Worcestershire Acute Hospitals NHS Trust

# Management of Postpartum Haemorrhage (PPH) including Massive Obstetric Haemorrhage

| | | |
|---|---|---|
| **Key Document code:** | WAHT-TP- 094 | |
| **Key Documents Owner/Lead:** | Dr Hillman | Consultant Obstetrician |
| **Approved by:** | Maternity Governance Meeting | |
| **Date of Approval:** | 15th November 2019 | |
| **Date of review:** | 15th November 2022 | |

## Key Amendments

| Date | Amendments | Approved by |
|---|---|---|
| | | |

## Introduction

The latest MBRRACE report (2014-2016) evidenced that, in the UK there were 18 Direct maternal deaths from obstetric haemorrhage. This represents a decline from the 21 reported in the previous report (2013-2015). This does not provide firm conclusions about the decline in incidence however it is hoped that the reduction in deaths may reflect improvements in the quality and safety of care, regular drills and skills exercises, the use of guidelines and closer multidisciplinary working.

## Definition

Primary postpartum haemorrhage (PPH) is blood loss within the first 24 hours and secondary PPH is blood loss after 24hours up to 12 weeks post-delivery.

Minor: 500-1000mL
Moderate: >1000- 2000mL
Severe: >2000mL

Acceptable blood loss is ≤500Ml at vaginal delivery and ≤1000mL at caesarean section

Major postpartum haemorrhage is defined as blood loss of 1000ml or more at vaginal delivery and 1500ml or more at caesarean section, a decrease in haemoglobin of >4 g/dl or acute transfusion of >4 units blood.

## Possible causes

| 4Ts | Risk factors | Relative frequency |
|---|---|---|
| **Tone** | • Atonic Uterus, Multiple pregnancy, Previous PPH, Fetal macrosomia, Delayed 2nd stage, Prolonged 3rd stage, General anaesthesia | 70% |
| **Trauma** | • Cervical, vaginal, perineal tears<br>• Pelvic haematoma<br>• Inverted uterus<br>• Uterine rupture | 20% |
| **Tissue** | • Retained tissue<br>• Invasive/adherent placenta (accreta) | 10% |
| **Thrombin** | • Coagulopathies<br>• Disseminated Intravascular Coagulation (DIC) | 1% |

## Management of PPH

Clinicians should be aware that the visual estimation of peripartum blood loss is inaccurate and that clinical signs and symptoms should be included in the assessment of PPH

### Estimated Blood Loss 500-1500mls with No clinical shock – Basic Measures

- Inform shift coordinator and obstetric registrar. Further help may be required.
- IV access with size 14G cannula and take bloods for FBC, clotting, Group & Save and crossmatch if required and IV fluid resuscitation
- See Appendix 1 (Pathway for management of PPH)
- Palpate uterus and commence fundal massage. Identify and treat cause of bleeding.
- Clinical vigilance & ongoing assessment of patient including WOW chart. Pulse, respiratory rate and blood pressure every 15 minutes
- Ensure bladder empty and consider catheterisation

### Estimated Blood Loss >1500mls Or Any Clinical signs of shock

1. Prompt recognition
2. Pull the emergency call bell and summon help via 2222 requesting an "obstetric emergency" doing so will summon the following clinicians: On call Obstetric registrar & Consultant (if on site), anaesthetist, labour ward co-ordinator and senior midwife (if on site). Additional staff should respond to the emergency bell including midwives, maternity support workers (MSWs) and junior doctors. If the estimated blood loss is >1500mL and on-going the consultant obstetrician should be contacted to attend. Details of the staff present and the management plan by each member of staff must be clearly documented to ensure effective communication.

   After summoning help the lead carer must declare a "massive obstetric haemorrhage (MOH), which will trigger the massive haemorrhage protocol as follows: Activate 2222 call and say 'Major Haemorrhage' and give location. Switchboard will contact the lab, the anaesthetist on call, the porters and consultant haematologist. The major haemorrhage pack will be initiated (appendix 1).
3. Alert the haematologist and blood transfusion laboratory at an early stage.
4. In case of life threatening haemorrhage request Major Haemorrhage pack (MHP) as a first line response. Contact blood transfusion on 30635/30637 (office hours) or Bleep 848 (out of hours).
5. Follow ABCD rule.

