NHS North West

NORTH WEST GUIDELINE

Management of postpartum haemorrhage

Document Control:

Role	Name	Contact
Owners	North West Regional Maternity Team	

Version control:

Title	
V1	FINAL

Compliant with:

1.	Prevention and Management of Postpartum Haemorrhage (Green-top Guideline No. 52)
2.	
3.	

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Acknowledgements:

These guidelines were based on individual guidelines produced by Liverpool Women's NHS Foundation Trust, Morcombe Bay, Royal Lancs, and St Mary's Manchester. We thank the original teams who developed them and for their generosity in sharing them. We also thank the labour ward leads and other experts throughout the region for their expert review or drafts.

Conflict of Interest:

ADW has received funding from NIHR for a randomised trial of oxytocin versus carboprost for the initial treatment of PPH (COPE). He is also the co-inventor of the PPH Butterfly whose patent is held by the University of Liverpool and for which he has a royalty-sharing agreement. However it is still the subject of clinical trials and not yet available commercially.

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1 Introduction

This guideline has been developed to define post-partum haemorrhage (PPH) and the subsequent management.

Obstetric haemorrhage remains one of the major causes of maternal death in both developing and developed countries. The 2024 report of the UK confidential enquiries into maternal deaths (MBRRACE-UK) shows that whilst mortality due to haemorrhage is rare, the rate of women dying from obstetric haemorrhage continues to marginally increase. The reports have repeatedly highlighted cases of maternal deaths where care was judged to be substandard.

MBRRACE recommendations in 2023 for PPH were:

- Risk awareness and early recognition of severe postpartum haemorrhage are essential.
- Haemorrhage (which might be concealed) should be considered when classic signs of hypovolaemia are present (tachycardia and/or agitation and the late sign of hypotension) even in the absence of revealed bleeding.
- When there has been a major haemorrhage and the bleeding is ongoing, or there are clinical concerns, then a major haemorrhage call should be activated.
- Early involvement of appropriate senior staff (including the anaesthetic team and laboratory specialists) is fundamental to the management of PPH.
- One member of the team should be assigned the task of recording events, fluids, drugs, blood and components transfused and vital signs.
- Every maternity unit should have a multidisciplinary protocol for the management of PPH.
- Training for PPH should be multi-professional and include team rehearsals.
- Ensure at least one senior clinician takes a “helicopter view” of the management of a woman with major obstetric haemorrhage to coordinate all aspects of care.
- Ensure that the response to obstetric haemorrhage is tailored to the proportionate blood loss as a percentage of circulating blood volume based on a woman’s body weight.
- In the context of major haemorrhage, vasopressors should only be used in conjunction with rapid, warmed infusion of blood, plasma and clotting factors or fluids, used for as brief a time as possible and not relied upon to maintain tissue perfusion.
- High-volume resuscitation with crystalloids and colloids is associated with coagulopathy and adverse maternal outcomes in women with PPH.
- Produce guidance on which bedside tests should be used for assessment of coagulation and the required training to perform and interpret those tests.
- Women should not be inappropriately denied clotting products based on a single measure of coagulation in the face of ongoing haemorrhage.
- If no haemostatic tests are available, early fresh frozen plasma (FFP) should be considered for conditions with a suspected coagulopathy, such as placental abruption or amniotic fluid embolism, or where detection of PPH has been delayed.
- Review guidance on when to use balloon tamponade, how to insert the balloon and inflate it.
- Resources such as postpartum haemorrhage checklists should include when not to use balloon tamponade and when to abandon it and move on to a different haemostatic technique.
- Early recourse to hysterectomy is recommended if conservative medical and surgical interventions to control haemorrhage prove ineffective.

Within this document we use the terms woman and women’s health. However, it is important to acknowledge that it is not only people who identify as women for whom it is necessary to access women’s health and reproductive services in order to maintain their gynaecological health and reproductive wellbeing. The delivery of care must therefore be appropriate, inclusive and sensitive to

the needs of those individuals whose gender identity does not align with the sex they were assigned at birth.

2 Purpose

The purpose of this guideline is to encourage consistency in the management of PPH across the North West region. It is designed to ensure compliance with national guidance and to promote evidence-based practice, with the ultimate goal of optimising maternal outcomes.

3 Scope

This guideline is restricted in scope to the management of PPH. It does not include the management of antepartum haemorrhage. The recommendations in this guideline apply to women experiencing a PPH of 500ml or more.

4 Responsibilities

This document provides staff looking after women in pregnancy with guidance to manage an obstetric haemorrhage safely. It identifies the necessary staff that need to be involved and the medications and surgical interventions that must be followed.

