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POSTPARTUM HEMORRHAGE TODAY: LIVING IN THE SHADOW OF THE TAJ MAHAL

A. B. Lalonde, B.-A. Daviss, A. Acosta and K. Herschderfer

‘Women are not dying because of a disease we cannot treat. They are dying because societies have yet to make the decision that their lives are worth saving.’

*Mamoud Fathalla, President of the International Federation of Gynecology and Obstetrics (FIGO),
World Congress, Copenhagen 1997*

INTRODUCTION

The wife of the Shah Jahan of India, the Empress Mumtaz, had 14 children and died after her last childbirth of a postpartum hemorrhage in 1630. So great was the Shah Jahan’s love for his wife that he built the world’s most beautiful tomb in her memory – the Taj Mahal¹. Far away and to the north, another country was taking a different approach: in 1663, the Swedish Collegium Medicum was established. The Swedish clergy created an information system that by 1749 provided the first national vital statistics registry in Europe; by 1757, a national training was approved for midwives in all parishes of Sweden. The resulting infrastructure – a comprehensive community midwifery system, with physician back-up expertise and an outcome reporting system – is today considered responsible for reducing the maternal mortality in Sweden from 900 to 230 per 100 000 live births in the years between 1751 and 1900². To this day, Sweden enjoys the lowest maternal mortalities in the world.

In 2006, each nation must decide whether it is going to build monuments to hardship and suffering or take the steps to avoid it. Although a full 10 years remain until the target date of 2015, it is already predicted that the Millennium Development Goal (MDG) number 5 to reduce maternal mortality (MM) by 75% will not be reached. Maternal mortality is currently estimated at 529 000 deaths per year, a number that translates into a global ratio of 400 maternal deaths per 100 000 live births³. Another way

to characterize these deaths is to say that one woman dies every minute of every hour of every day.

Most of the deaths and disabilities attributed to childbirth are avoidable, because the medical solutions are well known. Indeed, 99% of maternal deaths occur in developing countries that have an inadequate transport system, limited access to skilled care-givers, and poor emergency obstetric services⁴. It is axiomatic that each and every mother and newborn require care that is close to where they live, respectful of their culture, and provided by persons with enough skill to act immediately should an unpredictable complication occur. The challenge that remains internationally is not technological but strategic and organizational⁴.

Postpartum hemorrhage is the most common cause of maternal mortality and accounts for one-quarter of the maternal deaths worldwide⁵. The optimal solution for the vast majority, if not all, of these tragedies is prevention, both before the birth, by assuring that women are sufficiently healthy to withstand postpartum hemorrhage should it occur, and at the time of the birth, by the use of physiological or active management of labor, a management strategy that unfortunately is dependent on circumstances and the availability of oxytocics. To their credit, the International Confederation of Midwives (ICM) as well as the International Federation of Gynecology and Obstetrics (FIGO) are engaging their membership in a world-wide campaign to address this travesty.

DEFINITION AND INCIDENCE

The World Health Organization (WHO) has examined studies on postpartum hemorrhage published between 1997 and 2002 in order to arrive at more precise definitions of postpartum hemorrhage and its incidence⁶. Available resources – data from 50 countries, 116 studies and 155 unique data sets – were reported to be poor in quality. Definitions of postpartum hemorrhage were lacking in 58% of the published studies and, in the population-based surveys of medium quality, the prevalence ranged from a low of 0.55% of deliveries in Qatar to a high of 17.5% in Honduras. Preliminary findings suggest that excessive bleeding was reported between 0.84% and 19.80% of the time, but the majority of studies were reported as low in quality and had problems defining and diagnosing postpartum hemorrhage.

One of the major problems plaguing the research is how to measure postpartum hemorrhage with accuracy. Published data are scant, and an adequate and accurate gold-standard method is lacking. Clinical visual estimation of blood loss is not reliable⁷. As is often the case, necessity becomes the mother of invention. In the rural areas of Tanzania, the use of 'Kanga' has been adopted as a valid instrument tool⁸. Convenient because it is produced and sold locally, the pre-cut Kanga is a standard-sized rectangle (100 cm × 155 cm) of local cotton fabric. When three to four soaked Kangas are observed at a delivery, the trained traditional birth attendant (TBA) is entrusted to transfer patients to a health center.

Even when a good measurement methodology is in place, there is still difficulty in defining postpartum hemorrhage simply as blood loss greater than 500 ml because it fails to take into account predisposing health factors that are reflected in such a definition. Since the quantity of blood loss is less often important than the actual effect that it has on the laboring woman, it has been suggested that the definition take into account any blood loss that causes a major physiological change, such as low blood pressure, which threatens the woman's life. These issues are discussed in greater detail in Chapters 2–6.

