

THE MIDWIFE CONFRONTS POSTPARTUM HEMORRHAGE

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As repeatedly stated earlier in this book, postpartum hemorrhage is a major killer of women throughout the world¹ and is the second leading cause of admission of women to high-dependency units in the Western world^{2,3}. Postpartum hemorrhage also causes significant morbidity for women in the Third and Western worlds^{1,4,5}. Waterstone and colleagues⁶ noted that two-thirds of severe maternal morbidity is related to severe hemorrhage. It stands to reason that any reduction in the frequency of postpartum hemorrhage would impact the lives of women and their families throughout the world¹. Given these circumstances, it is essential that midwives, as first-line staff, be able to prevent, identify early and provide appropriate management during a postpartum hemorrhage^{7,8}.

Midwives practising in the United Kingdom (UK) are fortunate to work in a country with a relatively low maternal mortality rate¹. At first sight, the role of midwives in the management of a postpartum hemorrhage may seem obvious, that is, they should diagnose the bleed, call for help and instigate emergency treatment⁹. The reality of the management of a postpartum hemorrhage is much more complex than this, however, and involves an ability to work effectively within a multidisciplinary team and to possess an indepth knowledge of the social, psychological and physiological processes that surround pregnancy and childbirth. Midwives should be central to the prevention, identification and management of postpartum hemorrhage and these precepts will 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 postpartum hemorrhage should begin in the antenatal period. Midwives should assess women's risk factors at every antenatal visit and then, in partnership with the women, plan care that identifies the most appropriate lead health-care professional¹⁰. The antenatal risk factors, all within the midwives' domain to determine, that most commonly are reported for postpartum hemorrhage follow¹¹:

- Body mass index > 30 kg/m²
- Previous postpartum hemorrhage
- 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 placenta⁷. Nulliparity has recently been identified as a possible risk factor for postpartum hemorrhage, rather than grand multiparity¹². This is important, and it could well be that this group of women has not previously been identified as being at significant risk of postpartum hemorrhage. In the past, the management of such women may have been sub-standard as postpartum hemorrhage was not anticipated¹². The above-mentioned risk

factors focus totally on the physical aspects of pregnancy. To ensure the optimum safety of women and their babies and to ensure holistic care, these risk factors need to be assessed in conjunction with other risk factors for severe maternal morbidity; these include maternal age > 34 years, social exclusion and non-white ethnicity⁶.

Risk assessments undertaken by midwives need to carefully consider social and psychological aspects of women's lives, as there is clear evidence that women from poor areas, socially excluded groups and ethnic minorities have poorer health outcomes than other groups of women^{1,13,14}. 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 are key indicators of poorer outcomes¹³. This requires effective communication links with other groups such as Public Health Nurses, General Practitioners and Social Services to ensure these special women are identified as being pregnant as early as possible and provided care in an environment appropriate for them and tailored to meet their social, cultural and psychological needs^{1,13}.

The National Institute for Clinical Excellence (NICE) has produced guidelines for antenatal care of healthy pregnant women in the UK¹⁰. These are useful in honing effective use of resources, but midwives need to be mindful that the guidelines are intended to guide the care of *healthy* pregnant women. The NICE document¹⁵ 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)¹ further indicates that this also needs to be culturally specific to women's backgrounds if it is to be truly effective.

Although midwives clearly need to know the risk factors for postpartum hemorrhage, identifying risk factors is not enough if appropriate care is not then instigated¹³. Once identified, risk factors need to be acted upon. Even where women have strong views about the type of childbirth experience they desire, open, frank discussion of identified risk factors and their implication 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 experience¹⁵⁻¹⁸.

Intrapartum prevention

Intrapartum prevention of postpartum hemorrhage should begin in the antenatal period 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 normal¹⁹. Throughout the intrapartum period, midwives need to be with women supporting them, encouraging them to be mobile and offering alternative methods of pain relief that are less likely to interrupt the progress of labor^{20,21}. Labor causes a great deal of insensible fluid loss and women need to be kept well hydrated to ensure adequate circulating volumes at delivery to enable them to cope with any excessive blood loss²². Women should also be provided with a quiet, private environment where they feel safe and protected to reduce the need for intervention during the process of labor^{21,23}. All this is even more vital in areas where there is no direct access to intravenous fluids in the event of a postpartum hemorrhage.