5 Guidance

5.1 Identifying a PPH

5.1.1 Definitions[1]

Primary PPH is traditionally defined as blood loss of ≥500ml from the genital tract within 24 hours of the birth of a baby.

Severe PPH is defined as blood loss of ≥1000ml within the same timeframe.

> Note that in women with lower body mass (<60kg), a lower level of blood loss may be clinically significant.

Secondary PPH is defined as abnormal or excessive bleeding from the birth canal between 24 hours and 6 weeks postnatally.

Major obstetric haemorrhage (MOH) should be declared when:

- Actual or anticipated blood loss >1500ml or >20% circulating blood volume
  or
- Blood loss >150ml/min
  or
- Clinical signs of shock

1. NICE and the RCOG Green-Top Guideline refer to loss >1000mls as 'major'. RCOG additionally splits major into 'moderate' for 1000-2000 and 'severe' for >2000mls. Others have used 'Massive' for PPH >1500mls or >2000mls. We have used severe PPH for >1000mls (the WHO definition) to distinguish it from 'major obstetric haemorrhage' at 1500mls used in many other UK maternity documents.

5.1.2 Recognising severity of haemorrhage

Changes in blood pressure, pulse or clinical state, whether measured by MEWS score or prior to its use should prompt consideration of concealed haemorrhage or underestimation of haemorrhage before considering other causes.

Key signs of major obstetric haemorrhage are:

1) **Blood loss**
   Visual estimation of peripartum blood loss is inaccurate. Blood loss after birth should be collected, weighed and recorded every 15 minutes until it stops, to maintain an ongoing running total of blood loss. This should be done **at all births** even if the woman does not appear to have a PPH so as to normalise the process.

   Remember that persistent 'trickling' over several hours can result in substantial loss.

2) **Clinical features of shock**
   These may occur earlier in women with a lower weight and/or lower haemoglobin.

   The % of circulatory volume lost for any given blood loss will depend upon the patient's weight. Circulating blood volume is approximately 100ml/Kg in late pregnancy. Once blood pressure is affected, pregnant women have lost approximately 40% of their blood volume.

Level of shock	% blood volume lost	% blood volume by maternal body weight		Clinical features
Compensated	**10%**	500ml	50kg	Normal BP Mild tachycardia
		600ml	60kg	
		700ml	70kg	
		800ml	80kg	
		900ml	90kg	
		1000ml	100kg	
Mild	**15%**	750ml	50kg	Tachycardia (>100bpm) Hypotension (SBP 80-90mmHg) Tachypnoea (21-30 breaths/min) Pallor, sweating Weakness, faintness, thirst
		900ml	60kg	
		1050ml	70kg	
		1200ml	80kg	
		1350ml	90kg	
		1500ml	100kg	
Moderate	**30%**	1500ml	50kg	Rapid, weak pulse (>120bpm) Moderate hypotension (SBP 70-80mmHg) Pallor, cold clammy skin Urinary output <30ml/hr Restlessness, anxiety, confusion
		1800ml	60kg	
		2100ml	70kg	
		2400ml	80kg	
		2700ml	90kg	
		3000ml	100kg	
Severe	**40%**	2000ml	50kg	Rapid, weak pulse (>140bpm) Severe hypotension (SBP <70mmHg) Pallor, cold clammy skin, peripheral cyanosis
		2400ml	60kg	
		2800ml	70kg	
		3200ml	80kg	
		3600ml	90kg	

		4000ml	100kg	Anuria Confusion or unconsciousness, collapse

Table 1: Clinical features of shock and the level of blood loss at which they typically occur.

Pitfalls of recognition of shock:

- Some pregnant women do not mount a tachycardia, or can even become bradycardic.
- Women with pacemakers or taking beta-blockers may have a fixed heart rate.
- Athletic women may have a very slow heart rate.
- In the very acute phase of blood loss, or in the absence of volume replacement, the haemoglobin will **not** change.

5.2 Prediction of PPH

Many cases of PPH have no identifiable risk factors.

However, clinicians must be aware of antenatal and intrapartum risk factors for PPH (see below), modify care plans appropriately and take these into consideration when counselling women about safest place of delivery.

5.2.1 Risk Assessment

A risk assessment should be carried out for all patients and updated at every encounter, including during labour. Examples of risk assessments can be found in the first section of the OBS Cymru PPH proforma (**Appendix 1**) and within the NICE intrapartum care guideline (**Table 2**).

If a woman has identifiable risk factors, agree with her a care plan covering the third stage of labour and document this in her notes.

