Frimley Health
NHS Foundation Trust

Post Partum Haemorrhage

Key Points

- Obstetric haemorrhage is a leading cause of maternal mortality worldwide accounting for 10% of all direct maternal deaths in the UK
- For accurate estimates of blood loss; swabs, drapes etc. should be weighed, and suction measured throughout in real time, and recorded as Measured Blood Loss (MBL) in EPIC workflow
- RL6 Risk Management Form should be completed for PPH >1500ml blood loss

Version: 3.0
Date Issued: 27 November 2023
Review Date: September 2026
Key words: PPH, massive obstetric haemorrhage, major obstetric haemorrhage, cell salvage, interventional radiology

This is a controlled document. If you are using a printed copy, check it against the guidelines site to ensure you are using the latest edition.

Abbreviations

BMI	Body Mass Index
CMW	Community midwife
MCA	Maternity care assistant
ODP	Operating Department Practitioner
EI	Electronic issue
IM	Intramuscular
IV	Intravenous
MEOWS	Modified early obstetric warning score
PPH	Post-Partum haemorrhage
MOH	Massive obstetric haemorrhage
USS	Ultrasound scan
IR	Intervention Radiology

Contents

1. Introduction

Obstetric haemorrhage is a leading cause of maternal mortality worldwide accounting for 10% of all direct maternal deaths in the UK[1].

Postpartum haemorrhage (blood loss ≥500ml) affected 13% of all maternities in England in 2011–12 and major obstetric haemorrhage (blood loss ≥2500ml, or blood transfusion ≥5 units red cells, or treatment for coagulopathy) affected 0.6% of maternities in Scotland in 2011(1).

The maternal mortality rate from obstetric haemorrhage remains little changed from 2015-17(2).

Postpartum haemorrhage is defined as the loss of more than 500ml of blood from the genital tract after the birth of a baby. Major postpartum haemorrhage is defined as more than 1000mls of blood loss postpartum. This may occur immediately, but occasionally does not become apparent for several hours.

If vaginal blood loss occurs between 24 hours and 12 weeks post delivery, it is defined as secondary PPH.

To allow more accurate estimates of blood loss; swabs, drapes etc. should be weighed, and suction measured throughout in real time to avoid underestimation.[3]

The main causes of primary PPH are (4T's):

Tone - uterine atony (70-80% of all PPH)
Tissue - retained placenta or placental fragments
Trauma - lower genital tract trauma
Thrombin - coagulopathy

Broad ligament haematoma, uterine inversion, uterine ruptures are less common causes.

A rapid assessment needs to be done by palpating the fundus of the uterus and if the uterus is well contracted but blood loss continues examine for genital tract trauma and repair as appropriate. Examine the placenta and membranes to confirm they appear complete.

2. Initial management of PPH(4)

- Midwife or doctor to stay with the woman throughout
- Call for help – inform LW co-ordinator immediately
- Lie the woman flat
- Administer O2 at 10-15 l/min by mask with reservoir bag
- Ensure PPH Box is in the room
- Rub up a contraction, if unsuccessful perform bimanual compression.
- Give 1 amp (1ml) of Syntometrine IM (if hypertensive: 10units Oxytocin IM-may have repeat dose) if not already given (at Wexham Park, there is a list of high-risk women who receive Syntometrine as prophylaxis for active management of third stage of labour)
- Gain IV access with a 2 x 14/16 gauge IV cannula, take blood for:
  FBC, U&E, LFT
  Clotting screen including fibrinogen
  Cross-match
- Commence 2 x 1 litre infusions of Plasma Lyte 148
- Record maternal pulse, blood pressure, respiratory rate and oxygen saturation every 5 minutes until patient stabilises and document on MEOWS chart(2)

- Appoint a scribe to record events contemporaneously
- Catheterise the bladder and record fluid balance
- Keep patient warm
- Keep patient and family informed of events and actions taken contemporaneously.

2.1 If the placenta is not delivered (catheter in situ)

- Confirm Syntometrine has been given and attempt to deliver by controlled cord traction
- Give Tranexamic Acid 1gm IV
- If still undelivered commence Oxytocin IV infusion 40 units in 500mls Sodium Chloride 0.9% over 4 hours at a rate of 125mls/hr
- Transfer immediately to theatre (preferably within 30 minutes) for manual removal of placenta. Refer to the guideline for Retained Placenta.