POSTPARTUM HEMORRHAGE: WHEN, WHY AND WHERE

Sixty percent of all pregnancy-related maternal deaths occur during the postpartum period and one source suggests 45% of them occur in the first 24 h after delivery⁹.

The risk of dying from postpartum hemorrhage depends not only on the amount and rate of blood loss but also the health status of the woman¹⁰. Poverty, lifestyle, malnutrition, and women's lack of decision-making power to control their own reproductive health are some of the broad issues that have unfortunately come to be accepted as inevitable and unchangeable. In a busy urban maternity hospital, in the country where the Taj Mahal acts as a testament to contravention of this problem, nurses in a labor ward may not complete patient case notes for low-caste women, depriving them of the safeguards of other women³. But India's problems are merely a symbolic representation of a problem that faces both high- and low-resource countries^{3,4,11}. The insidious reality about having a postpartum hemorrhage is that two-thirds of the women who experience it have no identifiable clinical risk factors such as multiple births or fibroids¹². In this regard, postpartum hemorrhage is a veritable equal-opportunity occurrence. However, it is not an equal-opportunity killer because it is the poor, malnourished, unhealthy woman who delivers away from medical care who will die from it, whereas those who are fortunate enough to deliver in a well-supplied and staffed medical facility most likely will survive three delays at the actual time of birth: delay in the decision to recognize a complication and seek help; delay in accessing transportation to reach a medical facility, and, finally, delay in receiving adequate and comprehensive care upon arrival.

About 95% of maternal deaths in 2000 were equally distributed between Asia (253 000) and sub-Saharan Africa (251 000)¹³, but the risks are higher in Africa because it has a smaller population than Asia. For decades, sub-Saharan Africa has been the region with the highest maternal mortality ratio in the world, at over 900/100 000 live births. In this region, the numbers of births attended by skilled health personnel and life

expectancy at birth strongly correlate with maternal mortality.

As an example, the increased ability to measure maternal mortality in Afghanistan has revealed a heretofore suspected but unconfirmed reality. The Center for Disease Control and Prevention's retrospective cohort study of women of reproductive age in four selected districts in four provinces reported an astounding maternal mortality of 1900 per 100 000 live births¹⁴. Another group of authors, working in the same country, describes reasons for such a high maternal mortality ratio in the Province of Herat:

‘... conditions for individual and community health often depend on the protection and promotion of human rights. The findings of this study identify a number of human rights factors that contribute to preventable maternal deaths in Herat Province. These include access to and quality of health services, adequate food, shelter, and clean water, and denial of individual freedoms such as freely entering into marriage, access to birth control methods and possibly control over the number and spacing of one's children’¹⁵.

In many other countries, hemorrhage accounts for more than half of the maternal deaths, rather than the quarter of maternal mortality usually cited world-wide. For example, in Indonesia it has been reported at 43%, in the Philippines at 53%, and in Guatemala at 53%⁴.

Within given countries, certain populations are also at increased risk. In Latin America, for example, the Pan American Health Organization (PAHO) has identified reasons why maternal mortality is higher among the indigenous populations:

- (1) The professional teams in charge of maternity care underrate or are ignorant of traditional cultural practices;
- (2) The health team and pregnant women often communicate poorly, a principal factor behind the low maternity coverage;
- (3) Public policies for consensus building and intercultural dialogue on maternal health are in conflict over objectives and goals and the allocation of resources¹⁶.

EXISTING EVIDENCE FOR PREVENTION OF HEMORRHAGE

In September 2004, Litch provided a summary of the evidence base for the active management of the third stage of labor¹⁷. The following excerpt summarizes these data:

‘From 1988 to 1998, four large, randomized, controlled studies conducted in well-resourced maternity hospitals (two in the UK, one in the United Arab Emirates and one in Ireland) compared the effects of active and expectant management of the third stage of labor. In all four studies, active management was associated with a decrease in postpartum hemorrhage and the length of third stage of labor . . . A Cochrane Library systematic review and meta-analysis also concluded that active management of the third stage in the setting of a maternity hospital was superior to expectant management in reducing blood loss, incidence of postpartum hemorrhage and duration of the third stage. It was also associated with reduced postpartum anemia, decreased need for blood transfusion, and less use of additional therapeutic uterotonic drugs’¹⁷.

