

The Midwife Confronts Postpartum Hemorrhage

A. M. Ward

INTRODUCTION

Midwives practicing in the UK today are fortunate to work in a country with a relatively low maternal mortality rate^{1,2} and where there has been a significant reduction in the number of women dying from postpartum hemorrhage (PPH) in the past decade². At first glance, the role of midwives in such circumstances may seem obvious, that is, they should diagnose the bleed, call for help and instigate emergency treatment³. However, the reality of the management of PPH is much more complex and involves an ability to work effectively within a multidisciplinary team and to possess in depth knowledge of the social, psychological and physiological processes that surround pregnancy and childbirth. Midwives should be central to the prevention, identification and management of PPH and these precepts form the focus of this chapter. The degree to which midwives can achieve these goals will obviously vary with local customs, resources and practices, but the goals should remain the same regardless.

PREVENTION OF POSTPARTUM HEMORRHAGE

Antenatal prevention

Prevention of PPH should begin in the antenatal period by assessing women's risk factors at every antenatal visit and then, in partnership with the women, planning care that identifies the most appropriate lead health care professional⁴. The antenatal risk factors most commonly reported for PPH are^{2,5}:

- Body mass index >30 kg/m²
- Previous PPH
- Antepartum hemorrhage
- Placental abruption
- Placenta previa
- Multiple pregnancy
- Macrosomic infant
- Previous uterine surgery
- Antenatal anticoagulation.

Other risk factors include anemia, polyhydramnios, maternal age, uterine fibroids and a history of retained placenta^{6,7}. Nulliparity has recently been identified as a possible risk factor for PPH, rather than grand multiparity⁸. This is important as this group of women have not previously been identified as being at significant risk of PPH. In the past, the management of such women may have been substandard as PPH was not anticipated⁸.

The above-mentioned risk factors focus totally on the physical aspects of pregnancy. To ensure the optimum safety of women and their babies, as well as to ensure provision of holistic care, these factors need to be assessed in conjunction with other risk factors associated with severe maternal morbidity including maternal age more than 34 years, social exclusion and non-white ethnicity^{1,2,4,9,10}.

Midwives particularly need to focus care on women who book late, are poor attendees, or who do not access antenatal care at all, as these characteristics are key indicators of poorer outcomes². Such an approach requires effective communication links with other groups such as public health nurses, general practitioners and social services, so that these particular women are identified as being pregnant as early as possible and provided care in an appropriate environment tailored to meet their social, cultural and psychological needs^{2,11}.

Although the National Institute for Clinical Excellence (NICE) has produced guidelines for antenatal care of healthy pregnant women in the UK⁴, midwives need to be mindful that the guidelines are intended to guide the care of healthy pregnant women. The NICE document⁴ clearly states that women should have a plan of care that is relevant to their individual physical, social and psychological needs, and the World Health Organization (WHO)¹¹ further indicates that this also needs to be culturally specific to women's backgrounds if it is to be truly effective.

Knowing the risk factors for PPH, and identifying them is not enough if appropriate care is not then instigated². Even where women have strong views about the type of childbirth experience they desire, open, frank discussion of identified risk factors and

their implications for women and their babies, with time to assimilate and consider the information provided, leads to stronger relationships between women and midwives, and reduces the potential for conflict when the safest management of care conflicts with women's wishes for their childbirth experience^{12–16}.

Intrapartum prevention

Intrapartum prevention of PPH should begin antenatally with the aim of helping women to be as healthy as possible, both physically and emotionally, and should include preparation for childbirth, focusing on strategies to keep the process normal^{8,16}. Throughout the intrapartum period, midwives need to continually support women, encouraging them to be mobile and offering information on alternative methods of pain relief that are less likely to interrupt the progress of labor^{16–18}. As labor causes a great deal of insensible fluid loss, women need to be kept well hydrated to ensure adequate circulating volumes at delivery in the advent of excessive blood loss^{16,19}. Women should also be provided with a quiet, private environment where they feel safe and protected, thereby reducing the need for intervention during the process of labor^{18,20}. Such practices are even more vital in areas without direct access to intravenous fluids in the event of PPH.

