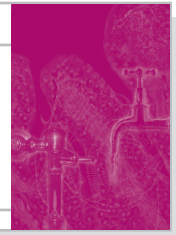


GUIDELINE

Standardised Maternal Guideline on the Management of Postpartum Haemorrhage



This guideline was compiled for use in the Western Cape Province of South Africa by a Provincial Reference Group with contributions from staff of the health facilities and academic institutions in the province. It follows on the recommendations of the Saving Mother's Report (recommendation No. 1 – to have protocols on the management of important conditions causing maternal deaths available at all institutions). It was accredited by the Western Cape Clinical Guidelines Advisory Committee, a group established by the Provincial Government of the Western Cape to advise on matters related to the development of clinical guidelines that deal with interventions provided at all levels of care, and to accredit those guidelines that meet pre-specified standards or criteria. Professor J Volmink, director of the South African Cochrane Centre, chairs the advisory group.

The goal should be to reduce deaths due to postpartum haemorrhage (PPH) to less than 5% of the total maternal deaths.¹

Background

This guideline is a priority as obstetric haemorrhage is the third most common cause of maternal deaths in South Africa.² In the triennium 2002 - 2004, 442 maternal deaths due to obstetric haemorrhage were reported. Of these deaths 313 were due to postpartum haemorrhage, which is regarded as the most preventable of deaths due to all causes reported.

The guideline was developed through a process of review by:

- The Maternal Guidelines Reference Group
- The Collaborative Guidelines Group that developed the Policy and Management Guidelines for Common Causes of Maternal Deaths for the National Department of Health
- External review by experts from both academic and secondary hospitals, in the Western Cape Province.

No member of the guideline development group has declared any competing interests in relation to the guideline.

The Maternal, Child and Women's Health (MCWH) sub-directorate of the Western Cape established the Maternal Guidelines Reference Group after the publication of the first Saving Mothers Report. The reference group consists of the rural MCWH co-ordinators, clinicians from both academic and secondary hospitals in the province and personnel involved in nursing training. The mandate was to address the recommendations of the Saving Mothers report with a specific aim to produce evidence-based but user-friendly guidelines on key conditions, and to plan implementation and monitor usage of these guidelines.

To ensure uniformity, the Clinical Guidelines Advisory Committee was established by the Provincial Government of the Western Cape's Health Department in July 2003.

This committee advises on matters related to the development of clinical guidelines in all disciplines and at all levels of care and accredits those guidelines that meet pre-specified standards or criteria. The guidelines are appraised using the AGREE¹ (Appraisal of Guidelines Research & Evaluation) tool.

Once the guideline advisory committee is satisfied that a guideline fulfils all these criteria, it is accredited for use and distributed throughout the province as a policy document. It is hoped that the wider circulation of these documents may help reduce the burden of maternal mortality.

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1. The AGREE Collaboration. Appraisal of Guidelines for Research & Evaluation (AGREE) Instrument 2001. www.agreecollaboration.org (last accessed 10 October 2007).

Search strategy

The aim of this search was to identify relevant published evidence to allow recommendations to be evidence based wherever possible. The search was carried out using the electronic database PUBMED and the Cochrane Library.

A combination of subject headings and free text was used to locate systematic reviews and meta-analyses, randomised controlled trials and observational studies relevant to the guideline. PUBMED references were sought using the MeSH heading postpartum haemorrhage (PPH). Relevant English articles published up to April 2005 were obtained and reviewed.

We made extensive use of high-quality review articles and bibliographies, as well as contact with experts in the field. The expert knowledge and experience of group members also endorsed the search strategy.

Overview of the literature

Evidence categories were adapted from the US Agency for Healthcare Policy and Research. These categories are as follows:

Categories of evidence

- Ia** Evidence from meta-analyses of randomised controlled trials
- Ib** Evidence from at least one randomised controlled trial
- IIa** Evidence from at least one controlled study without randomisation
- IIb** Evidence from at least one other type of quasi-experimental study
- III** Evidence from non-experimental descriptive studies, such as comparative studies, correlation studies and case-control studies
- IV** Evidence from expert committee reports or opinions and/or clinical experience of respected authorities.