2.2 If the placenta is already delivered

- Give 500 micrograms Ergometrine by slow IV/IM injection or 5 units of Oxytocin if Ergometrine is contraindicated (cardiac disease, severe hypertension, pre-eclampsia, renal or hepatic impairment and vascular disease)
- Give Tranexamic Acid 1 gram IV
- Commence Oxytocin IV infusion 40 units in 500mls Sodium Chloride 0.9% over 4 hours at a rate of 125 mls/hr
- Consider Carboprost 250 micrograms IM (up to 8 doses, 15 minutes apart)
    - contraindicated in women with asthma, certain active cardiac/pulmonary disease (to be discussed with anaesthetist) and untreated pelvic infection.

  (Direct intra-myometrial injection of Carboprost 0.5mg with responsibility of the administering clinician as is not recommended for intra-myometrial use[4])

- Consider Misoprostol 1000 micrograms PR if unable to start oxytocin infusion.

Any woman who has a PPH should be observed on labour ward for a minimum of 4 hours.

Throughout this time, she should be on 1/2hrly pulse, blood pressure, and respiration and O2 saturation. Calculate MEOWS score[2].

2.3 If the bleeding is from perineal trauma

- Firm pressure should be applied with swab or pack until suturing is commenced
- If suturing is going to be in the room, the emergency team should prepare the trolley with instruments, suture, swabs etc whilst the midwife or the obstetrician is scrubbing
- If decision is made to suture in theatre, someone needs to continuously apply firm pressure en route to theatre and in theatre. Refer to the guideline for Perineal Trauma.

- Repair of OASIS, complicated perineal, and cervical tears should only be undertaken by experienced obstetricians or under direct supervision

3. Massive Obstetric Haemorrhage

This is when the blood loss is more than 1500mls, there is rapid ongoing bleeding or the woman is haemodynamically compromised. Call '2222' and state 'Massive Obstetric Haemorrhage'. This will activate the Massive Transfusion Protocol and alert the Obstetric Registrar and Consultant, Labour ward co-ordinator, Gynaecology on call team, Anaesthetic Registrar and Consultant, ODP, Porters, Rapid Response Team and Transfusion Laboratory.
Rapid Response Team will only attend if a NEWS or Crash call is also activated.

To avoid wastage of blood products, please remember to state whether controlled or uncontrolled.

Resuscitation, monitoring, fluid replacement, definitive treatment, communication and record keeping must all happen simultaneously (see flow chart at Appendix 1).

Consultant staff must be involved at an early stage (obstetrician, anaesthetist, haematologist and radiologist); they can be contacted via switchboard. The obstetric consultant and registrar must debrief the partner and family once the patient's condition has stabilised enough to permit this.

Early consideration must be given to transferring the patient to a Level 2 HDU/ITU bed after the bleeding has been controlled. It is the obstetric anaesthetist's responsibility to arrange an HDU/ITU bed based upon the support requirements of the individual patient, following discussion with the intensivist, consultant anaesthetist and obstetrician.

4. Blood location

4.1 Frimley Park Site

O negative blood -2 units is available in the Blood Transfusion fridge and 2 units in the theatre fridge. Blood will be collected by the MCA on labour ward or a member of staff from theatre.
1 unit in available in the theatre fridge and 1 unit in FPH Blood Transfusion fridge for neonatal emergency.

4.2 Wexham Park Site

O negative blood -2 units is available in the Blood Transfusion fridge and 2 units in the theatre fridge. 2 units of blood is also available in theatre fridge for neonatal emergency.

5. Intrauterine Balloon Tamponade[5]

The balloon should be inserted into the uterine cavity in theatre, using the transabdominal or transvaginal approach.

5.1 Inflation

- The balloon should be filled with warmed sterile Sodium Chloride 0.9%.
- The capacity of the Bakri balloon is 500 ml, if using a different brand (than Bakri), check the manufacturers guide for capacity. If bleeding continues, consider undiagnosed trauma. Do not over-inflate the balloon.
- If balloon becomes dislodged due to shaft tension and cervical dilatation, deflate, reposition and re-inflate.
- Connect the drainage port to a fluid collection bag to monitor haemostasis (Bakri only)
- Document the volume used to inflate the balloon.