To a certain extent, the same caveat holds for the usage of prostaglandins where at least two Cochrane Reviews have addressed the issue of this drug as a choice for use in active management. A review in 2003 suggests rectal misoprostol 800 µg may be a useful ‘first-line’ drug for the treatment of primary postpartum hemorrhage, but that further randomized controlled trials are required to identify the best drug combinations, route, and dose for the treatment of postpartum hemorrhage. In 2004, a review says ‘Neither intramuscular prostaglandins nor misoprostol are preferable to conventional injectable uterotonics as part of the active management of the third stage of labor, especially for low-risk women. Future research on prostaglandin use after birth should focus on the treatment of postpartum hemorrhage rather than prevention where they seem to be more promising’¹⁸. However, this review should be read in the context that many countries do not have the infrastructural elements to provide uterotonics.

Even a WHO multicenter, randomized trial left some issues unresolved. This study concluded that 10 IU oxytocin (intravenous or intramuscular) was preferable to 600 µg oral misoprostol in the active management of the

third stage of labor in hospital settings where active management was the norm¹⁹. The possible troubling ‘secondary effect’ of oxytocin on manual removal of the placenta needs clarification, however, as a 2004 Cochrane Review suggested that, with prophylactic use of oxytocin, ‘the risk of manual removal of the placenta may be increased’²⁰. In high-resource countries, where embolism rather than postpartum hemorrhage is the major cause of maternal mortality, hemorrhage requiring hysterectomy is considered one of the most life-threatening conditions experienced by women during the perinatal period²¹. Retained placenta represents a serious complication requiring manual removal and such a ‘secondary outcome’ could be as critical to consider when deciding on third-stage management protocols. Because the picture is not yet entirely clear, practitioners should continually update themselves as to available options, and health-care agencies and government planning units should be equally vigilant about what is the best approach considering the available resources.

Thus, although the literature suggests that active management using the standard oxytocics can reduce postpartum hemorrhage by 40%²², this methodology is far from ideal for use in low-resource countries where the lethal postpartum hemorrhages are occurring, and where many births take place away from medical facilities and are supervised solely by traditional birth attendants who do not have access to medications or the right to use them.

The WHO study did not investigate whether misoprostol was better than placebo. Two recent trials with misoprostol, however, suggest favorable results for the use of this agent in low-resource countries. One was a field intervention trial in Tanzania after home births that demonstrated that implementing the use of 1000 µg of rectal misoprostol administered by TBAs to women with 500 ml or more blood loss decreased referral and need of further treatment when compared to a non-intervention group²³. The second trial was a randomized, double-blind, placebo-controlled trial that took place among women attended by midwives at local health centers in Guinea-Bissau. Here it was concluded that routine administration of 600 µg of sublingual misoprostol after delivery

reduced the frequency of severe postpartum hemorrhage²⁴. Both studies state these promising results suggest increased safety of deliveries using misoprostol even when attended by practitioners not considered by the WHO/ICM/FIGO definition to be ‘skilled’. Further discussion of ongoing field work with misoprostol is provided in Section IV.

An even more promising alternative method to deal with postpartum hemorrhage was undertaken in Indonesia, where 1811 women were offered counselling about the prevention of postpartum hemorrhage and use of misoprostol by trained and supervised volunteers. This study demonstrated that misoprostol was safely used in a self-directed manner among study participants who had home deliveries in the intervention area²⁵.

Although misoprostol is available in most countries in Asia and the Americas, there are restrictions to its use in many countries resulting from the fear that it will be used as an abortifacient. There is no access to this agent in most of Africa and much of the Middle East and only three countries have approved the obstetric use of it: Brazil, Egypt and France²⁶. Given the potential benefits of misoprostol to the major goal of the MDG #5 (maternal mortality), and the fact that the WHO has added it to its list of ‘essential medicines’²⁷, there appears to be a role for FIGO, ICM and the research community in closing the gaps on research as well as the barriers to availability of this medication.

ONGOING INITIATIVES TO PREVENT POSTPARTUM HEMORRHAGE

Every child-bearing woman is potentially at risk for postpartum hemorrhage, but biological/physiological considerations are only a part of the picture. Broader issues suggest that health-care workers should assume more of an attitude of service and responsibility in the larger public health issues, empowering women to seek help because the health-care culture is acceptable to them. With respect to indigenous populations and minority groups forgotten or subjugated by a dominant culture, more sensitive approaches that respect pregnancy and birth as a social and cultural rather than a medical act and incorporating traditional practitioners, e.g. the ‘partera’

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in Central America, into the health-care team, are an important step forward. It is crucial that physicians, midwives, and nurses work with communities and women's groups to bridge existing gaps in care.

