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**Reducing maternal morbidity and mortality from Postpartum
Haemorrhage (PPH) in developing countries: a midwifery
perspective**

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Introduction

“Every four hours, day in, day out, a jumbo jet crashes and all on board are killed. The 250 passengers are all women, most in the prime of life, some still in their teens” (World Health Organisation (WHO), 1986).

As a midwife of 20 years, this rather sobering statement had a profound effect on me when I heard it at the Intermed Summer School in 2013. Working in the relative safety and security of the Australian health system, I was confronted with the realisation that so many women are still dying daily in childbirth. Although the numbers have dropped significantly since then, with the WHO estimating a 47% drop in maternal mortality rates (MMR) in the last 20 years (WHO, UNICEF, UNFPA and The World Bank, 2012), too many mothers are still dying.

Having a passion for caring for women through all stages of their birth journey, particularly during their labour, pointed me in the obvious direction of researching a topic related to women’s health. Postpartum haemorrhage (PPH) is one of the commonest and most significant birth complications and recent research has found that the incidence is increasing, rather than decreasing as one might expect (Ford, Shand & Roberts, 2013). With this in mind I have chosen to research PPH in the context of developing countries.

Background

Maternal mortality is recognised by the United Nations (UN) as a key indicator of a nation's overall health. This was acknowledged when the eight Millennium Development Goals (MDGs) were developed in 2000. The fifth MDG (MDG5) specifically includes a goal to reduce the maternal mortality rate by three quarters between 1990 and 2015 (WHO et al., 2012).

PPH is still one of the major causes of maternal mortality and morbidity in both developed and developing countries (RANZCOG, 2011; Ford et al., 2013). Improving treatment and management of this major complication of childbirth will result in developing countries achieving, or at least working toward, MDG5 on a national level and improving pregnancy outcomes for individual women.

Pregnancy and birth are milestones in a woman's life that should be a time of joy and positive expectation. Sadly in many developing countries this is not the case. In Australia, and many other western countries, having a baby is not usually fraught with fear of death. In fact, the opposite can be said as in today's society women expect to birth safely and without complication, and unexpected maternal or foetal demise leaves all involved in a state of shock and disbelief (Tout, 2009).

Australia has a MMR of 8.4/100,000. In contrast, the MMR in sub-Saharan Africa is 100 times greater, with one maternal death for every 100 births in that region (King, 2009). In Papua New Guinea, our closest international neighbour, the lifetime risk of dying in pregnancy is 1:20 (Kirby, 2011). The overall MMR in developing countries is 240 per 100,000 births versus 16 in developed countries; almost all maternal deaths (99%) occur in developing countries (WHO, 2012a).

PPH is defined as a blood loss of 500ml or more during the puerperium and severe PPH as a blood loss of 1000ml or more (RANZCOG, 2011; WHO, 2012b). The incidence of PPH in Australia is between 5 - 15% (RANZCOG). Between 2003 -2005 four maternal deaths in Australia were attributed to obstetric haemorrhage (King, 2009). Worldwide it is estimated that 30% (in some countries up to 50%) of maternal deaths are due to haemorrhage, which equates to hundreds of women dying from PPH (International Federation of Gynecologists and Obstetricians (FIGO) Safe Motherhood and Newborn Health (SMNH) Committee [FIGO], 2012).

There can be up to 600mls of blood flowing through the maternal placental bed per minute (FIGO, 2012). Due to this, a woman can lose a large volume of blood in a short space of time, and death can ensue rapidly. It is therefore imperative that PPH is managed appropriately in any setting. Women in developing countries are frequently anaemic and unable to compensate for even the defined PPH blood loss of 500 ml without serious consequence, in contrast to women who are not anaemic and in general good health (McCormick, Sanghvi, Kinzie & McIntosh, 2002; Sanghvi, Zulkarnain & Chanpong, 2009).

The causes of PPH are well documented in obstetric and midwifery texts, and are recognised as 'the four T's' – tone, trauma, tissue and thrombin (FIGO, 2012). Management of PPH involves addressing the causes of bleeding. However, an identifiable cause may not always be apparent at the time and uterine atony (tone) should be assumed as the most probable reason, as it accounts for approximately 70% of cases of PPH (FIGO).