   **A - Airway**
   - Assess and maintain patency.
   - 15L/min O2 via face mask initially.
   - Attach pulse oximeter to patient.

   **B - Breathing**

- Assess
- Protect airway
- Monitor respiratory rate

**C - Circulation**

Restoration of circulating volume should be the first priority and labour ward anaesthetist should take charge of this (See Appendix 1 – Management of PPH)

- Insert 2 large bore IV cannulae.
- Send bloods for FBC, clotting studies including fibrinogen, APTT, PT (INR), X–match (at least 4 units), U&Es, LFTs.
- Clinical vigilance & ongoing assessment of patient.
- Consider CVP/arterial line.
- Regularly assess volume loss & maintain fluid balance chart
- Replace volume loss and urgent access to blood as per individual documented plan. Warm IV fluids and infuse with a pressure bag. Initially infuse up to 2 litres of Hartmans solution followed by colloid e.g. Volplex / Isoplex/ Gelofusine 500mls unless otherwise specified by the anaesthetist / obstetrician. Administer blood as soon as it is possible. Do not give >3.5L clear fluids while waiting for blood.
- If blood loss appears life threatening consider giving O Rh negative red cells. Preferably however please use group specific fully cross-matched blood.
- When requesting blood, be clear in your request to the haematologist and porters about the urgency and state what you need, when you need it and enquire when it will be ready for collection.
- Intraoperative cell salvage is recommended in patients where the anticipated blood loss is great enough to induce anaemia or exceed 20% of the patient's blood volume. Kleihauer testing is need in Rhesus negative patients and appropriate administration of Anti-D if fetal blood cells are detected in the maternal circulation.
- Catheterise and monitor urine output hourly.
- If prothrombin time/ activated partial thromboplastin time is more than 1.5 times normal and haemorrhage is ongoing consider FFP at a dose greater than 12mL/Kg. FFP at a dose of 12-15mL/Kg should also be considered if haemostatic results are unknown and the bleeding is continuing after 4 units of red blood cells.
- Cryoprecipitate should be used to maintain fibrinogen level >2g/L.
- Platelets should be transfused when the platelet count is $<75x10^9$/L

- Suspect hypocalcaemia if massive (>10 units blood) transfusion with ongoing hypotension, check $Ca^{2+}$. Give calcium gluconate 10% 10-20mL by IV infusion over 10mins with ECG monitoring. Also screen for hyperkalaemia with massive blood transfusion.

**D - Diagnose** and treat cause of bleeding.

*Beware of intra-abdominal bleeding following caesarean section. It can happen due to any of the following causes and if not diagnosed and managed early enough it can result in severe morbidity/ mortality.

- **Genital tract trauma -** Arrange for repair promptly. This may need to be done in theatre for proper access and analgesia. Senior help should be sought sooner than later.

- **Retained products/ placenta** – see guideline WAHT-OBS-091.

- **Coagulopathy/ DIC** – Suspect DIC in abruption, severe PET, infected RPOCs, amniotic embolism or prolonged/untreated hypovolaemic shock. If platelet count <50 or INR >1.6 check fibrinogen/fibrinogen degradation (FDP) levels. Liaise with consultant haematologist sooner rather than later.

- **Uterine atony**

  The following measures should be instituted, in turn, until the bleeding stops:

  a. **Continuous Fundal Massage**. If uterus feels flaccid rub up a contraction. Expel any blood clots trapped in the uterus as this inhibits effective uterine contractions. Use bimanual compression if it remains atonic.

  b. **Bimanual uterine compression** If the uterus remains atonic apply bimanual compression. The fingers of the right hand are inserted into the vagina like a cone the hand is formed into a fist and placed in the anterior vaginal fornix, the elbow resting on the bed. The left hand is placed behind the uterus the fingers pointing towards the cervix. The uterus is brought forward and compressed between the palm of the left hand and the fist of the right hand.

  **c. Use of uterotonics:**

  - Administer Syntometrine (oxytocin 5units + ergometrine 500 microgram 1ml IM (max 2 doses including the one used for active management of the third stage) or ergometrine 500 microgram IM / slow IV

  - If any maternal hypertension (avoid ergometrine/ syntometrine) give 5 units oxytocin IV/IM which can be repeated if required to a total of 10 units

  - Commence an intravenous infusion of oxytocin (Syntocinon) 40 units in 500ml Hartmanns at 125ml per hour unless fluid restricted. If fluid restricted, use 40 units in 40mls Hartmanns 10ml per hour by syringe driver.