Pre-Labour Risk Factors
• Previous PPH >1000ml **or** requiring blood transfusion • Antepartum haemorrhage • Placental abruption • Low lying placenta or placenta praevia • Placenta accreta spectrum • Pre-eclampsia • Maternal anaemia – Hb <85g/litre at onset of labour • BMI >35kg/m^2 • Grandmultiparity (parity ≥4) • Overdistension of uterus (multiple pregnancy, polyhydramnios, EFW >4.5kg) • Existing uterine abnormalities (e.g. fibroids) • SSRI/SNRI use in the month before birth
Intrapartum Risk Factors
• Induction of labour with oxytocin or prostaglandins • Oxytocin use during labour • Prolonged first or second stage of labour • Precipitate labour • Instrumental birth • Caesarean birth • Shoulder dystocia

• Sepsis • Delay in delivery of the placenta

Table 2: Risk factors for PPH, adapted from NICE Intrapartum Care guideline [NG235] 2023.

5.3 Prevention of PPH morbidity

5.3.1 Anaemia

Women with anaemia have a much lower tolerance for blood loss. Antenatal screening and effective treatment is vitally important in reducing the morbidity associated with PPH.

5.3.2 Bleeding disorders

Women with known coagulopathies require specialist care throughout pregnancy, with input from Haematology. Clear individualised management plans should be in place for labour and delivery, and experienced staff should provide their intrapartum care.

5.3.3 Women who decline blood or blood products

These women should be identified at the booking visit risk assessment by the midwife, and then transferred to consultant-led care. An Obstetrician (ST3+) should review the woman before 20 weeks gestation to discuss and document an individual management plan. Uncorrected anaemia in the antenatal period should be treated.

Jehovah's Witnesses may carry an Advance Directive relating to their Refusal of Blood and Blood products and this should be documented. An Obstetrician should discuss the Advance Directive and document the woman's wishes as to what blood products she would accept or decline.

Jehovah's Witnesses who do not carry an Advance Directive or women who are not Jehovah's Witnesses who decline blood products should have a similar discussion as above and the same documented.

It is important to note that there are varying degrees of acceptance of blood products.

Women who Decline Blood and Blood Products may reject:

- Whole blood
- Packed red blood cells
- White blood cells
- Platelets
- Plasma
- Pre-deposit and storage of autologous blood

Women who Decline Blood and Blood Products may accept:

- Albumin
- Recombinant factor concentrates
- Non-recombinant factor concentrates (e.g. fibrinogen concentrate)
- Immunoglobulin
- Intra and post-operative blood salvage. This has (rarely) been used for vaginal blood loss and appears to be safe – a risk assessment should be done antenatally and expert advice sought.
- Haemodilution

If the woman is for a surgical procedure, there should be a multidisciplinary discussion between the

Anaesthetist/Obstetrician involved with the case and early involvement of a Consultant Haematologist/Transfusion Practitioner in the event of haemorrhage above 500ml or if the woman is anaemic.

In an emergency, if the woman is unconscious, and therefore incapacitated, then her previously held beliefs must be respected, and blood transfusions **should not** be prescribed if those beliefs made it clear that it was unacceptable.

5.3.4 Placental localisation

Placental site is identified at the anomaly scan (or at a booking scan for late bookers). Women previously delivered by caesarean section with a low-lying anterior placenta in the current pregnancy must see a consultant to plan care. Accreta spectrum is more likely in this cohort, with significant risk of haemorrhage. Please refer to regional placenta accreta spectrum guidelines and refer accordingly.

5.3.5 Cell salvage

Where available, consider cell salvage from the start for all emergency caesarean sections plus high-risk elective caesarean sections.

The SALVO multicentre randomised control trial (Khan et al 2017) compared the effect of routine use of cell salvage during caesarean section for women at risk of haemorrhage to usual care on the need for donor blood transfusion.

The key findings were:

- Donor blood transfusion rates were lower in the cell salvage group than the control group (2.5% vs 3.5%), but this reduction was not statistically significant.
- Cell salvage was associated with increased maternal exposure to fetal blood among RhD-negative mothers. Mechanisms must be in place to maximise adherence to anti-D prophylaxis for prevention of RhD red cell isoimmunisation.
- No cases of amniotic fluid embolism were observed, with or without leukocyte depletion filters.
- The cost-effectiveness of cell salvage is uncertain.

Cell salvage of vaginal blood has also been used successfully and can be considered for high-risk patients refusing blood products.

For further information, refer to local guidance.

5.3.6 Active management of the third stage

Discuss with women antenatally, during her initial assessment and in labour:

- The different options for managing the third stage of labour, and what to expect with each option.
- The benefits and risks associated with active and physiological management of the third stage.