Recommendations were graded using the scheme of the Royal College of Obstetrics and Gynaecology:

Strength of recommendation

- A** Requires at least one randomised controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation (evidence levels **Ia, Ib**)
- B** Requires the availability of well-controlled clinical studies but no randomised clinical trials on the topic of recommendations (evidence levels **IIa, IIb, III**)
- C** Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates an absence of directly applicable clinical studies of good quality (evidence level **IV**)

GPP GOOD PRACTICE POINT: Recommended best practice based on the clinical experience of the guideline development group.

Target group

The target groups of this guideline are midwives and doctors conducting deliveries at primary, secondary and tertiary level of care.

Implementation

Implementation of this guideline requires no additional equipment or drugs compared with current standard practice. A checklist of what is needed includes:

- Intravenous fluids – e.g. Plasmalyte B[®], Balso[®], Ringer's lactate or rehydration fluid
- Wide-bore intravenous cannulas, at least G16
- Colloids – Haemaccel[®], Haes-steril[®], Gelofusine[®] or Voluven[®]
- Oxytocin
- Misoprostol tablets
- Blood (hospitals where caesarean sections are performed).

With the exception of blood, all items under 'Implementation' must be available at primary care level (i.e. maternity obstetric units and district hospitals). Obstetric emergencies cannot be predicted, and when they occur efficient emergency management is immediately required until the patient can be transferred. The principle that these patients must be stabilised prior to transfer should always be adhered to. In the acute emergency situation midwives must initiate management according to the guideline. Following the initiation of emergency management the doctor at the referral hospital will then be notified.

General preventive measures

1. Permanent contraception must be positively encouraged for all women with a parity of >4 and/or in the age group >35 years. This could be female postpartum or interval sterilisation or vasectomy for the male partner.² **(C)**
2. All pregnant women must receive antenatal care from early in pregnancy. **(GPP)**
3. Routine iron supplementation is recommended for all antenatal women to minimise anaemia during pregnancy and delivery.³ **(A)**
4. A referral network from primary through to tertiary level of care must be in place in each region. Women attending primary health care facilities must know which hospital to attend in the event of an emergency.² **(C)**

5. Anaemic patients with Hb <8 g/dl must deliver at level 2 (secondary hospital) care institutions. **(GPP)**
6. The 'mother as a monitor' concept must be taught to all pregnant women. Following delivery of the placenta the mother must:
 - know how to feel for uterine relaxation and how to rub up her uterus if it relaxes
 - know to call for help if the amount of bleeding increases. **(GPP)**

Specific preventive measures

1. Obstetric haemorrhage must always receive the highest priority for emergency ambulance transport.² A response time of less than 30 minutes is required. **(C)**
2. Establish good communication links between different levels of care to enable immediate action in the receiving hospital when patients are referred, which must include:
 - No delays on admission²
 - Direct access to the labour ward
 - Prompt initial assessment by the person in charge of the labour ward.² **(B)**
3. Identify all women with a risk factor for PPH for delivery at a level 2 hospital, e.g. women with multiple pregnancies, polyhydramnios, grand multiparas and previous PPH that required blood transfusion. **(B)**
4. Continuing in-service training regarding the emergency management of PPH at level 1 and 2 care must be maintained. **(GPP)**
5. Emergency management, especially at level 1 care, must be improved and all health workers at an institution that deals with pregnant women must know standard protocols for managing PPH.⁴ **(C)**

Where deliveries are infrequent and PPH is consequently rare, 'fire drills' should be performed to ensure the staff is familiar with what to do with a woman with a PPH. **(GPP)**

6. Use a partogram for all women in labour to enable the early recognition and prompt management of prolonged labour.^{5,6} **(A)**
7. Active management of the third stage of labour should be practised.⁶ There is convincing evidence that active management significantly reduces the incidence of PPH.⁶ The oxytocic drug used during the active management of the third stage should preferably be 10 U oxytocin given by intramuscular injection. Oxytocin has the advantage over ergometrine that it is not degraded by direct light and need not be kept continuously in a fridge. The shelf life at normal room temperature is 1 month. Oxytocin is not contraindicated in patients with hypertension or heart valve lesions.^{7,8} **(A)**

