL

Postpartum hemorrhage (PPH) is the leading cause of maternal death around the world. Every 10 minutes, a woman dies of PPH. Approximately 31% to 34% of all maternal deaths are from PPH, with the greatest burden of disease in the developing world.<sup>1,2</sup> Women who survive PPH suffer from anemia and other complications and are exposed to blood transfusions and their associated risks (such as transfusion reactions or infection with HIV or hepatitis). Global action to address PPH comprehensively is a public health imperative.



Source: World Health Organization. 2011. "Why do so many women still die in pregnancy or childbirth?" At: [www.who.int/features/qa/12/en/index.html](http://www.who.int/features/qa/12/en/index.html).

### BEST PRACTICE

Research has shown that use of a uterotonic drug is a key component of any PPH prevention strategy. All women—whether they give birth in a facility or at home—should have access to a uterotonic. Because it is possible for women to die within two hours of the onset of bleeding with PPH, a logical approach to prevent PPH must address both births in facilities and births at home. The box below shows the principal best practice interventions for PPH reduction in those two settings. National PPH reduction strategies should include a review of national data to determine where births are occurring and how best to introduce and scale up the appropriate interventions for either facility births or home births. PPH reduction strategies, which ideally include promotion of facility-based births and provision of high-quality emergency obstetric and newborn care, must be part of a larger country effort to reduce maternal mortality.

**Active Management of the Third Stage of Labor (AMTSL)\*** is the intervention that has proven most successful in prevention of PPH. AMTSL involves the use of uterotonic medication immediately after birth, which causes the uterus to contract firmly, thereby decreasing the risk of life-threatening bleeding. Studies regarding the safety and effectiveness of uterotonics have demonstrated that oxytocin is the drug of choice for AMTSL. The use of oxytocin, however, is not always feasible in low-resource settings because it requires storage in a cool environment or refrigeration, sterile equipment for injection and often a skilled provider. Furthermore, the potency of existing oxytocin for PPH prevention and management cannot always be assumed in low-resource settings.

When conditions for oxytocin use cannot be met, misoprostol is recommended as safe and effective for prevention of PPH. In March 2011, the World Health Organization (WHO) endorsed the use of

**KEY PPH PREVENTION INTERVENTIONS**

**Facility-based births:**  
Active Management of Third Stage of Labor (AMTSL):

1. Oxytocin, 10 IU IM immediately after birth
2. Controlled cord traction
3. Uterine massage to ensure uterine tone

**Community-based births:**

- Promotion of facility-based birth
- Education about PPH
- Advance provision of misoprostol to women for self-administration after birth

\* AMTSL consists of three steps: 1) the administration of a uterotonic immediately following birth; 2) controlled cord traction; and 3) abdominal massage of the uterus after the placenta is delivered to ensure uterine tone.

### COUNTRY EXPERIENCES OF PPH PREVENTION AT HOME BIRTH THROUGH USE OF MISOPROSTOL

- **Tanzania**—Women who delivered at home and did not use misoprostol were almost nine times more likely to need additional interventions for the treatment for PPH than those who used misoprostol.
- **Nepal**—Uterotonic coverage increased from 12% to 74% in 30 months, with no decrease in institutional deliveries.
- **Afghanistan**—Women in the intervention group were almost four times more likely to use a uterotonic (96%) than the control group.

misoprostol on the WHO Essential Medicines List for prevention of PPH. Misoprostol is an oral uterotonic in tablet form that does not require refrigeration or storage in a cool, dark place, or administration by a skilled attendant. Thus, **misoprostol can be provided to women in advance of their birth for self-administration immediately following delivery**. In numerous randomized controlled trials, misoprostol has been associated with significant decreases in the rate of acute PPH, including severe hemorrhage of >1000mL, which is most often fatal.<sup>3,4,5,6,7</sup> Projects in a number of countries including Afghanistan, Bangladesh, Ethiopia, Ghana, Nepal, Nigeria, Tanzania, Zambia and others have demonstrated that antenatal care (ANC) providers or health workers in the community can effectively distribute, and women can safely use, misoprostol for PPH prevention following childbirth at home.<sup>8,9,10,11</sup> In addition, a cost-effectiveness analysis of women delivering at home in rural India concluded that misoprostol is a cost-effective intervention for home births.<sup>12</sup>