5.2 Post-Inflation

- IV oxytocics should continue for a minimum of four hours with 500 ml sodium chloride 0.9% with 40units Oxytocin to run at a rate of 125mls/hour via a pump
- Patients should be prescribed antibiotic, whilst the balloon is in situ. See *antimicrobial guideline*.
- Dalteparin can be given whilst the balloon is in situ, 4 hours after insertion
- Patient monitoring should include: ½ Hourly (for at least 4 hours) blood pressure, pulse, respiratory rate, saturations, urine output (hourly), cramping, pallor, active bleeding. Record on MEOWS chart[(2)].

- Repeat bloods (FBC and Clotting), 6 hourly or sooner if haemodynamically unstable (can take a venous sample to gas analyser for a quick Hb check)

- Attach a purple band around the patient's wrist indicating there is a balloon in situ

5.3 Balloon removal

- The surgical note needs to be checked for volume of fluid in the balloon and whether vaginal pack is in situ
- The balloon should remain in-situ for 6-12 hours, minimum of six hours and no more than 24hrs
- The balloon should be removed by a member of the obstetric team who is competent to do so
- The entire volume can be drained from the balloon all at once or in a stepwise fashion
- If there is no bleeding after deflation, remove the balloon
- Remove purple wristband upon removal of the balloon
- Patient can be transferred to the postnatal ward 2 hours after removal of the balloon, if stable
- Urinary catheter to be removed once patient is stable.

6. Other Surgical Options

- B lynch uterine compression suture
- Bilateral ligation of the uterine arteries
- Bilateral ligation of the internal iliac arteries and hysterectomy
- Resort to hysterectomy sooner than later especially in cases of placenta accrete uterine rupture and women who decline blood products.
- Seek opinion of a second consultant if proceeding with a hysterectomy.

7. Recombinant factor VIIa (Novoseven)[6]

For major haemorrhage, this product is unlicensed, of unproven benefit and costly. It can only be given after discussion with a consultant obstetrician and haematologist.

Prerequisites for use[(2)]:

- surgical haemostasis
- temperature >33oC
- pH >7.0
- platelet count >50 x 109/L
- fibrinogen >1.0g/L

Side effects

- fever, headache, vomiting, skin hypersensitivity

Thrombosis occurs in 25 per 100,000 infusions.

8. Interventional radiology

Use of selective pelvic arterial embolisation (SPAE) is a decision made by the obstetrician in consultation with a gynaecologist, anaesthetist, haematologist and interventional radiologist when medical and surgical options are failing to control the bleeding.

8.1 Frimley Park Site

A 24/7 on call interventional radiology (IR) regional rota is available. All IR Consultants are able to perform internal iliac artery embolisation in the emergency setting. The on call IR radiologists can be contacted through the Frimley Health Switchboard.

8.2 Wexham Park Site

Currently these services are available from 09:00hrs to 17:00hrs Monday to Friday. Outside of these hours contact the consultant radiologist on call, via switchboard, who will be able to inform you if the interventional services are staffed and available.

8.3 Transfer of a Woman for SPAE

- Patient should be haemodynamically stable at time of transfer
- Time from decision for SPAE to haemostasis should not exceed 2-4 hours
- A senior obstetrician and anaesthetist should accompany the woman
- An unstable woman should only be transferred for embolisation if the benefits outweigh risks. The anaesthetist should liaise with the intensive care consultant
- If a woman absolutely needs SPAE and is unstable and therefore cannot be transferred, then the interventional radiologist and team can perform the procedure in main LW theatres with mobile radiography. However, this is not the preferred method as mobile radiography is not as clear

8.4 Post embolisation

The patient must be monitored closely. This should take place on ITU or in recovery until stable enough to go back to labour ward. Ensure adequate analgesia, with the use of opiates if necessary.

9. Intraoperative cell salvage

Cell salvage equipment is available for use in emergencies at all times in theatres.

In cases where major obstetric haemorrhage can be anticipated prior to elective birth (such as placenta praevia/accreta, fibroids, Jehovah's witness), the obstetrician should indicate its requirement to alert theatre and anaesthetic team when booking the case.

An appropriate filter should be used when re-infusing salvaged blood.

Where salvaged blood is re-infused to Rh D negative women, prophylactic anti-D, at least 1500IU must be given if the baby is Rh D positive, as per the transfusion policy.

10. Secondary Postpartum Haemorrhage

When the bleeding is significant, follow the initial management of primary PPH and inform the consultant obstetrician.