Advise women that active management of the third stage of labour is associated with a lower risk of PPH or blood transfusion. Document the woman's choice in her records.

For women who are having a vaginal birth and have opted for active management of the third stage, discuss the choice of uterotonic with them. Include that oxytocin plus ergometrine (Syntometrine®):

- May be more effective than oxytocin alone at reducing the risk of PPH
- Is advised if there are risk factors that could increase the risk of PPH
- Is more likely to lead to nausea and vomiting compared with oxytocin alone

- Is contraindicated in women with severe hypertension, pre-eclampsia, eclampsia, or severe cardiac, hepatic or renal disease.

Active management of the third stage		
Vaginal birth	Low risk of PPH	Oxytocin 10 units by IM injection
	Increased risk of PPH	Oxytocin 5 units by slow IV injection over 3-5 minutes OR Oxytocin 5 units + Ergometrine 500 micrograms by IM injection + an antiemetic e.g. cyclizine
Caesarean birth	Carbetocin 100 micrograms by slow IV injection If Carbetocin is not available, choose an alternative depending on patient risk factors: • Oxytocin 5 units by slow IV injection over 3-5 minutes **or** • Oxytocin 5 units + Ergometrine 500 micrograms by IM injection	

Table 3: Pharmacological management of the third stage, adapted from NICE Intrapartum Care guideline [NG235] 2023. For risk assessment, refer to **Table 2**.
Low risk = no risk factors
Increased risk = 1 risk factor or more

NOTE: Any prophylactic oxytocin infusion must only be prepared at the time of birth and NOT in advance as per National Patient Safety Alert (Appendix 10)

After administering the uterotonic, do not clamp and cut the cord for 2 minutes (unless concern about cord integrity, CS incision through an anterior placenta praevia or neonate has HR <60bpm that is not getting faster after a minute of drying and stimulation). Perform controlled cord traction as part of active management after signs of placental separation

Advise a change from physiological management to active management if

- haemorrhage occurs
  or
- the placenta is not delivered within 1 hour of the birth of the baby.

5.4 Principles of caring for women with PPH

The overall management of PPH is summarised in **Appendix 2**.

1. Communication

The key to successful management is prompt involvement of experienced staff trained in the management of haemorrhage. The management of major haemorrhage requires a multidisciplinary approach with rapid and good communication between clinical specialities and a clear understanding of roles (see Appendix 10 for detailed list).

All post-partum haemorrhages
Activate emergency buzzer to summon help.
Immediate call for:

- Additional midwife
- Obstetric staff trained in the management of PPH
- PPH trolley/tray including medications required

- Additional staff members to assist with other duties e.g. scribing, weighing ongoing blood loss, runner
- Inform shift leader

Major obstetric haemorrhage (1500ml or clinical shock)*
In addition to the above:

- Activate major haemorrhage protocol / crash call via switch '2222' stating the emergency and the team(s) required
- Alert consultants in obstetrics and anaesthesia (see **Table 4** below)
- Alert Haematology/blood transfusion lab
- Alert theatre team if surgical cause suspected
- Mobilise staff to transport blood samples and products
- Designate a member of staff to act as co-ordinator
- Undertake point of care testing of coagulation e.g. ROTEM / TEG

***Signs of shock may occur earlier in women with a lower body weight. Refer to Table 1.**

Allocate a member of the healthcare team to stay with the woman and her birth companion(s), explain what is happening, answer any questions and offer support throughout the emergency situation.

Situations in which the consultant must ATTEND unless the most senior doctor present has documented evidence as being signed off as competent. In these situations, the senior doctor and the consultant should decide in advance if the consultant should be INFORMED prior to the senior doctor undertaking the procedure.
EBL >1.5L and ongoing bleeding *Consultants should be informed earlier than 1.5 litres if the woman is haemodynamically unstable, has a low body weight, has a low starting haemoglobin, if there is a rapid rate of bleeding or if there are other complexities regarding her care. Should the consultant choose not to attend in person, there should be a full discussion regarding resuscitation of the patient and ongoing management. This should be documented along with the reasons why the consultant has not attended.
Consultant MUST ATTEND
PPH >2L where the haemorrhage is continuing and Major Obstetric Haemorrhage protocol has been instigated

Table 4: Advice for when consultants should attend PPH. Taken from RCOG Roles and responsibilities of the consultant providing acute care in obstetrics and gynaecology (May 2022).