8. Oxytocin must always be used with caution during labour.^{7,8} **(A)**
9. Labour is not to be augmented in multigravid patients once in the active phase of the first stage of labour, unless discussed with a specialist. **(GPP)**
 - Discontinue oxytocin following induction of labour (e.g. for prelabour rupture of membranes) once in established labour. **(GPP)**
10. Take the following into account when discharging patients postpartum:
 - Patients at risk for PPH must not be discharged early. **(GPP)**
 - Examine each patient for a well-contracted uterus before discharge. **(GPP)**
 - Iron supplementation must continue for 1 month postpartum if the postpartum haemoglobin concentration is less than 10 g/dl.⁹ **(A)**
11. Blood must be available at all hospitals providing level 2 care and level 1 hospitals where caesarean sections are performed.² **(C)**

Problem recognition

1. Any amount of bleeding that appears more than normal during and following the third stage of labour.
2. Any patient with signs of shock (tachycardia and/or low blood pressure) due to haemorrhage.

Emergency management

The **initial emergency management** of all patients with PPH must include:

Step 1: The uterus must immediately be rubbed up. This will cause the uterus to contract and reduce the blood loss.

Step 2: Call for help. One health worker alone will not be able to manage a PPH.

Step 3: A rapid intravenous infusion of 20 U oxytocin in a litre of intravenous fluids must be started. Once again make sure that the uterus is well contracted.

Step 4: The patient's bladder must now be emptied. A full bladder may cause poor contraction of the uterus with resultant haemorrhage.

These 4 steps must always be carried out irrespective of the cause of the PPH.

Specific management measures

1. Patients with retained placentas must always have an intravenous infusion of 20 U oxytocin in a litre inserted.^{7,10} **(A)**

- Observations need to be done every 15 minutes and check continuously whether the uterus remains well contracted. Transfer to an appropriate level of care must be arranged.
 - Repeat the vaginal examination prior to transfer or prior to taking the patient to theatre to check whether the placenta has not been completely or partially expelled from the uterus into the vagina, in which case the placenta can be delivered and the problem solved.
2. Any patient with signs of shock (tachycardia and/or low blood pressure) due to haemorrhage requires at least two intravenous infusions, one for rapid administration of crystalloids (i.e. Plasmalyte B, Ringer's lactate, rehydration fluid, etc.) with 20 U oxytocin, the other for the rapid administration of colloids (i.e. Haemaccel[®], Haes-steril[®], Voluven[®], etc.)⁴ **(C)**
 3. An atonic uterus not responding to the initial management steps 1 to 4 must be bimanually compressed while the patient is transferred to the next level of care. **(GPP)**

Referral of patients with PPH to higher levels of care

PPH is the commonest cause of maternal deaths at level 1 institutions.² The commonest avoidable factor for maternal death is delay in transport.²

- All patients managed at level 1 care where bleeding persists following the initial steps must be referred to the next level of care where the cause of the haemorrhage must be determined and further management instituted according to the cause. **(GPP)**

Observation guidelines

Poor observations contribute significantly to deaths from PPH.² The following important improvements are required with regard to observation of patients at risk for PPH:

- Identify women at high risk of PPH.
- Adhere to accepted nursing norms in observing these women after delivery. Keep these patients under observation for longer (6 hours) in the labour ward.
- Ensure ongoing observations once transferred to postnatal wards.

The following postpartum observations must be done on all patients and noted in their records following completion of the third stage of labour:

- Whether the uterus is well contracted or not
- The pulse and blood pressure
- Whether there is excessive vaginal bleeding or not

- Whether the episiotomy was sutured and an inspection for perineal and vaginal tears was done
- Whether the placenta was completely delivered.

→Observations must be documented, dated and signed legibly. The observations must be interpreted and action taken if abnormal.

If the third stage was normal, the placenta was delivered completely, or the observations mentioned above were normal:

- The observations need to be repeated after 1 hour.
- It is important to check continuously whether the uterus remains well contracted during this hour.

If the third stage was abnormal, the placenta was delivered incompletely, or any of the observations mentioned above was abnormal:

- The observations need to be done every 15 minutes until the patient's condition has stabilised.
- During this time it is important to check continuously whether the uterus remains well contracted.