Midwives require an in depth understanding of all intrapartum risk factors for PPH and constantly need to reassess the woman throughout labor^{17,21} for the following:

- Prolonged labor >12 h
- Prolonged third stage >30 min
- Retained placenta
- Febrile illness
- Instrumental delivery
- Cesarean section, especially emergencies in late first or second stage of labor
- Amniotic fluid embolism
- Placental abruption.

The first four conditions are most likely to cause uterine atony, whereas operative deliveries are the main cause of uterine, cervical or vaginal trauma; embolisms and abruptions are common causes of coagulopathy, although these causes are the least common reasons for PPH^{2,5}.

The debate regarding whether to manage the third stage of labor actively could fill an entire text itself, especially when considering practices in the UK and other developed countries. In developing countries, however, this debate takes on a different form, and routine active management of the third stage of labor could and does save many women's lives as well as saving many others from the abject misery of severe morbidity brought about by PPH^{1,6,8,9,11}.

Table 1 Options for the management of the third stage of labor

<i>Active management</i>	<i>Expectant management</i>
Oxytocic drug given at delivery of anterior shoulder	No oxytocic drug given
Cord clamped and cut immediately	Cord not clamped until pulsation ceased, then only clamped at baby's umbilicus
When uterus is central and well contracted, controlled cord traction applied	No cord traction Signs of separation awaited: <ul style="list-style-type: none"> • Rise in fundus • Lengthening of cord • Trickle of blood at introitus
Midwife delivers placenta and membranes	Maternal effort delivers placenta and membranes

The type of management used for the third stage of labor may be of no real consequence in a well nourished, healthy population, but it is vitally important that midwives can clearly identify those women at increased risk of PPH, as well as understanding and carrying out expectant and active management of the third stage of labor²². Table 1 describes the main components of each management option for the third stage of labor.

DIAGNOSIS AND PREVENTION OF POSTPARTUM HEMORRHAGE

Definitions may not be useful in themselves, as they often involve measurement of blood loss retrospectively^{2,23}, a task which is notoriously inaccurate and difficult²³ regardless of whether all blood loss is revealed or remains partially concealed (see Chapters 9 and 11). Healthy, young women can compensate for routine postdelivery blood loss very effectively, and this ability is increased even further if there has been a healthy increase in blood volume during pregnancy¹⁹. Normally, plasma volume increases by 1250 ml and the red cell mass also increases, resulting in women being able to tolerate a drop in their pre-delivery blood volume of up to 25% and remain hemodynamically stable¹⁹. In practice, however, this means that midwives need to be encouraged to use their clinical observational skills, remaining ever vigilant to signs of the earlier stages of shock – pallor, sweating and muscle weakness characterized by severe and rapid fatigue¹⁹. When women become restless and confused, shock is advancing rapidly and immediate, aggressive treatment is needed if not already instigated¹⁹ (see also Chapter 13).

PPH is either primary (occurring within the first 24 h after birth) or secondary (occurring after 24 h and before 6 weeks postpartum)². In practice, PPH has three different presentations²³:

- Rapid loss of blood at or just shortly after delivery
- Constant heavy lochia that persists for a significant length of time after delivery
- Bleeding after the first 24 h following childbirth.

It is the second type of bleeding that can cause problems for health care practitioners, because it is often missed. Women will experience heavy lochia that they report. Their sanitary protection will be changed and then, a little while later, it will happen again and be reported, but this may be to another member of staff who is unaware of the previous loss. Midwives and midwifery assistants should not only quantify the amount of blood lost, but also record this in the maternal notes, keeping a running total of the amount of blood lost to alert them to women who are bleeding significantly but still compensating adequately¹⁹.

MANAGEMENT OF POSTPARTUM HEMORRHAGE

The Royal College of Obstetricians and Gynaecologists² discusses how the practical management of PPH can be viewed as having four component considerations:

- Communication
- Resuscitation
- Monitoring and investigations
- Taking measures to arrest the bleeding.

As any PPH has the potential to cause maternal collapse with loss of consciousness, midwives need to be competent with basic life support (ABC algorithm)^{19,24,25}. The first principle of which is that a single individual cannot effectively manage an emergency situation, and help must be urgently requested prior to commencing any treatment²⁵. Midwives need constantly to ensure that women have patent airways and are breathing adequately; here, expensive technology is not required. If women do not respond when spoken to, then they potentially cannot manage their own airway and an individual with the appropriate skills and training needs to do this. Until the airway and breathing are effectively brought under control, there is little point undertaking any other task, as hypoxia can kill women much faster than hypovolemia¹⁹. Once sufficient members of the team are present, they can move on to maintaining the circulatory system and determining the cause of the PPH (see Chapter 36).