2. Resuscitation and investigations

Assessment of patient
Quickly assess the overall condition of the mother using ABC.
A – Airway
B – Breathing (respiratory rate, O_2 saturations). Consider supplementary oxygen 15 L/min via non-rebreathing mask with reservoir bag, aiming for target saturations of 94-98%.
C – Circulation (pulse, BP, capillary refill).

Basic measures for all PPHs

- IV access: at least 1 x 14/16 gauge cannula
- Commence warmed crystalloid infusion. 1-2L STAT
- Take blood samples for:
  - Blood transfusion service: 10ml for cross-matching
  - Haematology: FBC

Additional measures for major obstetric haemorrhage (≥1500mls) with continued bleeding or signs of shock

- Position flat, keep warm using appropriate available measures
- Second 14/16 gauge cannula
- Additional blood samples – Haemocue / venous blood gas (VBG), point of care coagulation testing e.g. ROTEM/TEG, calcium (via VBG), U&Es.
- Warmed intravenous fluid replacement.
  - 1L crystalloid through each cannula
  - After the first 2L of crystalloid, up to a further 1.5L crystalloid can be given if blood is not available
  - Give blood once available, if required. Clinical assessment should be based on haemodynamic status following initial volume replacement, alongside bedside measurement of Hb and rate of ongoing blood loss.
  - Consider O negative blood if transfusion is required and crossmatched or group specific blood is not yet available.

3. Monitoring and documentation

Assign a member of the team to keep the trust PPH proforma updated (Obs Cymru or equivalent).

Record:

- Pulse, blood pressure recording and respiratory rate (using oximeter, electrocardiogram and automated blood pressure recording)
- Fluid balance – Foley catheter (monitor hourly input-output)
- Continued estimation of blood loss – weigh loss at least every 15 minutes from the time of birth and document on the PPH proforma. Keep the leader of the resuscitation team informed of the total weight of blood since birth (excluding liquor).
- Timing and doses of all drugs administered.

4. Consider cause – The 4 T's

1) **Tone** – majority of primary PPHs are due to uterine atony**.**
2) **Tissue** – retained products of conception can cause bleeding directly, or via uterine atony.
3) **Trauma** – adequately inspect for trauma if the uterus is well contracted. This may mean examination in theatre.
4) **Thrombin** – point of care coagulation testing and formal clotting studies.

5. Continuous blood loss assessment and reporting

Ongoing accurate blood loss measurement after **every** birth is important to diagnose and guide management of PPH. The PPH proforma assists in this process.

Blood loss should be measured contemporaneously, not in retrospect.

Visual estimation of peripartum blood loss is inaccurate, but can be useful for an initial assessment of the situation (**Appendix 3**).

Measuring blood loss after vaginal birth

- Immediately after vaginal birth, a fresh 'inco pad' should be placed under the buttocks of the woman so that additional loss (i.e. not liquor) can be collected and weighed. The liquor soaked inco pad should be discarded.
- Replace the soaked inco pad with a clean one every 15 minutes.
- Weigh the soaked inco pad and subtract the weight of a clean pad (see **Appendix 4**). Record the weight in grams (this is the same as the blood loss in mls) on the PPH proforma.
- At the point weighed blood loss reaches 500ml / 1000ml / 1500ml / 2000ml, this should be communicated to staff in the room.
- Continue to weigh pads until the blood loss stops.
- Any later loss of blood or clots can be added to the chart in the same way.

Measuring blood loss in theatre

- For women having a caesarean or operative vaginal birth in theatre, the amount of fluid loss at birth (containing liquor) should be separated out and documented so as to allow accurate assessment of blood loss after birth.
- Every 15 minutes, a repeat assessment can be done of the blood loss, measuring the weight of the swabs (after subtracting the dry weight) and the volume of blood in the suction. In women who have a caesarean, this fits in well with the instrument count at the closure of each cavity:
  - Closure of the uterus (after 15 minutes)
  - Closure of the sheath (after 30 minutes)
  - Removal of final drapes (after 45 minutes)
- Vaginal blood loss can be suctioned from a vaginal drape into a volumetric container, and any swabs or inco pads can be weighed.
- The totals at each count and cumulative total should be recorded on a whiteboard.
- At the point weighed blood loss reaches 500ml / 1000ml / 1500ml / 2000ml, this should be communicated to staff in the room.

5.5 Treatment of PPH

1. Initial management

This should be directed at the most likely cause under the individual circumstances.

In event of torrential loss, bimanual uterine compression should be carried out until first line pharmacological treatment has been given or completed.
Insert a hand into the vagina, form a fist and place it into the anterior fornix. Apply pressure against the anterior wall of the uterus, and with the other hand, press deeply into the abdomen behind the uterus to apply pressure to the posterior wall of the uterus. Maintain pressure until bleeding is controlled and the uterus contracts.