Further management of PPH

All patients who did not respond to the initial emergency management should be transferred as acute emergencies to an appropriate level of care, which will be at least a level I hospital with theatre facilities and emergency blood available.

The cause of persistent haemorrhage must now be determined. Any one of the two large groups and two less common groups of causes could be present. According to the clinical picture the groups will be (also refer to Fig. 1):

1. Bleeding due to an atonic uterus. The uterus tends to relax and become flabby and soft following the initial emergency steps. The bleeding occurs in episodes following rubbing up of the uterus or a uterine contraction and consists of dark red blood clots.
2. Bleeding due to trauma, e.g. vaginal or cervical tears or uterine rupture. Bleeding persists as a bright red trickle of blood while the uterus remains well-contracted and firm.
3. Uterine inversion. The patient is shocked but has not bled a lot. The uterus cannot be palpated above the symphysis pubis. The uterus may be visible outside the vagina or palpable in the vagina.
4. Clotting disorders. If bleeding persists despite a contracted uterus and the patient had a complication that could result in a bleeding disorder (e.g. abruptio placentae or HELLP syndrome) or is known to suffer from a bleeding disorder, further investigation and correction of the disorder will be required.

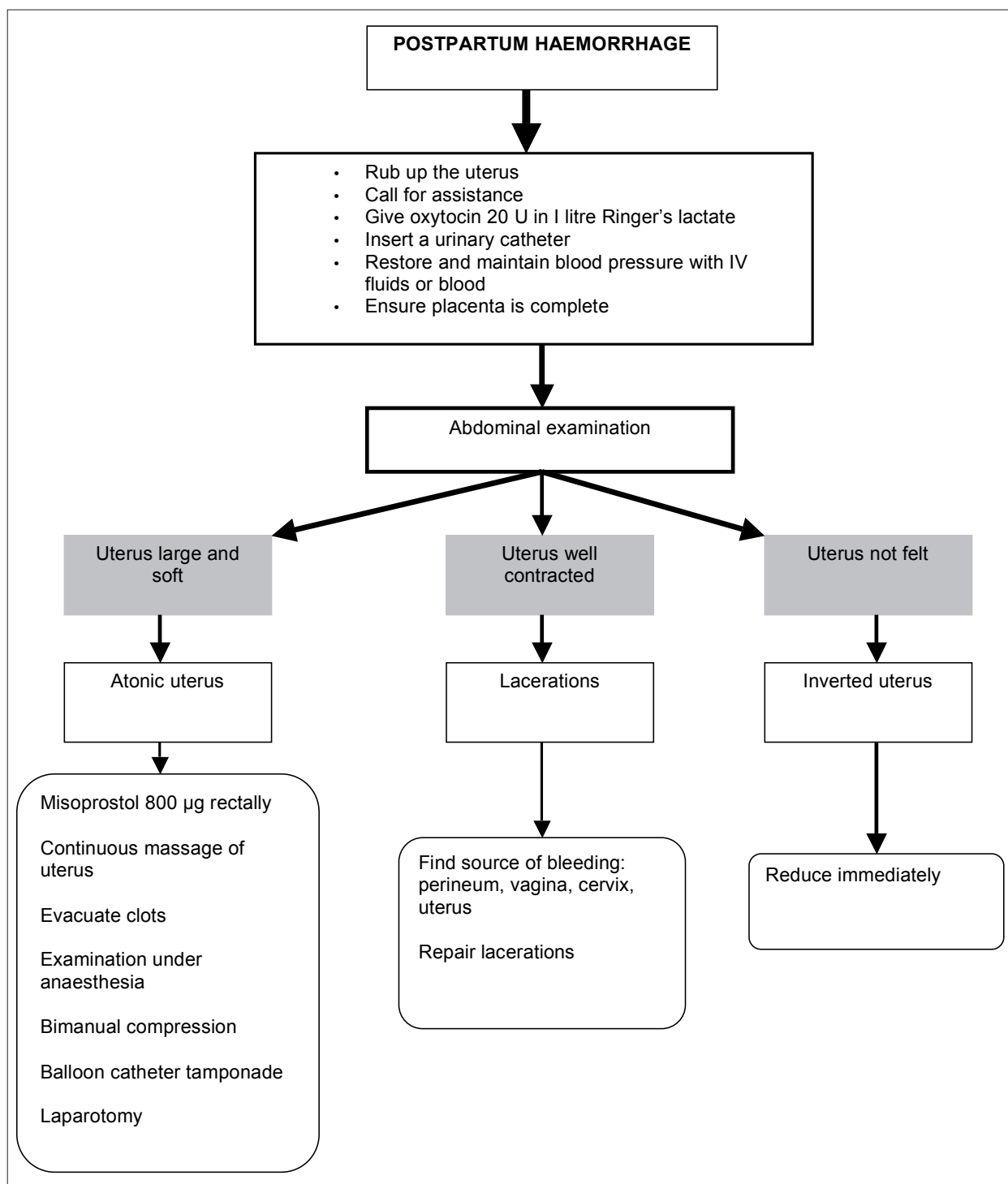


Fig. 1. Algorithm for the management of postpartum haemorrhage.

Bleeding due to an atonic uterus

Additional attempts to contract the uterus are required in the following sequence:

1. Misoprostol (Cytotec®) 4 tablets (800 µg) are inserted per rectum. The drug is generally available and must be used at level 1 hospitals.¹⁰ **(A)**

OR

Prostaglandin F₂-alpha (if available) is a potent uterotonic agent. The drug may be injected into the myometrium – 5 mg is added to 20 ml saline and 2 ml

injected into various sites in the myometrium, being careful not to inject intravascularly. Alternatively 5 mg may be added to a litre of the crystalloid infusion.

2. If the uterus continues to relax, the patient needs to be taken to theatre in a level 2 (secondary) hospital. Four units of blood and a person with the skills to do an emergency hysterectomy need to be available if required. While waiting for theatre bimanual compression of the uterus is applied to reduce further blood loss. **(GPP)**