Midwives need an indepth understanding of intrapartum risk factors and need to constantly reassess the woman for risk throughout labor²⁴. Intrapartum risk factors for postpartum hemorrhage include:

- 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 an atonic uterus, whereas operative deliveries are the main cause of uterine, cervical or vaginal

trauma; embolisms and abruptions are common causes of coagulopathy, although this is the least common reason for postpartum hemorrhage¹¹.

The debate on whether to manage the third stage of labor actively could fill an entire text itself when considering practice in the UK and other developed countries. In the Third World, however, this is a different matter and routine active management of the third stage of labor could save many women’s lives as well as saving many more from the abject misery of severe morbidity brought about by a postpartum hemorrhage^{1,5,6,12}. This treatment needs to be carried out in conjunction with having in place trained birth attendants that understand women’s specific cultural issues and are aware of when pregnancy and labor are not progressing normally¹.

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 a postpartum hemorrhage, as well as understanding and carrying out expectant and active management of the third stage of labor²⁵. Table 1 describes the main components of each management option for the third stage of labor.

DIAGNOSIS OF POSTPARTUM HEMORRHAGE AND POSTPARTUM PREVENTION

Definitions in themselves may not be useful, as they often involve measurement of blood

loss retrospectively. As blood loss may not be entirely revealed, its estimation is notoriously inaccurate and difficult²⁶.

Healthy, young women can compensate for routine post-delivery blood loss very effectively, and this toleration is increased even further if there has been a healthy increase in blood volume during pregnancy²². 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 stable²². In practice, this means that midwives need to be encouraged to ignore machines and use their clinical skills of observation. They need to be alert to signs of earlier stages of shock – pallor, sweating and muscle weakness characterized by severe and rapid fatigue²². When women become restless and confused, shock is advancing rapidly and immediate, aggressive treatment is needed if not already instigated²² (see also Chapter 8).

There are only two definitions for postpartum hemorrhage, primary (occurring within the first 24 h after birth) or secondary (occurring after 24 h and before 6 weeks postpartum). In contrast, experienced health-care practitioners will recognize that, in practice, there are three different presentations of postpartum hemorrhage:

- (1) Rapid loss of blood at or just shortly after delivery;
- (2) Constant heavy lochia that persists for a significant length of time after delivery;

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 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

- (3) Bleeding after the first 24 h following child-birth.

It is the second type of bleeding that can cause problems for health-care practitioners, because it is often the type of bleeding that is missed. Women will experience heavy lochia that they report. Their sanitary protection will be changed and then, a little while later, the same will happen and they will report it again, but this may be to another member of staff who is unaware of the previous loss. Midwives and midwifery assistants need to be encouraged to quantify the amount of blood lost and 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 adequately²².

MANAGEMENT OF POSTPARTUM HEMORRHAGE

As any postpartum hemorrhage has the potential to cause maternal collapse with loss of consciousness, midwives need to be competent with basic life support (ABC algorithm)^{8,22,27}. The first principle of which to be aware is that a single individual cannot effectively manage an emergency situation, and help must be urgently requested prior to commencing any treatment²⁷. Midwives need to constantly 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 hypovolemia²². Proper airway management needs to ensure that oxygen therapy is optimally utilized to ensure depleted hemoglobin is as well oxygenated as possible to prevent cell death²². Once sufficient members of the team are present, then they can move onto maintaining the circulatory system and determining the cause of the postpartum hemorrhage (see Chapter 13).

The key to reducing morbidity and mortality in the management of a postpartum

hemorrhage is effective fluid resuscitation^{8,22} (see also Chapter 5). 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**^{8,22}. To ensure fluid can be delivered as quickly as possible, two wide-bore, short cannulae need to be used, as the volume that can be infused through a cannula is proportional to the diameter and inversely proportional to its length²². Midwives may also be concerned about commencing intravenous fluids without prescription or written order. However, postpartum hemorrhage is an emergency situation and, as such, midwives can administer resuscitative fluids without a prescription first⁹. Women need to be kept warm as hypothermia is a consequence of hypovolemic shock^{8,22}. As the assessment of renal function is an essential part of management once the bleed is controlled, 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 postpartum hemorrhage²².

CARE FOLLOWING A POSTPARTUM HEMORRHAGE

Women who have sustained a significant postpartum hemorrhage need to be receive one-to-one care to facilitate close monitoring^{4-6,12}. 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. Any women requiring mechanical ventilation should be cared for in an intensive care unit^{4-6,12}.

Intensive monitoring often means that other aspects of care important to women following childbirth are neglected³. 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^{3,24}. Women who are conscious need to have contact with their babies and feel central in any decision-making around

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the care of their babies³. 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 alike²⁸.