If the placenta is retained, aortic compression can be helpful to reduce the flow of blood to the pelvis.
The aorta is compressed above the uterus in the midline and the femoral artery palpated in the groin to ensure that there is adequate compression (i.e. it has stopped pulsating). The pressure can be maintained for up to 30 minutes before release.

- Catheterise the bladder – a full bladder can inhibit contraction of the uterus.

- **Pharmacological treatment**
  - Administer 1 of the following uterotonics (see **table 5** overleaf) as first line treatment for postpartum haemorrhage, taking into account which uterotonics have already been administered as part of active management of the third stage of labour.
  - Uterotonic choice may be modified depending on drug availability and patient profiles.
  - In addition to uterotonic drugs, give tranexamic acid (1g by IV injection over 10 minutes). Repeat, if necessary, after at least 30 minutes for managing continuing postpartum haemorrhage.

Uterotonic used in the third stage of labour as prophylaxis	Suggested first-line treatment of postpartum haemorrhage	Suggested second-line treatment of postpartum haemorrhage	Additional treatments that can be offered, depending on clinical need
No uterotonic used – physiological management	Oxytocin 5IU + Ergometrine 500 micrograms by IM injection (if contraindicated give Carboprost) **or** Oxytocin 40IU infusion as soon as IV access available	Carboprost 250 micrograms IM injection	Carboprost 250 micrograms IM injection (can be repeated at intervals not <15 mins up to a max. of 8 doses **or** Misoprostol 800 micrograms SL or PR (may be used earlier if IV route not available) **or** Carbetocin 100 micrograms by slow IV injection
Oxytocin alone	Ergometrine 500 micrograms IM injection (if contraindicated give Carboprost) **or** Oxytocin 40IU infusion as soon as IV access available	Carboprost 250 micrograms IM injection	
Oxytocin + Ergometrine	Carboprost 250 micrograms IM injection **or** Oxytocin 40IU infusion as soon as IV access available	Repeat Carboprost after 15 minutes	
Carbetocin	Ergometrine 500 micrograms IM injection	Carboprost 250 micrograms IM injection	Carboprost 250 micrograms IM injection (can be repeated at intervals not <15 mins up to a max. of 8 doses **or** Misoprostol SL or rectally

Table 5: Pharmacological management of PPH, adapted from NICE Intrapartum Care Guideline [NG235] 2023.

Uterotonic choice should take into account patient specific cautions and contraindications. Optimal uterotonic choices should be decided and recorded antenatally in those attending specialist clinics.

Oxytocin requires significant **caution** in some cardiac conditions. Oxytocin infusions for PPH should not be pre-prepared (this is to prevent accidental use for augmentation – see NPSA alert, Appendix 10)

Ergometrine should be used with **caution** where there is history of cardiac disease or hypertension. Ergometrine is **contraindicated** in women with severe hypertension, pre-eclampsia, eclampsia, or severe cardiac, hepatic or renal disease.

Carboprost should be used with **caution** where there is history of asthma. It is **contraindicated** in some cardiac conditions and pulmonary hypertension. An increase in intrapulmonary shunting with an accompanying fall in pO_2 has been described following Carboprost. Oxygen saturation monitoring should be used for women receiving this drug.

Failure of Carboprost to control haemorrhage has been associated with the presence of chorioamnionitis or a coagulation defect.

2. Management of ongoing haemorrhage

If the haemorrhage continues:

- Continue resuscitation
- Assess blood loss and its rate
- Reconsider cause
- Check for coagulopathy using point of care coagulation testing e.g. ROTEM / TEG. Coagulopathy may be present either as a primary cause or as a secondary feature of major haemorrhage.
- Consider setting up cell salvage equipment at caesarean section or laparotomy (if not already)
- Give further uterotonics as needed (**Table 5**)
- Consider administration of blood products and reassess the level of transfusion alert. Assign person to be responsible for taking blood from clinical area to transfusion laboratory and returning with blood and or blood products.
- Intravenous fluids and blood products should be given via a warming device. Consider use of a rapid infuser.

Subsequent actions depend to some extent on the likely cause, the amount and rate of continued loss and the haemodynamic circumstances.