### BENEFITS AND POTENTIAL IMPACT

Distribution of misoprostol directly to women through ANC and/or community health systems has been shown to **increase the proportion of women who are covered by use of a uterotonic drug immediately after birth**. Misoprostol can be safely administered in the home by community-level birth attendants or, preferably, self-administered by the woman herself or her family. Use of misoprostol during home birth allows ministries of health and public health programs to achieve high coverage of high-impact interventions for PPH prevention—both in facilities and at home births—with great potential for significantly reducing deaths from PPH. In support of misoprostol use in low-resource settings, the International Confederation of Midwives (ICM) and the International Federation of Gynecology and Obstetrics (FIGO) issued a joint statement in 2006, stating, “*In home births without a skilled attendant, misoprostol may be the only technology available to control PPH.*”<sup>13</sup> In addition, as noted above, WHO’s latest guidance on essential medicines says, “*After consideration of the evidence for efficacy and safety, the Committee decided to add misoprostol to the List, for the prevention of PPH in settings where parenteral uterotonics are not available or feasible.*”<sup>14</sup> These recommendations from WHO, FIGO and ICM provide support and justification for the use of misoprostol to prevent deaths from PPH wherever women deliver.

### BENEFITS OF MISOPROSTOL

- Inexpensive: USD \$0.1 per tablet<sup>1</sup>
- Effective in prevention of PPH
- Can be self-administered
- Does not require cold storage; therefore, can be used outside of health facilities or in remote areas
- Acceptable to women
- Results in greater coverage of a uterotonic following delivery

Studies in several countries have demonstrated that misoprostol, given as 600 µg (3 tablets of 200 µg each) immediately following delivery of the baby and after confirmation of no unanticipated second twin, can be safely used to prevent PPH and maternal death at home deliveries. A double-blinded, randomized controlled trial in Pakistan found a 24% reduction in PPH when trained traditional birth attendants administered misoprostol.<sup>15</sup> In 2009, a Tanzania study, which combined education on PPH with distribution of misoprostol through ANC, raised coverage of misoprostol to 88% of home births among a group of more than 12,000 women. Women who delivered at home in this program and did not use misoprostol were almost nine times more likely to require treatment for PPH than those who used misoprostol.<sup>16</sup>

A similar study in Nepal involved volunteer community health workers (CHWs) distributing misoprostol during home visits in the eighth month of pregnancy. Misoprostol was provided to 18,761 near-term pregnant women (73.2% of the target group of women in the district), and 74.5% of those women used it. In two and a half years, uterotonic coverage increased from 11.6% to 74.2% as a result of a combination of misoprostol distribution and use, increased facility delivery and increase in oxytocin use during facility delivery. The bulk of this increase was due to misoprostol use, which went from 0% to 49.4%.<sup>17</sup> In a similar study from Afghanistan, 96% of the women in the intervention group used a uterotonic at birth

(mostly misoprostol), while only 26% of the women in the control group—who had not been provided misoprostol—were protected from PPH through the use of a uterotonic.<sup>18</sup> In both of these studies, no women reported taking the drug prior to delivery of the baby. Furthermore, in the Nepal experience, those who gained the most from the program were the poor, the illiterate and those in remote areas.

Although oxytocin is the preferred uterotonic when available, misoprostol has been shown to be an effective backup. The occurrence of certain side effects (mostly shivering and elevated temperature) is more common with misoprostol use than with use of oxytocin. However, these side effects are not only minor and transient, but the studies in Afghanistan and Nepal also suggest that they are acceptable to women.