An international group including the ICM, FIGO members, researchers and experts met in Ottawa, Canada, in August 2003 to craft the Ottawa Statement on prevention of postpartum hemorrhage and offer new options for its treatment. At the last World Congress of FIGO in Chile in 2003, President Arnaldo Acosta announced that FIGO, in partnership with ICM, would launch an initiative that would promote active management of the third stage of labor (AMTSL) to prevent postpartum hemorrhage and increase the knowledge of nurses, midwives and physicians in the medical and surgical treatment of postpartum hemorrhage. Both FIGO and ICM are collaborating with the Program for Appropriate Technology for Health (PATH) to conduct a project: Prevention of Post Partum Hemorrhage Initiative (POPPHI), launched in October 2004. The program has created tool kits and educational modules for implementation of the AMTSL. POPPHI is also providing small grants to countries for FIGO and ICM members to collaborate on scaling up the use of AMTSL. These initiatives have been prompted in large part by the fact that past efforts have not decreased maternal mortality and morbidity substantially. Postpartum hemorrhage prevention and treatment procedures are well known and are proven to be scientifically beneficial but not readily available to health workers and pregnant women.

The following Joint Statement and Action Plan was launched in 2004 by ICM/FIGO.

JOINT ICM/FIGO STATEMENT AND ACTION PLAN

Management of third-stage labor should be offered to women since it reduces the incidence of postpartum hemorrhage due to uterine atony.

Active management of the third stage of labor consists of interventions designed to facilitate the delivery of the placenta by increasing uterine contractions and to prevent postpartum hemorrhage by averting uterine atony. The usual components include:

- Administration of uterotonic agents,
- Controlled cord traction, and
- Uterine massage after delivery of the placenta, as appropriate.

Every attendant at birth needs to have the knowledge, skills and critical judgement required to carry out active management of the third stage of labor and access to appropriate supplies and equipment.

How to use uterotonic agents

- Within 1 minute of the delivery of the baby, palpate the abdomen to rule out the presence of an additional baby(s) and administer oxytocin 10 units intramuscularly. Oxytocin is preferred over other uterotonic drugs because it is effective 2–3 minutes after injection, and has minimal side-effects so that it can be used on all women.
- If oxytocin is not available, other uterotonics can be used such as: ergometrine 0.2 mg intramuscularly, syntometrine (1 ampoule) intramuscularly or misoprostol 400–600 µg orally. Oral administration of misoprostol should be reserved for situations when safe administration and/or appropriate storage conditions for injectable oxytocin and ergot alkaloids are not possible.
- Uterotonics require proper storage:
 - Ergometrine: 2–8°C and protect from light and from freezing
 - Misoprostol: room temperature, in a closed container
 - Oxytocin: 15–30°C, protect from freezing
- Counselling on the side-effects of these drugs should be given.

Warning! Do not give ergometrine or syntometrine (because it contains ergometrine) to women with pre-eclampsia, eclampsia or high blood pressure.

How to perform controlled cord traction

- Clamp the cord close to the perineum (once pulsation stops in a healthy newborn) and hold in one hand.

- Place the other hand just above the woman's pubic bone and stabilize the uterus by applying counter-pressure during controlled cord traction.
- Keep slight tension on the cord and await a strong uterine contraction (2–3 minutes).
- With the strong uterine contraction, encourage the mother to push and very gently pull downward on the cord to deliver the placenta. Continue to apply counter-pressure to the uterus.
- If the placenta does not descend during 30–40 seconds of controlled cord traction, do not continue to pull on the cord:
 - Gently hold the cord and wait until the uterus is well contracted again;
 - With the next contraction, repeat controlled cord traction with counter-pressure.

Never apply cord traction (pull) without applying counter-traction (push) above the pubic bone on a well-contracted uterus.

- As the placenta delivers, hold the placenta in two hands and gently turn it until the membranes are twisted. Slowly pull to complete the delivery.
- If the membranes tear, gently examine the upper vagina and cervix wearing sterile/disinfected gloves and use a sponge forceps to remove any pieces of membrane that are present.
- Look carefully at the placenta to be sure none of it is missing. If a portion of the maternal surface is missing or there are torn membranes with vessels, suspect retained placenta fragments and take appropriate action²⁷.

How to perform uterine massage

- Immediately massage the fundus of the uterus until the uterus is contracted.
- Palpate for a contracted uterus every 15 minutes and repeat uterine massage as needed during the first 2 hours.
- Ensure that the uterus does not become relaxed (soft) or 'boggy' after you stop uterine massage.

In all of the above actions, explain the procedures and actions to the woman and her family. Continue to provide support and reassurance throughout.

