

Guest Editorial

The challenge of reducing postpartum haemorrhage-related deaths

Epidemiological studies consistently show haemorrhage to be the leading cause of maternal death in resource-poor settings.[1] To reduce postpartum haemorrhage (PPH) related mortality and morbidity, action must be taken at several levels, with consideration given to the conditions experienced by, and resources available to, a specific community.

According to the Confidential Enquiries into Maternal Deaths in South Africa, the most common setting for deaths from PPH (40% of the total) occurred at the primary level of care, such as clinics or district hospitals.[2] In the South African Enquiry, patient- and community-related factors, such as delay in seeking treatment and lack of emergency transport, as well as health system-related issues, such as lack of blood for transfusion, lack of appropriately skilled personnel, and substandard treatment, were all identified as avoidable factors contributing to the high rate of mortality from PPH.

The recent publication of a successful implementation strategy highlights the need for both clinical and translational research into reducing morbidity and mortality from PPH.[3] Here, we briefly review evidence on interventions to prevent death from PPH, and highlight gaps in the evidence. Strategies for the treatment of PPH may be setting-specific, and determined by the interventions available, and so we discuss births in medical facilities and those in the community separately.

Births in medical facilities

Evidence-based interventions

Active management of the third stage of labour (AMTSL) is defined as the use of a uterotonic after birth, clamping and cutting the cord, and controlled cord traction after the uterus contracts to deliver the placenta. Although AMSTL has been shown to be an effective measure to prevent PPH, its use has been inconsistent, and the relative contribution of its components is not known.[4]

Interventions requiring more evidence

Recommended interventions for treating PPH due to uterine atony are almost entirely empirical, and depend on the initial response to treatment. First-line treatments typically include: fluid resuscitation; uterotonics, such as oxytocin, ergometrine, misoprostol, and prostaglandins; bimanual compression of the uterus; evacuation of the uterus; intrauterine tamponade, including balloon tamponade; haemostatic therapy, such as tranexamic acid or recombinant activated factor VIIa; uterine vessel embolisation; and laparotomy for uterine devascularisation, compression sutures, or hysterectomy. Among these, only misoprostol is, to our knowledge, being evaluated in controlled trials.[5] All others are based on assumptions and clinical impressions.

Evidence-based implementation strategies

For facility-based settings in which skilled birth attendants are available, the standard of care should be audited and failures within the system explored. If AMTSL is not practised, the focus should be on implementing AMTSL. Access to knowledge alone of best practices is not sufficient to improve the quality of care in most settings, and one has to ensure that knowledge is translated into action.

Results of a cluster randomised controlled trial of a multifaceted intervention (including selection of opinion leaders, interactive workshops, training of manual skills, one-on-one academic detailing visits with hospital birth attendants, reminders, and feedback) at 19 hospitals in Argentina and Uruguay were recently reported.[3] Outcomes were measured at baseline, after the 18-month intervention, and 12 months later. This tailored intensive intervention at 10 hospitals increased oxytocin use from 2.1% to 83.6% (there was a smaller increase at control hospitals, from 2.6% to 12.3%), and reduced median severe PPH rate from 3.0% to 0.8% (relative rate reduction [of 1000 mL or more] versus control hospitals, 70%; 95% CI 16 to 78). One question is, how feasible will it be to replicate the design and implement such a complex, intensive, and possibly costly, intervention in other settings? Another issue is whether it is important to determine which of the included interventions are the key ones that improved outcome, so that this complex regimen can be simplified in the most clinically and cost-effective way. Nevertheless, this is an evidence-based implementation strategy that can be built upon and implemented.

Births in the community

Evidence-based interventions

Women giving birth in the community are particularly vulnerable to PPH-related morbidity and mortality.[6] The feasibility of using AMTSL depends on the presence of a skilled caregiver and the availability of uterotonics. The potential use of the orally active uterotonic misoprostol by birth attendants without formal training, or by the women themselves, has generated widespread interest. Although considerably less effective than oxytocin,[7] recent trials in resource-poor settings have shown reduced blood loss with oral[8] or sublingual[9] misoprostol compared with placebo.[10] The large-scale use of misoprostol is the subject of considerable debate. It has been argued that awaiting further evidence of effectiveness and safety regarding the introduction of misoprostol at the community level is unethical, given the current mortality from PPH and the proven uterotonic effects of misoprostol,[11] and large-scale use of this drug has been advocated — for example, in Nigeria and Ethiopia. However, there are concerns about the lack of evidence on other effects, both beneficial and adverse, of misoprostol. At this time, there is no evidence that misoprostol, when used either to prevent or treat PPH, reduces mortality,[5][10] and there is only limited evidence on the most effective drug dosage. In addition, the public health risk of uterine rupture or neonatal morbidity and mortality from inadvertent or ill-advised use of misoprostol in PPH dosages before birth of the baby has not been adequately quantified. Sustained research efforts are needed to ensure that the use of misoprostol in various settings does more good than harm.