## STRATEGIC APPROACH AND PROGRAM COMPONENTS

Before beginning a program of community-focused PPH prevention using misoprostol, programs should review and/or develop a policy on uterotonic use, including what is recommended, at which levels of the health system and by which cadres of health workers. Programs should also assess drug supply and logistics mechanisms to ensure uninterrupted drug availability (ideally of all maternal and newborn health drugs), review rates of facility-based and home-based births, and understand the community health system, including those programs already functioning within the community that serve reproductive age women and their families.

The strategic approach for a **community-focused program for prevention of PPH at home births** ideally would include the following elements:

- Community mapping of pregnant women by CHWs
- Community awareness-raising, promotion of facility-based births and education on PPH
- Encouragement of attendance at ANC (ideally four visits)
- Screening of women to determine who may have difficulty achieving their plan for a facility-based birth (difficulties may include distance, isolated communities, lack of roads and limited staff at the facility)
- Counseling of women on birth preparedness and the safe and correct use of misoprostol (if provided)
- Distribution of misoprostol, either through the ANC system or the community health system to those women who may have difficulty in achieving their plan for a facility-based birth
- Reinforcement of counseling messages on PPH through the community health system by home visits by CHWs to all pregnant women identified through the mapping exercise
- Postpartum follow-up of all women provided misoprostol

To ensure consistency with national strategies for the promotion of facility-based births and AMTSL, community-focused PPH reduction programs must work with the various facilities in the health system. Programs can accomplish this goal by training facility staff on the correct and appropriate use of misoprostol, managing women who present with hemorrhage despite taking misoprostol or have misoprostol side effects, and supporting implementation of AMTSL and protocols for PPH management.

### DOES USE OF MISOPROSTOL AT HOME BIRTH DECREASE FACILITY DELIVERY?

Colleagues from ministries of health and other institutions have voiced concern that interventions to provide misoprostol in a community setting will decrease institutional delivery. To assess this possibility, several studies included change in facility delivery rates as a key variable. The data from Nepal show that while misoprostol coverage increase from 0% to 49.4%, institutional delivery also increased from 10.9% to 14.8% in this group.<sup>8</sup>

Additionally, because misoprostol is already available through commercial and private outlets in many countries, ministries of health need to be proactive in developing policies and programs that ensure safe and correct use of the drug throughout the health system.

## CONCLUSIONS

Ideally, all women would have access to a skilled attendant for their birth, and the necessary emergency obstetric care to handle life-threatening emergencies. As we work toward that goal, simple and inexpensive interventions such as a community-focused program to reduce PPH using misoprostol have the potential to save many lives. Now is the time to ensure that every pregnant woman is provided an effective intervention to prevent PPH. Achieving maximum coverage with an effective intervention requires both facility- and community-based approaches. In light of current evidence—including the recent endorsement of misoprostol for PPH prevention by WHO—and recognizing that women continue to deliver, and die, from PPH at home birth, action must be taken to protect life and ensure health. Misoprostol's effectiveness, low cost, ease of administration, stability and positive safety profile make it an ideal option for a woman-focused public health intervention.

### KEY MESSAGES

- Reduction of PPH requires attention to all women, including those who deliver their babies in facilities and those who deliver at home.
- Because so many women worldwide do not have access to skilled care at birth, misoprostol use in the community may help make significant progress toward reaching Millennium Development Goal 5 to reduce maternal deaths.
- Misoprostol is a safe and effective alternative for preventing PPH when oxytocin is not available. It is a practice supported by global organizations such as WHO, FIGO and ICM.
- Programs that support wide distribution of misoprostol as part of a strategy to achieve high coverage of use of a uterotonic immediately after birth have been successful.
- WHO guidelines currently recommend that in situations where oxytocin is not available, misoprostol can be used to prevent PPH. In March 2011, use of misoprostol for PPH prevention was added to the WHO Essential Medicines List.
- Evidence and program experience have shown that community-focused programs for PPH reduction that include distribution and use of misoprostol have resulted in increases in the number of women who go to facilities for delivery by skilled attendants.