IMPORTANT CHANGES TO CONSIDER IN ACTIVE MANAGEMENT PROTOCOLS

As the evidence suggesting immediate cord clamping can reduce the quantity of red blood cells an infant receives at birth and result in potential short-term and long-term problems, and because prior concerns about polycythemia have not been documented²⁸, the collaborative ICM/FIGO group decided not to include early cord clamping in the active management protocol. This decision means that the present definition of active management promulgated by ICM/FIGO differs from that described in the early literature.

FIGO now also advises that, in the absence of oxytocin or misoprostol at delivery, skilled birth attendants should use physiologic management of the third stage to avoid over-exertion through cord traction until the uterus has contracted and the placenta has begun being expelled. This is best described as allowing the mother to expel her own placenta without interference from the practitioner.

THE ROLE OF NATIONAL PROFESSIONAL ORGANIZATIONS

The following points outline the ten key action imperatives that are being promoted world-wide by FIGO/ICM to prevent postpartum hemorrhage and manage postpartum hemorrhage when it occurs.

- (1) Disseminate and secure support for the joint statement from UN agencies, and international and national organizations.
- (2) Recommend that this Global Initiative on the Prevention of Postpartum Hemorrhage be integrated into the curriculum of medical, midwifery and nursing schools.
- (3) Work toward the goal of offering uterotonic drugs for prophylactic treatment of postpartum hemorrhage to every

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- mother giving birth anywhere in the world.
- (4) Ensure that every skilled attendant at a birth will have uterotonic drugs and know how to administer them.
 - (5) Ensure that every hospital birthing unit and every birth center will have uterotonic drugs and a protocol to prevent and manage postpartum hemorrhage.
 - (6) Give adequate training to every skilled attendant that attends births (including doctors, nurses and midwives) in uterine massage, bimanual compression, and manual removal of the placenta.
 - (7) Make the use of new simple medical and surgical therapies available to skilled attendants, including the use of intravenous infusion, tamponade balloons, and shock pants²⁹ (see Chapters 5, 14, 21 and 28).
 - (8) Provide every doctor who can perform a laparotomy and basic clinical officers who are responsible for the surgical management at the peripheral hospital level, with surgical training to perform ‘simple conservative surgery’, including compression sutures and sequential devascularization (see Chapter 31).
 - (9) Make blood transfusion facilities with secure blood supplies available in centers that provide comprehensive health care (see Chapter 45).
 - (10) Make definitive surgery (hysterectomy) and modern clotting factors (recombinant factor VIIa) available in level III (tertiary care) hospitals (see Chapter 26).
- (4) Dealing with the legislative and other barriers that impede the prevention and treatment of postpartum hemorrhage, including dealing with poverty and malnutrition as well as the incorporation of active management of third stage into pre-service and in-service curricula for all skilled birth attendants;
 - (5) Incorporation of active management of the third stage of labor in national standards and clinical guidelines, as appropriate;
 - (6) Working with national pharmaceutical regulatory agencies, policy-makers and donors to assure that adequate supplies of uterotonics and injection equipment are available.

National professional associations also have an important and collaborative roles to play in the following areas:

- (1) Advocacy for skilled care at birth;
- (2) Public education about the need for adequate prevention and treatment of postpartum hemorrhage;
- (3) Publication of the statement in national midwifery, obstetric and medical journals, newsletters and websites;

CONCLUSION

Tourists flock to the Taj Mahal, largely unaware how often around the world the event symbolized by this monument still occurs in the shadows of a woman’s blood-soaked dirt floor, or when a desperate husband’s rough cart is dragged over poor roads and fails to arrive in time, or in the sad eyes of a basic health-unit nurse. Governments have been slow to prioritize women’s health and donor countries have not shown sufficient commitment to dealing with maternal mortality. This is in a context in which there is supposed recognition that poverty reduction and education are the keys to good health – that there is no health without education and no education without health³⁰.

To address the issue of postpartum hemorrhage, ICM and FIGO have launched a worldwide initiative to promote the offer of active management to all women. Further research is needed about the benefits of misoprostol, the secondary side-effects of oxytocin, the anti-shock garment, and the balloon tamponade in preventing and treating postpartum hemorrhage. Both organizations need the support of governments, donors and the public to support the campaign that will produce results in addressing Millennium Development Goal number 5. We respectfully request the professional associations to join the ICM/FIGO coalition to prevent and treat postpartum hemorrhage by working with their Ministries of

Health on the broader issues of poverty, nutrition, status of women, and access to medication and education, while they adopt the low-cost medico-surgical approaches we have discussed in this chapter. Since a good community/national infrastructure designed in Sweden in the 1700s still represents a respectable solution to our millennium goal to save mothers, it appears to be time to act upon the answers that have been staring us in the face for some time.

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