Maternal morbidity and mortality, PPH and Midwifery implications

WHO has recommended standard procedures for the prevention and management of PPH (WHO, 2012b). These guidelines are in alignment with both the FIGO and ICM recommendations (International Confederation of Midwives (ICM) & FIGO, 2003). However, in the context of developing countries, reducing maternal morbidity and mortality from PPH is a more complex issue than just managing the clinical situation, and requires a multisectorial approach (Awofeso, & Rammohan, 2010). Marge Berer (2007) infers this when she states “changing what happens in health systems is a social intervention, not just a technical one; context is crucial” (p. 6). The perennial problems of “poverty, powerlessness, lack of education and lack of access” (Radford, 2013, p. 2) are all contributing factors to poor maternal health (Radford; WHO, 2012a; FIGO, 2012).

A midwife is:

a responsible and accountable professional who works in partnership with women to give the necessary support, care and advice during pregnancy, labour and the postpartum period, to conduct births on the midwife’s own responsibility and to provide care for the newborn and the infant. This care includes preventative measures, the promotion of normal birth, the detection of complications in mother and child, the accessing of medical care or other appropriate assistance and the carrying out of emergency measures. The midwife has an important task in health counselling and education, not only for the woman, but also within the family and the community. This work should involve antenatal education and preparation for parenthood and may extend to women’s health, sexual or reproductive health and child care. A midwife may practise in any setting including the home, community, hospitals, clinics or health units (ICM, 2011).

As such, midwives are in a unique position to influence birth outcomes by the very nature of their work. In the context of maternal mortality and morbidity from PPH in developing countries, midwives can make a

difference directly in their role as clinician and indirectly as an advocate for the women in their care.

Midwifery Interventions

Prevention and management of PPH as per the 2012 WHO guidelines are critical interventions however, appropriate antenatal care and counselling by midwives are important preventative measures. Although most cases of PPH occur in the absence of known risk factors (RANZCOG, 2011), recognising factors such multiparity, high parity, poor obstetric history and existing health concerns in the antenatal period should result in these women being referred to birth in a healthcare facility (HCF), minimising risk (Mpemda, Kampo, & Zhang, 2012).

Women in developing countries are often affected by anaemia as a complication of malaria and hookworm infection and also due to poor dietary intake (WHO, 2005). As previously noted, these women are less able to tolerate PPH (McCormick et al., as cited in Olefile, 2013) and face increased morbidity due to fatigue, increased risk of infection and organ damage (Abou-Zahr, 2003). Contact with women in the antenatal period provides opportunity for screening women routinely for anaemia and other infections, for education and implementation of malaria and hookworm prevention methods, education regarding improved dietary intake and iron supplements, with the goal of women coming into labour with optimal haemoglobin levels. Antenatal and postnatal contact would also enable family planning/child spacing information to reduce the risk of PPH from high parity (WHO, 2005).

The availability of clinical guidelines such as the 2012 WHO Recommendations for prevention and treatment of PPH (WHO, 2012b) should facilitate best practice and standardisation of management of PPH in developing countries. The WHO and

FIGO/ICM have published care pathways that are simple to follow. These should be available in local hospitals and HCF's (WHO, 2012b; ICM & FIGO, 2003). This means that health providers in low resourced settings have ready access to evidence based practice guidelines.

Active management of the third stage of labour (AMTSL) has been shown to be the most effective factor in reducing PPH (Prendiville, Elbourne & McDonald, 2009). AMTSL includes the administration of oxytocin soon after the birth of the baby, early cord clamping and delivery of the placenta by controlled cord traction (RANZCOG, 2011). There are several problems associated with AMTSL in low resource settings. Oxytocin is the drug of choice as has been shown to be more effective than other uterotonic drugs in reducing blood loss (WHO, 2013). Oxytocin should be refrigerated for stability and requires sterile needles and syringes for administration, factors that present challenges in low resource settings where coldchain storage may be unavailable and equipment is limited (Gülmezoglu, Forna, Villar & Hofmeyr, 2007; Olefile et al., 2013). Alternative preparations are being developed such as the UniJect system of prefilled injectable capsules with promising results (Gülmezoglu & Souza, 2009).

The WHO guidelines go on to include alternative PPH prevention strategies recognising that many births in low resource settings will not be attended by skilled birth attendants (SBA's) and /or oxytocin will not be available. WHO then recommends the use of misoprostil as an alternative uterotonic by any health worker (WHO, 2012b). Misoprostil has the advantage of being thermostable, can be administered vaginally, orally, sublingually or rectally and is relatively cheap (Hundley, Ava, Sullivan & Graham, 2012; Olefile et al., 2013).

An indication of the effectiveness of misoprostil use is demonstrated in a small pilot project in Myanmar. Misoprostil was administered to 50 high risk women postpartum resulting in no PPH in that setting. Although this was only a small study the positive results have meant that the use of misoprostil has been included in Myanmar's midwifery and auxiliary midwife training (Htay & Thein, 2007). Hundley (2012) however, cautions that further larger studies are needed on the development and implementation of safety guidelines for the use of misoprostil.