  - Give carboprost (Hemabate) 250 micrograms IM. The dose can be repeated at 15-minute intervals. The total dose should not exceed 2mg. (Arrange transfer to theatre

if not already in theatre, for EUA after 2nd dose. Avoid Carboprost in women with asthma, active cardiac, pulmonary, renal, hepatic disease or acute PID.

- Intramyometrial use of Carboprost is not recommended but may be used at the responsibility of the obstetrician in-charge.

- Misoprostol is effective in the treatment of postpartum haemorrhage, but its uterotonic effect is slower in onset than the oxytocin (probably 30 to 60 minutes) and therefore it is likely to prevent later uterine relaxation than have much effect on the acute loss**. Misoprostol 1000 microgram can be inserted PR.**

- **PPH at homebirth:** Misoprostol is especially useful in cases of PPH after home birth. In such a situation the usual protocol for PPH should be followed and Misoprostol 1000 microgram can be inserted PR while awaiting transfer to the hospital.

**E. Examination under anaesthesia -** If bleeding continues proceed to examination under anaesthesia (usually general) to exclude and manage:

- Inverted uterus see guideline
- Retained placental tissue, including adherent placenta or placenta accreta.
- Genital tract trauma
- Screen for coagulation disorder and treat DIC if present.
- Intrauterine direct pressure using hydrostatic balloon (See Uterine Tamponade Guideline) The SOS Bakri Tamponade Balloon Catheter is intended to provide temporary control or reduction of postpartum uterine bleeding when conservative management is warranted. While the device is intended as a temporary means of establishing hemostasis in cases indicating conservative management of postpartum uterine bleeding, the application of this device should be concomitant with close monitoring for signs of arterial bleeding, atony bleeding, and/or disseminated intravascular coagulation (DIC).

**F. Surgical Haemostasis:**

If conservative measures fail, initiate surgical haemostasis sooner rather than later and proceed to laparotomy. When severe haemorrhage occurs it is a good practice to call for the help of second consultant.

The following methods are reported to be effective and can be considered dependent on the skill of the surgeon involved and possible cause of bleeding:

- **Compression/ Haemostatic uterine suturing (e.g. B-Lynch/ Modified B-Lynch/ Box suture)** should be considered in cases of uterine atony. A bimanual compression should be tried first to assess the potential success of the compression suture. Modified compression suture can be tried without opening

the uterus if not post LSCS. Vicryl No1, W9289 mounted on 80mm round bodied hand needle is recommended for this purpose (available in obstetric theatres).

- **Bilateral ligation of uterine & ovarian arteries.**
- **Ligation of the anterior trunk of internal iliac arteries.**
- **Uterine artery embolisation** if the service is available
- **Hysterectomy** should be considered early to reduce risk of coagulopathy – subtotal hysterectomy may well be preferable. It is recommended to involve a second consultant obstetrician & gynaecologist in decision making.
- **Bleeding Placental Bed :**

  Bleeding from the placental site following delivery of placenta praevia is common. Senior and experienced obstetric and anaesthetic staff should be present for all caesarean sections for placenta praevia with or without accreta.

  Following techniques can be tried to control haemorrhage from the placental site. Such procedures may allow one to buy time while awaiting senior/experienced help.

  - Firm packing of the lower uterine segment for 5 minutes help reduce the bleeding or help delineate specific bleeding sites that can be over-sewn with the "figure of 8 sutures".
  - Square suture going through the entire thickness of uterine wall may help stem oozing areas.
  - Intrauterine direct pressure using balloon tamponade or packing the uterine cavity and bringing out the other end of pack out through vagina. The uterine cavity is then carefully sutured avoiding the pack/ balloon.
  - Bilateral ligation of uterine may also prove effective but this will not sufficiently reduce the bleeding from area of internal os.
  - In most cases of placenta accreta hysterectomy will be required (see above).
  - **Interventional radiology** – Limited interventional radiology service is available in the Trust. Pre-operative placement of vascular catheters for uterine artery embolisation can be considered in elective cases with high suspicion/diagnosis of placenta accreta by liaising with the consultant interventional radiologist.