A major step towards reducing morbidity and mortality in the management of PPH is effective fluid resuscitation^{19,23,24} (see also Chapter 10). Midwives may be concerned about which fluids are best, but their focus needs to be on ensuring fluid is administered quickly and is not cold. Where available, fluid warmers and pressure bags must be utilized. Every 1 ml of blood lost needs to be replaced with 3 ml of fluid until blood is available^{19,23,24}. To ensure fluid can be delivered as quickly as possible, two wide-bore, short needles should be placed into major veins, as the volume that can be infused through a given cannula is proportional to the diameter and inversely proportional to its length¹⁹. Midwives justly may be concerned about commencing intravenous fluids without

prescription or written order, but as PPH represents a true emergency situation midwives can administer resuscitative fluids without first obtaining a prescription³. Women need to be kept warm as hypothermia is a consequence of hypovolemic shock^{19,24}. As the assessment of renal function is an essential part of management, an indwelling urinary catheter should be inserted using strict aseptic techniques to avoid infection in women who are already compromised as a result of the PPH¹⁹.

CARE AFTER POSTPARTUM HEMORRHAGE

Women who have sustained a significant PPH need to receive one-to-one care to facilitate close monitoring^{6,8,9,26}. Initially, the focus of care will be on the woman's physical condition, observing and monitoring urinary output, fluid intake, vital signs and subsequent blood loss. Ideally, such care is best provided in an obstetric high-dependency unit if available. On the other hand, any women requiring mechanical ventilation should be cared for in an intensive care unit^{6,8,9,26}.

Intensive monitoring often means that other aspects of care important to women following childbirth are neglected²⁷. Care provided by midwives also needs to include the psychological well-being of women and the integration of the family unit who may be bewildered by the goings-on after the delivery^{19,27}. Women who are conscious need to have contact with their babies and feel central in any decision-making around the care of their babies²⁸. Skin-skin contact is a simple procedure that can be carried out even for the sickest women and can be beneficial to women as well as their babies; it assists in the effective introduction of breastfeeding and has relaxing properties for women and babies alike²⁹.

Given the traumatic nature of PPH, women need support for a considerable length of time into the postnatal period as they recover physically and emotionally³⁰. Initial debriefing may not be beneficial and may, in fact, be detrimental to these women, as many are too consumed by the rapidity of the ongoing resuscitative efforts to comprehend truly what is being said in an effective manner. Later debriefing may discuss, among other things, the risk of recurrence in a later or subsequent pregnancy. After the initial crisis has passed, these women need effective long-term follow-up. In larger units, it may be appropriate to have a lead midwife and obstetrician to run combined postnatal clinics for the women, where recovery can be monitored and any concerns about subsequent pregnancies can be discussed with relevant health care professionals³⁰.

DOCUMENTATION

Accurate documentation is crucial during an emergency procedure and the leader of the emergency team needs to designate someone by name to record events as they occur, including the times team members enter and leave the room, as well as the timing of

any procedures and drugs administered, including route and dose³¹. Good records are an indication that the quality of care given to women was of an adequate standard³¹. Midwives have a professional duty to ensure records are kept as contemporaneously and accurately as possible^{3,31}. Good practice is to ensure that the documentation completed by the named scribe is included in the maternal records and not disposed of once individual health care practitioners have used them to complete their own notes. Accurate record-keeping is vital to reduce the risk of successful litigation, but it is also vital in the active debriefing of all team members³² (see also Chapter 36). Simple factors dramatically improve the quality of record-keeping and only take seconds²⁹. These include:

- Dating and timing all entries
- Printing name and qualification alongside the first signature in any records
- Writing legibly.

Documentation of vital signs and urine output is essential following significant PPH, but documentation itself will not ensure effective management of sick patients. It is vital to ensure that trends in all important physical parameters, especially respiration, are recognized and acted upon, because they indicate the effectiveness of any treatment as well as when women are deteriorating^{27,28}. Scoring tools can be developed that assist practitioners to identify women who are not responding to treatment and, therefore, require the expertise of senior obstetricians and anaesthetists and admission to an intensive care setting.