The WHO (2012b) and ICM/ FIGO (2003) guidelines state that AMTSL should only be routine practice if skilled birth attendants (SBA) are present. Historically some confusion has surrounded the terminology of SBA – does it include traditional birth attendants (TBA) or village birth attendants or other health attendants? The role has clear definitions and skills required. A skilled attendant or SBA is

is an accredited health professional – such as a midwife, doctor or nurse – who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns (WHO, 2004, p.1).

Anywhere between 10 – 100% of births in developing countries are attended by SBA's (Countdown2015MNCH, 2013). This indicates that many women are still not receiving the potentially lifesaving care that should be afforded to them as a basic human right. Training and availability of SBA's including professional midwives should be improved. (Graham, Bell, & Bullough, 2001; WHO, 2004). It is unrealistic to hope that by 2015, midwives will be attending the majority of births in developing countries. In the interim, training community health workers to administer misoprostil will reduce PPH incidence (Hundley, 2012).

In the event of PPH, prompt recognition and management is essential in order to reduce maternal mortality and morbidity (Rath, Hack, & Bohlmann, 2012; FIGO, 2012). In an ideal world, women birthing in their communities should be able to be referred to a health facility with surgical and medical professionals in attendance, operating theatres and blood product availability. HCFs in low resource settings may not have access to these resources, but SBAs are able to improve outcomes by way of uterine massage, IV access, fluid replacement therapy, further administration of uterotonics, bimanual compression and other temporary measures such as intrauterine balloon tamponades (UTP), made of a simple syringe attached to a condom and inflated (Tindell, Garfinkel, Abu-Haydar, Ahn, Burke, Conn, & Eckardt, 2012; Rath, Hack, & Bohlmann, 2012).

From a midwifery perspective many of the current WHO recommendations for prevention and management of PPH are included in the midwifery scope of practice, but implementation is dependent on availability of uterotonics and birth place.

Barriers to accessing care

All women should be encouraged to birth at a health care facility where skilled care is available. However, women frequently face barriers to accessing this care.

Remote geographical location, lack of transport and roads may mean a HCF is physically too difficult for women to access (Mpemba, 2012; Awofeso & Rammohan, 2010). Dr Barry Kirby, an Australian doctor working in PNG, documents the case of a woman in his care as recently as 2011. The closest HCF was a five hour walk from her village. This woman presented to the HCF two days prior to her due date but was sent back to her home not in labour. However, two days later she went into labour in

her village, attended by her sister and a TBA. She suffered a PPH and subsequently died (Kirby, 2011). Was hers an unnecessary death?

As discussed earlier, SBAs and improved obstetric services are key interventions in reducing maternal morbidity and mortality (FIGO, 2012). These potentially lifesaving interventions are more likely to be available in hospital settings than home or village births. However, building more facilities is just one part of the solution to a complex problem. Requiring women to leave their communities to birth places added emotional, physical and economic stressors on women and their families (Chamberlain & Barclay, 2000), and this psychosocial impact should be taken into account by policy makers. Midwives working within communities can provide effective care as demonstrated by a successful midwifery led programme in a Canadian Inuit community .The programme utilizes traditional birthing and remote area care while maintaining strong links to regional and tertiary referral centres (Van Wagner, Epoo, Nastapoka & Harney, 2007). This model could be researched further to be adapted to other like communities. PPH in that setting would not be a death sentence.

Political instability and war impacts access and availability of care. In the Democratic Republic of Congo (DRC), continuing conflict poses a real threat to women and young girls from rape and torture, although the war officially ended there in 2005. Many women in that country still die from complications in pregnancy and childbirth simply because there is no medical care and transport to hospital is impossible (Dietsch & Masururu, 2006).Economic barriers may restrict women in developing countries from accessing care as the cost of birthing in a hospital is often prohibitive (Kirby, 2011; Berer, 2007).

Cultural barriers may also impact on PPH rates. In Papua New Guinea (PNG), viewing an exposed perineum and touching a mother's blood or the umbilical cord is a cultural taboo and requires the mother's explicit permission. A woman may quietly bleed to death because local custom prohibits someone looking and touching. This is not a simple obstacle to overcome as complicated payback systems exist between communities and a woman's family may be obligated to compensate anyone who has touched her blood or private parts (Kirby, 2011). Perhaps by increasing antenatal contact midwives will have opportunities to build trusting relationships with women and work towards gradually breaking down those barriers.