Given the traumatic nature of a postpartum hemorrhage, women will need support long into the postnatal period as they recover physically and emotionally²⁹. Initial debriefing may not be beneficial and may, in fact, be detrimental to these women. Later debriefing may discuss, among other things, the risk of recurrent postpartum hemorrhage. After the 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 these women, where recovery can be monitored and any concerns about subsequent pregnancies can be discussed with relevant health-care professionals²⁹.

DOCUMENTATION

Accurate documentation is crucial during an emergency procedure and the leader of the emergency team needs to task 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 dose³⁰. Good records are an indication that the quality of care given to women was of a good standard³⁰. Midwives have a professional duty to ensure records are kept as contemporaneously and accurately as possible^{9,30}. 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 members³¹ (see also Chapter 13). Simple factors can dramatically improve the quality of record-keeping and only take seconds³⁰. These include:

- Dating and timing all new entries;

- Printing name and qualification alongside the first signature in any records;
- Writing legibly.

Documentation of vital signs and urine output is essential following a significant postpartum hemorrhage, but documentation itself will not ensure effective management of sick women. It is vital to ensure that trends in all important physical parameters, especially respiration, are being acted upon effectively because they can indicate the effectiveness of any treatment as well as when women are deteriorating^{2,3}. 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, professionals are relieved when help arrives, but the larger the team the more complex communication and the more difficult it can be to manage the situation effectively and utilize the team efficiently^{31,32}.

Someone needs to take charge, stand back, observe and then direct the working of the team^{31,33}. The role of this lead individual is also to constantly evaluate the effectiveness of treatments instigated and to constantly be re-thinking the potential causes of postpartum hemorrhage when the treatment instigated is not being effective in controlling the bleeding³⁴. Historically, this has been the most senior obstetrician on duty in an 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^{31,33}. In some circumstances, this may be the senior midwife who will be more experienced than the house officers.

An emergency situation is no time for hierarchy. Communication needs to be precise, with tasks directed to a named individual (not Mr or Mrs Somebody) 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 possible³³. For example, if simulating a postpartum hemorrhage in a home setting, then paramedics need to be involved and the setting needs to reflect the equipment that would be available to midwives in those situations. For midwife-led units not attached to obstetric units, the training should involve paramedics and the ambulance service and not include the management schemes using drugs and techniques that would not be available to those midwives.

TRAINING

Team sports have recognized for decades that, to ensure that a team functions efficiently and effectively, its members must train together; 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 and then they have been expected to work as a well-oiled machine in times of great stress, with minimal understanding of each others' strengths and weaknesses^{31,35}. Happily, this trend is changing and the benefit of multidisciplinary training is being recognized³³.

In the Yorkshire Region, 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, there is a systematic approach to the training for management of obstetric emergencies that they are expected to complete as early as possible into 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 it were a real emergency. This is then videoed and the participants on the day debrief themselves, with a facilitator assisting them to focus on issues of leadership, control and communication, all of which have been highlighted as factors in suboptimal care¹³. Dedicated time is given for this training, which has been shown to improve outcomes and

efficiencies and can be achieved with effective timetabling and allocation³⁶. Anecdotally, the training improves communication and team work, but 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. It 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 situations³⁷. Debriefing is a useful tool to help team members recognize that they are valued and 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 obstetrics³⁷.

CONCLUSION

Midwives are central to the effective prevention, recognition and treatment of postpartum hemorrhage. They need to be aware of the risk factors for postpartum hemorrhage 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 their 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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Managing postpartum haemorrhage. Midwifery education module 2. Authors: World Health Organization. In order that students may fully understand how postpartum haemorrhage occurs, this module begins with a detailed explanation of the physiology and management of the third stage of labour. Students then learn what postpartum haemorrhage is, how it occurs, what factors contribute to it and how it can be identified, and the critical points for management. Appropriate management of postpartum hemorrhage requires prompt diagnosis and treatment. The Four T's mnemonic can be used to identify and address the four most common causes of postpartum hemorrhage (uterine atony [Tone]; laceration, hematoma, inversion, rupture [Trauma]; retained tissue or invasive placenta [Tissue]; and coagulopathy [Thrombin]). Rapid team-based care minimizes morbidity and mortality associated with postpartum hemorrhage, regardless of cause. Massive transfusion protocols allow for rapid and appropriate response to hemorrhages exceeding 1,500 mL of blood loss. The most effective strategy to prevent postpartum hemorrhage is active management of the third stage of labor (AMTSL).