COMMUNICATING EFFECTIVELY

In any emergency health care situation, professionals are relieved when help arrives, but the larger the team the more complex the communication process and the more difficult it can be to manage the situation effectively and utilize the team efficiently^{32,33}. Someone needs to take charge, stand back, observe and then direct the working of the team^{32,34}. The role of this lead individual is also constantly to evaluate the effectiveness of treatments instigated and constantly to be re-thinking the potential causes of PPH when the treatment instigated is not being effective in controlling the bleeding³⁵. Historically, this lead person has been the most senior obstetrician on duty in the obstetric maternity unit. Both obstetricians and midwives recognize that the person co-ordinating the team at an emergency should be the most experienced clinician available^{32,34}. In some circumstances, however, this may be the senior midwife who will be more experienced than the house officers. An emergency situation is no time for hierarchy to interfere with communication which needs to be precise, with tasks directed to a named individual and feedback requested from that individual at regular intervals. Training of teams, within individual units or the community setting, needs to be multidisciplinary, realistic to the

work environment, scenario-driven and based on real timing and action to make it as realistic as possible³⁴. For example, if simulating PPH in a home setting, then paramedics need to be involved and the setting should reflect the equipment that would be available to midwives in those situations. For midwife-led units not attached to obstetric units, the training also should involve paramedics and the ambulance service and not include management regimens using drugs and techniques that are not available to those midwives.

TRAINING

Team sports have recognized for decades that members must train together to ensure that a team functions efficiently and effectively; such training must focus on utilizing individual skills to their greatest potential for the good of the team. In the NHS, individual professional bodies have trained their own practitioners largely in isolation of other health care professionals while, at the same time, expecting them to work as a well-oiled machine in times of great stress with minimal understanding of each others' strengths and weaknesses^{32,36}. Happily, this trend is changing and the benefit of multidisciplinary training is now recognized as an essential part of safe maternity services².

In the Yorkshire Region (UK), this has been taken one step further with many maternity units adopting a regional training program aimed at managing the first 20–30 min of obstetric emergencies effectively. As medical trainees rotate around the Region, they are expected to complete a systematic approach to the training for management of obstetric emergencies as early as possible in their time in a new unit. Units in the Region that have adopted the training have made it mandatory for anyone involved in the intrapartum care of women, from health care assistants to consultants.

Scenarios are run real-time using mannequins, and participants are expected to carry out procedures as if they were a real emergency. This is then videoed, and the participants debrief themselves, with a facilitator assisting them to focus on issues of breaches of leadership, control and communication, all of which have been highlighted as factors in suboptimal care². Dedicated time is provided for this training, which improves outcomes and can be achieved with effective timing and allocation³⁷. Anecdotally, training improves communication and team work, but it also needs to be audited against unit guidelines considering maternal outcomes and focusing on morbidity and mortality rates, as well as adherence to the guidelines themselves.

DEBRIEFING

Part of ensuring a team learns from stressful clinical incidences is a review of their performance as close to the event as possible. The purpose of this 'debriefing' session should be to focus on what was done well and, conversely, to point out those actions that require further attention. Debriefing also can be used to identify

what needs to be shared with team members not involved in the emergency, to aid their development and learning, as well as to provide a forum where those involved in the emergency can vocalize how they feel in a protective environment. This will enable learning whilst, at the same time, offering professional and emotional support, recognizing that health care professionals are caring individuals who can be profoundly affected by traumatic situations^{38,39}.

Finally, debriefing is a useful tool to help team members recognize that they are valued as is the role they play in the effective running of the team, all of which can help increase job satisfaction and reduce the number of professionals leaving midwifery and obstetrics^{38,39}.

CONCLUSION

Midwives are central to the effective prevention, recognition and treatment of PPH. They need to be aware of the risk factors for this condition and take appropriate action when they are identified. They should also be skilled in basic life support and have an understanding of the pathophysiology of hypovolemic shock. This knowledge must be used in conjunction with an understanding of women's social, cultural and psychological well-being.

Training as multidisciplinary teams can be effective in improving outcomes for women and their families. The Yorkshire model may be beneficial in units that have trainees who rotate throughout the region. Effective communication and leadership are vital in the management of any obstetric emergency and scenario-based training can be used to highlight issues of control and communication.

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