Other cultural barriers to improving maternal health and PPH rates are the role of men at births. Traditionally, birthing has been "women's business" and even in western society it has only been in relatively recent times that men have become actively involved in supporting women. Men can play a crucial role in reducing maternal morbidity and mortality. With relation to PNG's high MMR, Dr Barry Kirby states that "if men are part of the equation for PNG's dismal maternal mortality figures then they must be part of the solution" (Kirby, 2011, p. 58). Men can be informed of the importance of a supervised birth, of recognising when something is abnormal, and in the case of PPH, recognising the urgency of transporting their women to a HCF.

Midwives may need to think outside the box and develop innovative ideas to encourage women to attend HCFs for their births. A PNG project that involved distributing plastic baby baths containing baby clothes, soap and other items to women on presentation to the clinic resulted in an increase in the number of women presenting to birth and a decrease in maternal deaths (Kirby, 2011; Chandler, 2013).

Maintain evidence based midwifery skills

One area that requires further investigation is the impact of poor obstetric or midwifery practice on PPH rates. Are developing countries using current best practice guidelines or using practices adopted from western medicine that are frequently outdated and unsafe? Substandard care and lack of skills are common reasons for PPH mismanagement (Lombaard & Pattinson, 2009; Mpemba, 2013; Rath, 2012). An Egyptian study found that despite improved rates of hospital births, maternal and neonatal mortality rates remained high. This was partly attributed to potentially harmful hospital practices (Khalil et al., 2005).

V. Chan (personal communication, May 5, 2013), reports from her experiences of working in a Nairobi health centre recently, that women frequently had to labour and birth on their backs, that midwives were often bullying and authoritarian; oxytocin infusions were run through open drip lines and no foetal monitoring was available. Midwives are experts in facilitating normal birth. Interventions such as oxytocin infusions and assisted delivery have been shown to increase PPH risk and should only be used when medically indicated.

Education and training

Developing midwifery education and training programmes in low resource countries to attract local women (and men if culturally appropriate) to the profession would be a step towards ensuring all women were attended by SBA 's. Regular skills training and continuing education for clinicians are important measures to prevent and manage PPH (Lombaard & Pattinson, 2009).

In PNG a partnership has been developed between the WHO in PNG and the WHO Collaborating Centre (WHO CC) for Nursing and Midwifery and Health at the

University of Technology Sydney. Clinical facilitators from Australia have been employed to support and improve the standard of midwifery education and practice in that country. Interviews with recent PNG midwifery graduates have indicated that these midwives are already making a significant difference to local women in their care (Moore, 2013).

Professional Associations

Midwifery in developing countries can be supported by professional bodies such as the ICM. This organisation sets out essential competencies for basic midwifery practice and global standards for midwifery education (ICM, 2010), tools that facilitate accountability of practice and maintain midwifery standards internationally.

Professional awareness

Midwives working in developed countries can raise awareness amongst their peers about the plight of women birthing in developing countries. There are many NGO's and charities working towards improving maternal health that need financial support to continue their work. In Australia, local midwifery associations hold birthing kit assembly days to pass on to Zonta, an organisation that distributes the kits to low resource countries. One Australian obstetrician has started a charity: Send Hope Not Flowers, specifically to fund improving maternal health in those countries. Expatriate midwives can share experiences "from the field" such as Elaine Dietsch's graphic article exposing the plight of women in the DCR (Dietsch & Masuru, 2006). These may seem like small steps but the "power of one" should not be underestimated, nor the influence of social media such as Twitter and Facebook.

Research

There is still much to be done to reduce the number of women dying from PPH and further research into preventative measures and treatment can only be a positive step towards improved maternal health globally. Improved education models for midwifery training equips midwives with the academic skills to pursue research projects in their chosen field.

Conclusion and personal reflection

PPH continues to be a significant cause of maternal morbidity and mortality in developing countries. Midwives are able to influence outcomes in a variety of ways, by education, clinical management and also through professional activism and advocacy. One of the interesting observations to come out of my research is the irony that hundreds of women in developing countries continue to die from PPH due to lack of access to SBA's and unavailability of uterotonic drugs, while in this country women decline to receive recommended third stage management as it is seen as a disruption in the normal birth process, sometimes with serious consequences. Consumers and health professionals cannot afford to become complacent about the very real risk of PPH.

Perhaps the key impact the essay has had on my personal knowledge and attitudes is to increase my awareness of midwifery and birthing practice in developing countries; and to acknowledge the importance of maintaining links with professional bodies such as the Australian College of Midwives (ACM) and ICM as a way of supporting my colleagues working with much less as they strive to make a difference to the poor and disadvantaged women in their care.

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