Secondary PPH is usually due to infection with or without retained products. Infection usually presents with lower abdominal pain, uterine tenderness, fever and offensive lochia

The diagnosis of retained products is clinical. 51% of women with normal postpartum bleeding have an echogenic material in the uterus on ultrasound scan 7 days post delivery. 51% of woman having surgical evacuation of the uterus following delivery have no histological evidence of retained products. Persistent bleeding after 3 weeks despite antibiotic therapy merits a pelvic US Scan.

- Record full observations and document on MEOWS chart with appropriate referral
- Check delivery notes regarding completeness of placenta and membranes
- If the cervix is open and the bleeding is heavy, or if the uterus is bulky and tender, transfer to theatre for evacuation of retained products of conception by a senior obstetrician. Give IV antibiotics prior to or in theatre to prevent bacteraemia.

When the bleeding is not heavy:

- If the referral comes from a GP or CMW within 28 days after delivery invite in to triage/maternity assessment centre. After 28 days, refer to gynaecology
- If a woman presents directly to labour ward or A&E, assess and commence initial treatment but refer to gynaecology for review if necessary when more than 28 days post natal
- Do not give repeated courses of antibiotics unless there is evidence of untreated endometritis. If the woman has had a course of antibiotics with no improvement, surgical evacuation may be indicated. Commence antibiotics for 12-24hrs before the procedure to prevent bacteraemia.

A consultant needs to be informed prior to any postpartum surgical evacuation. Consider ultrasound guidance in theatre to ensure complete evacuation and reduce risk of uterine perforation.

11. Auditable Standards

- Documented evidence of clear communication between all members of staff involved in an incident
- Clinical management of haemorrhage
- Documentation of fluid balance
- Documented decision to instigate the massive transfusion protocol for MOH
- Delay in the availability of blood products reported via the RL6 Risk Management Form & followed up by the LW lead
- The use of intraoperative cell salvage, and interventional radiology

12. Monitoring

Major obstetric haemorrhage will be monitored through the maternity risk management group and reported on the maternity dashboard.

References

1. Saving Lives, Improving Mothers' Care, MBBRACE-UK December 2014.
2. Saving Lives, Improving Mothers' Care, MBBRACE-UK November 2022
3. Knight, M. *et al.* (2009) 'Trends in postpartum hemorrhage in high resource countries: a review and recommendations from the International Postpartum Hemorrhage Collaborative Group', *BMC Pregnancy and Childbirth*, 9, article number 55. Available at: https://doi.org/10.1186/1471-2393-9-55:55 (Accessed: 27 November 2023)
4. Marvies, E. *et al.* on behalf of the Royal College of Obstetricians and Gynaecologists (2016) 'Prevention and management of postpartum haemorrhage', *BJOG*, 125(5), e106-e149. Available at: https://doi.org/10.1111/1471-0528.14178 (Accessed: 27 November 2023)
5. (2018) 'Removal of Bakri intrauterine balloon by rapid or stepwise deflation: which technique is better? [5A]', *Obstetrics & Gynecology*, 131, 10S. Available at: http://dx.doi.org/10.1097/01.AOG.0000532869.21833.b4 (Accessed: 27 November 2023)
6. Karalapillai, D. and Popham, P. (2006) 'Recombinant factor VIIa in massive postpartum haemorrhage', *International Journal of Obstetric Anesthesia*, 16(1), pp. 29-34. Available at: https://doi.org/10.1016/j.ijoa.2006.09.001 (Accessed: 27 November 2023)

N.B. Newer version available: MBRRACE-UK (2023) *Saving lives, improving mothers' care: lessons learned to inform maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2019-21.* Available at: https://www.npeu.ox.ac.uk/assets/downloads/mbrrace-uk/reports/maternal-report-2023/MBRRACE-UK_Maternal_Compiled_Report_2023.pdf (Accessed: 27 November 2023).