3. Management if second/third line uterotonics fail

- Continue resuscitation
- Assess uterine tone, continual bimanual compression
- Assess blood loss and its rate
- Reassess initial diagnosis
- Reassess level of transfusion alert
- Identify and correct coagulopathy
- Communicate
    - Inform consultant obstetrician and anaesthetist. They must attend urgently (if not already present) if there is major ongoing blood loss or bleeding ongoing after balloon

tamponade.
    - On call haematologist may need to be informed in presence of complex or severe coagulopathy which is resistant to usual treatment.
- Transfer to theatre and perform examination under anaesthetic
    - Ensure that the uterus is empty and repair any trauma
    - Consider balloon tamponade before surgical options
      No particular surgical procedure can be recommended over any other for treating PPH.
- Consider setting up cell salvage equipment at caesarean section or laparotomy (if not already)
- Consider need for arterial line for monitoring and repeat blood samples, based upon haemodynamic status and blood loss (usually required if >2L blood loss).
- If further haemodynamic monitoring is required, consider cardiac output monitoring or a central venous catheter, where appropriately trained staff are available.

4. Surgical management of PPH

Uterine balloon tamponade

A uterine balloon can be inserted transvaginally or transabdominally after caesarean delivery/laparotomy.
The hydrostatic Bakri Balloon is one example of a uterine balloon tamponade device**. Appendix 5** shows how the Bakri Balloon should be used including contraindications. A laminated version should be displayed in the Delivery Suite Theatre.

It should be filled with 400-500ml of saline. Ultrasound should be used to check correct placement at the fundus. A vaginal pack can be used to keep it in place. Continue oxytocin infusion for 4 hours to maintain contractions and give broad spectrum antibiotics for 24 hours.

Patient safety points following balloon insertion

- When balloon tamponade has been inserted the patient MUST be given a coloured wristband as per trust guidance, identifying an intentionally retained item. There should be additional coloured wristbands for any swabs/packs that are used.
- Retained items must be clearly documented in the patient notes and included in the WHO checklist and patient SBAR at handover.
- A plan of care for the patient should be made by the clinician inserting the balloon and recorded in the notes.

If this procedure is successful there should be a clear plan in place for the removal of the balloon. The balloon can remain in situ for a maximum of 24 hours.

Monitor for evidence of continued bleeding including fundal height, loss from drainage channel of

Patient safety points for balloon removal

- The operation notes should be reviewed to ensure that the clinician removing the balloon is aware of the fluid volume inserted and the number of packs/swabs used.
- A two-person check must be undertaken to ensure that the swabs/packs are checked as per Trust policy.
- The coloured wristbands should be removed as part of this two-person check for each retained item.
- There should be clear documentation of the removal of the balloon in the notes. This must include reference to the swab count.

balloon catheter and bypassing.

Removal of the balloon must be undertaken by a clinician with an understanding of the process and knowledge of how to escalate if there are any concerns. Details of how to remove the balloon are found in **Appendix 5**.

Surgical procedures where abdomen is open

This section pertains to:

- PPH at time of caesarean section
- Post caesarean section return to theatre
- Laparotomy due to unrelenting haemorrhage following vaginal birth

Where laparotomy has been performed, aortic compression or bimanual compression of the uterus should be considered until senior staff arrive.
A surgical technique should be chosen that conserves the uterus. Where possible, and when safe to do so, definitive surgical techniques should be deferred until arrival of the consultant.

The choice of technique should be individualised by the consultant obstetrician/gynaecologist.

Surgical approaches include:

- Upper segment bleeding and atony
  - **B-Lynch** haemostatic suture (**Appendix 6)**
  - **Modified B Lynch** (Hayman) compression suture (**Appendix 7**) – this does not involve opening the uterus and is preferable if CS has not been performed

- Lower segment bleeding and atony e.g. following placenta praevia
  - **Vertical lower segment compression sutures**

- **Stepwise uterine devascularisation and internal iliac artery ligation** – sutures or clips may be used (**Appendix 8**).

- **Hysterectomy**
  The possible need for hysterectomy must be considered continuously between the consultants in obstetrics and anaesthetics. Individual cases will be assessed on total blood loss, cause of loss, response to therapies used, haemodynamic stability and neurological status.

  Hysterectomy can be a life-saving procedure and, whilst reasonable efforts will be made to avoid this, the patient should not be in extremis before it is considered. The Confidential Enquiries into Maternal Death have consistently highlighted that definitive surgical intervention is often too late.

  It should be considered sooner in patients who refuse blood products and in cases of placenta accreta or uterine rupture.

  A second consultant clinician should be involved in the decision for hysterectomy whenever possible.

  Subtotal hysterectomy may be sufficient in most cases to arrest haemorrhage where the cause is atony. Careful consideration should be given to the surgical approach where there is

suspected abnormally invasive placenta.