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<sup>2</sup> Khan KS, Wojdyla D, Gulmezoglu M, Van Look P. 2006. WHO analysis of causes of maternal death: A systematic review. *Lancet* 367: 1066–1074.

<sup>3</sup> Bamigboye AA, et al. 1998. Rectal misoprostol in the prevention of postpartum hemorrhage: A placebo-controlled trial. *Am J Obstet Gynecol* 179(4): 1043–1046.

<sup>4</sup> Derman RJ, et al. 2006. Oral misoprostol in preventing postpartum hemorrhage in resource-poor communities: A randomized controlled trial. *Lancet* 368(9543): 1248–1253.

<sup>5</sup> El-Refaey H, et al. 1997. Use of oral misoprostol in the prevention of postpartum hemorrhage. *Br J Obstet Gynaecol* 104(3): 336–339.

<sup>6</sup> Hofmeyr GJ, et al. 1998. A randomized placebo controlled trial of oral misoprostol in the third stage of labor. *Br J Obstet Gynaecol* 105(9): 971–975.

<sup>7</sup> Surbek DV, et al. Oral misoprostol for third stage of labor: A randomized placebo-controlled trial. 1999. *Obstet Gynecol* 94(2): 255–258.

<sup>8</sup> Sanghvi H, Ansari N, Prata N, Gibson H, Ehsan A, Smith JM. Prevention of postpartum hemorrhage at home birth in Afghanistan. 2010. *Int J Gynecol Obstet* 108(3): 276–281.

<sup>9</sup> MNH Program/Jhpiego. 2004. *Prevention of Postpartum Hemorrhage Study: West Java, Indonesia*.

<sup>10</sup> Ethiopian Federal MOH/Venture Strategies. 2008. *Community-Level Prevention of Postpartum Hemorrhage: The Role of Misoprostol*. (May)

<sup>11</sup> Hashi M/EngenderHealth. 2010. *Community-Based Distribution of Misoprostol for the Prevention of Postpartum Hemorrhage: Evaluation of a Pilot Intervention in Tangail District, Bangladesh*.

<sup>12</sup> Sutherland T, Bishai D. 2009. Cost-effectiveness of misoprostol and prenatal iron supplementation as maternal mortality interventions in rural India *Int J Gynecol Obstet* 104(3): 189–193.

<sup>13</sup> International Confederation of Midwives, International Federation of Gynecologists and Obstetricians. 2006. *Joint statement: Prevention and treatment of post-partum haemorrhage: New advances for low resource settings*: International Confederation of Midwives, International Federation of Gynecology and Obstetrics.

<sup>14</sup> World Health Organization. 2011. Unedited Report of the 18th Expert Committee on the Selection and Use of Essential Medicines, 21 to 25 March 2011, Accra, Ghana. (5 May)

<sup>15</sup> Mobeen N, Durocher J, Zuberi N, Jahan N, Blum J, Wasim S, et al. 2011. Administration of misoprostol by trained traditional birth attendants to prevent postpartum haemorrhage in homebirths in Pakistan: A randomised placebo-controlled trial. *Br J Obstet Gynaecol* 118(3): 353–361.

<sup>16</sup> Ifakara Health Institute, Venture Strategies Innovations, et al. 2011. *Prevention of Postpartum Hemorrhage in Home Births: Misoprostol Distribution during Antenatal Care Visits in Tanzania*. Final Report Brief. (February)

<sup>17</sup> Rajbhandari S, Hodgins S, Sanghvi H, McPherson R, Pradhan YV, Baqui AH; Misoprostol Study Group. 2010. Expanding uterotonic protection following childbirth through community-based distribution of misoprostol: Operations research study in Nepal. *Int J Gynecol Obstet* 108(3): 282–288. Epub 2010 Jan 19.

<sup>18</sup> Sanghvi H, Ansari N, Prata N, Gibson H, Ehsan A, Smith JM. 2010. Prevention of postpartum hemorrhage at home birth in Afghanistan. *Int J Gynecol Obstet* 108(3): 276–281.