Appendix 1 - Management of Major Obstetric Haemorrhage

Resuscitation, monitoring, investigation and treatment should occur simultaneously

Major Obstetric Haemorrhage (MOH)
Blood loss >1000mls and ongoing bleeding
Blood Loss >1500mls
Clinical shock

Call '2222' and state 'Massive Obstetric Haemorrhage' to activate the 'Massive Transfusion Cross site Protocol'
Appoint a scribe (WPH and FPH)
This will alert - Obstetric Registrar and Consultant
Labour ward co-ordinator,
Gynaecology on call team
Anaesthetic Registrar and Consultant
Labour ward ODP, Porters, Rapid Response Team
Transfusion Laboratory
Rapid Response Team will only attend if a NEWS or Crash call is also activated

Resuscitation

Airway –	Oxygen via face mask (15L/min)
Breathing	
Circulation –	2 x IV Access 14/16G (orange/grey)
	Fluid balance (2L Plasma Lyte 148, 1.5L Isoplex)
	Blood transfusion (O RhD negative or group-specific blood)
	Blood products (FFP, PLT, cryoprecipitate, factor VIIa)
Environment -	**Keep patient warm** – Fluid Warmer/ Bair Hugger

Monitoring and investigations
Pulse, BP, O_2sats, RR
FBC, coagulation, U&Es, LFTs
Cross match (4 x red cells), FFP, cryoprecipitate, platelets
ECG, pulse oximeter
Foley catheter with urometer
Hb bedside testing
Consider central and arterial lines
Commence HDU chart (Frimley Site)
Weigh all swabs/linen and estimate blood loss

Medical Treatment
Bimanual uterine compression
Oxytocin 5 units slowIV/IM x 2 doses
Ergometrine 500 micrograms IM/IV
Oxytocin 40 units in 500 ml Sodium Chloride 0.9% at 125ml/hr
Carboprost 250 micrograms every 15 minutes up to 8 doses IM or intramyometrially
Tranexamic Acid 1 gram IV
Misoprostol 1000 micrograms rectally

Theatre
Is the uterus empty and contracted?
EUA – exclude trauma,inc.vaginal/ cervical haematoma
Has any clotting abnormality been corrected?
Cell Salvage

Surgery
Intrauterine balloon tamponade
Brace uterine compression suture.
Bilateral uterine artery ligation
Bilateral internal iliac artery ligation
Hysterectomy (second consultant)

⇔

Interventional Radiology
Check availability with radiology dept.
Consider if relatively stable, with gradual loss.
Time from decision for SPAE to haemostasis should not exceed 2-4 hours.
Usually performed in the angiography suite, and done antenatally, prior to elective caesarean section, for high risk women such as placenta accreta and praevia.
The Interventional Radiology Team may attend in theatre if requested.
Continuous patient monitoring for the first 1 hour; then at 15 minute intervals for the next 2hrs; then every hour thereafter whilst under High Dependency Care.

Full version control record

Version:	3.0
Guidelines Lead(s):	Miss Shaila Banu, Post CCT Specialty Doctor, Miss Alexa Vardy, Consultant Obstetrician
Contributor(s):	
Lead Director / Chief of Service:	Miss Anne Deans
Library check completed:	July 2023, 27 November 2023
Ratified at:	Cross Site Obstetrics Clinical Governance meeting, 21.11.2023
Date Issued:	27 November 2023
Review Date:	September 2026
Pharmaceutical dosing advice and formulary compliance checked by:	Chido Mukoko, Specialist Women &Children's Pharmacist, FPH, 31.07.2023
Key words:	PPH, massive obstetric haemorrhage, major obstetric haemorrhage, cell salvage, interventional radiology

This guideline has been registered with the trust. However, clinical guidelines are guidelines only. The interpretation and application of clinical guidelines will remain the responsibility of the individual clinician. If in doubt, contact a senior colleague or expert. Caution is advised when using guidelines after the review date. This guideline is for use in Frimley Health Trust hospitals only. Any use outside this location will not be supported by the Trust and will be at the risk of the individual using it.

Version Control Sheet

Version	Date	Guideline Lead(s)	Status	Comment
1.0	Sept 2015	Miss Z Jones	Final	
2.0	January 2019	Miss Z Jones	Final	Approved at Obstetrics and Gynaecology Clinical Governance Committee, 10 January 2019
2.1	May 2021	Miss Z Jones, Miss S Banu	Interim	Amendment on balloon removal (staff) section 5.3, approved at Obstetrics CG, 1 July 2021
3.0	September 2023	Miss S Banu, Miss A Vardy	Final	Approved at Cross Site Obstetrics Clinical Governance meeting, 21.11.2023

Related Documents

Document Type	Document Name
Guideline	Massive Haemorrhage
Guideline	Retained Placenta
Guideline	Perineal Trauma