**G: Multiple causes of PPH / Refractory cases of PPH**

If there is more than one cause of haemorrhage multiple techniques may need to be tried to control bleeding. Similarly in some refractory cases more than one technique may need to be tried e.g. compression suture and balloon tamponade at the same time before resorting to more invasive procedures.

**H**: **Tranexamic acid**

Prompt administration of tranexamic acid is important in early clot formation. The use of tranexamic acid must be authorised by the consultant and middle grade Obstetricians and Anaesthetists.

For short term use in localised haemorrhage the antifibrinolytic drug tranexamic acid can be used at a dose of 1g by slow IV bolus over 10 minutes (no faster than 1ml per minute of the 500mg in 5ml injection). This can be repeated every 8 hours. Check with JM

Alternatively after the initial bolus injection a continuous IV infusion can be started. An infusion of 1g over 8 hours would give a therapeutic dose to patients weighing between 60-120kg.

The continuous infusion needs to be given using a volumetric infusion pump or syringe pump. The injection should be diluted to an appropriate volume with sodium chloride 0.9%. Sodium chloride 0.9% is used as a flush. The infusion should not be infused via the same line as any other medications or any other infusion fluids except sodium chloride 0.9%, glucose 5% or glucose/saline.

The continued use of tranexamic acid must be reviewed on a regular basis by a senior obstetrician or anaesthetist.

Infusion related adverse effects are dizziness nausea, vomiting and diarrhoea and hypotension with rapid administration.

**Secondary PPH** (PPH after 24 hrs of delivery):

Secondary PPH is defined as abnormal or excessive bleeding from the birth canal between 24 hours and 12 weeks postnatally

Secondary PPH may be due to endometritis. The following is the recommended antibiotic treatment:

Co-Amoxiclav 1.2 g intravenous injection over 3 to 4 minutes every 8 hours for 7 days **AND, if severe infection** Clindamycin 900 mg intravenous infusion in 50 ml sodium chloride 0.9% or glucose 5% over 30 minutes every 6 hours for 7 days.

**If non-severe penicillin allergy:** Cefotaxime 2 g intravenous infusion in 100 ml sodium chloride 0.9% every 6 hours for 7 days **AND** Metronidazole 400 mg orally or 500 mg by intravenous infusion over 20 to 30 minutes three times a day for 7 days.

**If severe penicillin allergy** Clindamycin 900 mg intravenous infusion in 50 ml sodium chloride 0.9% or glucose 5% over 30 minutes every 6 hours for 7 days **AND** Gentamicin **once daily dosing – follow Trust Aminoglycoside Dosing Guideline WAHT** for 5 days, depending on clinical response

**If severe sepsis** Vancomycin 1.5 g intravenously in 500 ml sodium chloride 0.9% or glucose 5% over 3 hours every 12 hours for 7 days – therapeutic drug monitoring required refer to Guideline for Vancomycin dosing and monitoring in adult patients (WAHT-PHA-003)

- **Surgical measures should be undertaken if there is excessive or continuing bleeding, irrespective of ultrasound findings.**
- **A senior obstetrician should be involved in decisions and performance of any evacuation of retained products of conception as these women are carrying a high risk for uterine perforation.**
- In continuing haemorrhage, insertion of balloon catheter may be effective, to remain insitu for a maximum of 24 hours.

**Investigations of secondary PPH should include**

- High vaginal swabs,
- Full blood count,
- C-reactive protein.
- Blood cultures if pyrexial,
- A pelvic ultrasound may help to exclude the presence of retained products of conception, although the appearance of the immediate postpartum uterus may be unreliable.

**After Care**:

- All women following major PPH require intensive monitoring for at least first 24 hours.
- In some cases transfer to high dependency unit or ITU may be required
- Remember accurate documentation at all times.
- Debrief/discuss with patients & colleagues following delivery**.**
- Datix should be completed for all major PPH cases.
- It is important to remember that thrombo-embolic disease (TED) is still one of the commonest cause of maternal death. TED stockings should be the bare minimum in these cases. Consider pneumatic calf compression devices and continue them post-operatively until it is safe to give heparin (e.g. Enoxaparin).
- Non steroidal anti-inflammatory drugs are contraindicated for at least 12 hours after haemorrhage has settled and platelet and renal function are normal.

Worcestershire Acute Hospitals NHS Trust

## Appendix 1