Another way to induce uterine compression is with intrauterine balloon tamponade, which may be successful in controlling the bleeding without surgery in up to 80% of cases where all other conservative measures has failed.¹¹ In the South African setting, balloon tamponade may be attempted in a rural or district hospital before transfer to the next level of care. A commercially available balloon or a Sengstaken Blakemore oesophageal catheter can be used. The principle is to have a balloon that can fill the whole uterine cavity and create pressure that is greater than the systolic blood pressure.¹² In an emergency, a makeshift balloon catheter can be made with an ordinary Foley catheter with a condom fitted over the tip and tied (watertight) at the base of the condom with string. **(B)**

3. In theatre under general anaesthetic:

- An inspection of the vagina and cervix for tears is first done, followed by
- A bimanual examination and exploration of the uterine cavity with two fingers for retained placental tissue and a possible laceration.
- The uterus is further emptied with a large ovum forceps and then firmly curetted with a Baum's curette.
- Trans-abdominal ultrasound in theatre is of value to confirm that the uterus is empty.

4. If the bleeding persists a laparotomy (midline incision) is required.⁴ **(C)**

If the patient has completed her family or is of high parity, proceed directly with a total abdominal hysterectomy. If the patient is primiparous or of low parity, the following steps could be followed:

The patient is draped in the lithotomy position. This will allow immediate inspection to assess the result of intra-abdominal measures to reduce blood loss. Compression sutures are inserted. The bladder peritoneum is opened. A Vicryl 1 suture is passed through the lower segment 2 - 3 cm from the lateral border of the uterus. These sutures are tied as tight as possible on top of the uterus 3 - 4 cm medial to the uterine cornu.

5. If the bleeding persists, systematic devascularisation of the uterus is required:

- First, tie off the anastomoses between the ovarian and uterine arteries below and close to the insertion of the uterine tube to the uterus. Also tie off the uterine arteries by opening the broad ligament and identifying the uterine arteries above and medial to the ureters.
- Secondly, if above measures fail, the internal iliac arteries could be tied off.
- Thirdly, if bleeding persists proceed with a hysterectomy as a life-saving procedure. A less experienced surgeon should perform a subtotal hysterectomy, by amputating the uterus above the cervix following ligation of the uterine arteries.

Audit

To ensure that the changes are implemented, audit needs to be done regarding PPH at all levels of care.

Conclusion

Careful observation, prompt recognition and the initial emergency management will lead to a rapid reduction in maternal deaths due to PPH.

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