We believe that the benefits and harms of such approaches should be evaluated in appropriately designed and implemented research projects before large-scale implementation.

Interventions requiring more evidence

One intervention with the potential for use at community level is sustained uterine massage after birth. There is only limited evidence that this simple intervention may be effective.[12]

In settings without skilled birth attendants, one limiting factor in the implementation of AMTSL is the specialist training required for controlled cord traction, which is a complex procedure.

Reduction of deaths from PPH will require simple, inexpensive interventions that can be implemented on a broad scale with limited skilled staff and infrastructure. In our opinion, further research should focus on two strategies that can be implemented at the community level:

Interventions that can be implemented by birth attendants with limited skills: sustained uterine massage; and the use of oxytocin (with or without the Uniject system), or misoprostol (if injection is not possible) without controlled cord traction.

Interventions that will improve the immediate care and transfer of women with haemorrhage, such as the non-pneumatic anti-shock garment, and the community-level home-based lifesaving skills programme, which targets those who are present during birth and who need to be able to respond in an emergency.

As with the facility-based interventions, assessment of current standard of care, including access to facilities and barriers to change, should precede the implementation of the proposed interventions.

Strategies to reduce deaths from PPH need to be setting-specific, taking into account the evidence from systematic reviews, and evaluating the causes of death and the characteristics of targeted communities. The international research community, national policy-makers, and communities in which PPH deaths occur need to work together to develop and implement these strategies.

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References

1. Khan KS, Wojdyla D, Say L, et al. WHO analysis of causes of maternal death: a systematic review. *Lancet* 2006;367:1066–1074.
2. Department of Health, South Africa. Saving mothers. 2002–2004. The report on confidential enquiries into maternal deaths in South Africa. Third report on confidential enquiries into maternal death in South Africa. 2006;68–95.
3. Althabe F, Buekens P, Bergel E, et al. A behavioral intervention to improve obstetrical care. *N Engl J Med* 2008;358:1929–1940.
4. Festin MR, Lumbiganon P, Tolosa JE, et al. International survey on variations in practice of the management of the third stage of labour. *Bull World Health Organ* 2003;81:286–291.
5. Mousa HA, Alfirevic Z. Treatment for primary postpartum haemorrhage. In: *The Cochrane Library*, Issue 1, 2007. Chichester, UK: John Wiley & Sons Ltd. Search date 2006.
6. Fawcus S, Mbizvo M, Lindmark G, et al. A community-based investigation of maternal mortality from obstetric haemorrhage in rural Zimbabwe. Maternal Mortality Study Group. *Trop Doct* 1997;27:159–163.
7. Gülmezoglu AM, Villar J, Ngoc NT, et al. WHO multicentre randomised trial of misoprostol in the management of the third stage of labour. *Lancet* 2001;358:689–695.

8. Derman RJ, Kodkany BS, Goudar SS, et al. Oral misoprostol in preventing postpartum haemorrhage in resource-poor communities: a randomised controlled trial. *Lancet* 2006;368:1248–1253.
9. Hoj L, Cardoso P, Nielsen BB, et al. Effect of sublingual misoprostol on severe postpartum haemorrhage in a primary health centre in Guinea-Bissau: randomised double blind clinical trial. *BMJ* 2005;331:723.
10. Gülmezoglu AM, Forna F, Villar J, et al. Prostaglandins for preventing postpartum haemorrhage. In: The Cochrane Library, Issue 3, 2007. Chichester, UK: John Wiley & Sons Ltd. Search date 2006.
11. Potts M, Walsh J, Prata N, et al. Parachute approach to evidence based medicine. *BMJ* 2006;333:701–703.
12. Abdel-Aleem H, Hofmeyr GJ, Shokry M, et al. Uterine massage and postpartum blood loss. *Int J Gynaecol Obstet* 2006;93:238–239.