Arterial embolization

Where available, this may be considered in a haemodynamically stable woman with a slow intra-abdominal post-operative haemorrhage (e.g. into the broad ligament or pelvis) in liaison with the interventional radiology team.

On the very rare occasion where known placenta percreta or accreta leads to consideration of this technique, consultations between obstetrics, interventional radiology, vascular surgery and theatres should take place.

5. Management of non-atonic PPH

Genital tract trauma:

Repair in appropriate setting, vaginal pack may be needed (if so, prescribe antibiotics and leave urinary catheter in place until pack is removed).

Retained placenta

- Diagnose a prolonged third stage of labour if it is not completed within 30 minutes of the birth with active management or within 60 minutes of the birth with physiological management.
- Secure intravenous access if the placenta is retained, and explain to the woman why this is needed.
- Do not use intravenous oxytocic agents routinely to deliver a retained placenta.
- Give intravenous oxytocic agents if the woman is bleeding excessively.
- If the placenta is retained and there is concern about the woman's condition:
  - Offer a vaginal examination to assess the need to undertake manual removal of placenta
  - Explain this can be painful and advise her to have analgesia.
  - If the woman reports inadequate analgesia during the assessment, stop the examination and address this immediately.
- If the placenta is retained and the woman is not already in an obstetric unit, arrange transfer.
- Do not carry out uterine exploration or manual removal of the placenta without an anaesthetic.
- Perform manual removal of the placenta in theatre, with appropriate analgesia and antibiotic cover as per local antibiotic formulary.

Retained products:

Manage as for retained placenta.

Coagulopathy:

Replace blood products, discuss care with haematology team

6. Secondary PPH

The management of secondary PPH follows the same basic principles as primary PPH. A full clinical assessment with initiation of resuscitation as per primary PPH should be undertaken.

Secondary PPH is commonly associated with retained placental tissue and / or endometritis, which

may then lead to coagulopathy.

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, as organised clot can be difficult to distinguish from placental remnants. Ultrasound can also detect a uterine artery pseudo-aneurysm if blood flow is assessed.
Concurrent or causative infection is very common. An assessment of vaginal microbiology should be performed (high vaginal and endocervical swabs) and appropriate use of broad-spectrum antimicrobial therapy should be initiated when endometritis is suspected. Prescribe antibiotics in accordance with the local antibiotic formulary.

Definitive surgical treatment in the form of evacuation of retained products of conception (ERPOC) should be undertaken if there is excessive or continuing bleeding, irrespective of ultrasound findings.

These women are at high risk of uterine perforation compared with first trimester ERPOC. A senior obstetrician should therefore be involved in the decision for a postnatal ERPOC, and be present for the procedure itself. The procedure should be performed under ultrasound guidance.

Non-sensitised Rhesus-negative women with secondary PPH who have had surgical management should receive anti-D, unless it was given <6 weeks ago.

5.6 Management of transfusion and coagulation in major obstetric haemorrhage

5.6.1 Blood

The decision to use emergency O-negative or fully cross matched blood will depend on individual circumstances. 2 valid G&S samples are required by the laboratory to issue crossmatched blood (1 can be historical and one ‘current’, usually within 72hrs in obstetrics).

- The time taken for release of XM blood will depend on local laboratory setup but is approximately 40 minutes from receipt of a 2nd G&S sample.
- This may be shortened if 2 samples have already been processed and electronic issue is available.
- Note that time to crossmatch is extended in the presence of maternal antibodies and such patients should be discussed directly with the laboratory at the earliest opportunity.
- If RBC transfusion is required before XM blood is available, the laboratory may issue group specific blood, or O negative (uncrossmatched) may be used.

5.6.2 Use of emergency O Negative blood

- Uncrossmatched blood (O, D Negative) may be used if the patient requires blood urgently and crossmatched blood is not available.
- Giving uncrossmatched blood carries the (rare) risk of a transfusion reaction, if the patient has new or previously undetected antibodies. Therefore, uncrossmatched blood should only be given in an emergency and only given one unit at a time, with reassessment after each unit as to whether further O Negative blood is required.
- Use of emergency O Negative blood should not, however, be delayed in a life-threatening haemorrhage where blood is required.
- Following use of emergency O Negative blood, the patient should be closely observed for transfusion reactions, ideally in a HDU setting. Urine output, FBC and U+E should be monitored over the next 24hrs.

- If the emergency O, D Negative blood units stored on delivery suite are transfused, inform the laboratory so they can be replaced.

5.6.3 Management of coagulopathy

Coagulopathy may be associated with obstetric haemorrhage, as either a cause and/or effect. If untreated, this leads to progression of haemorrhage and a vicious cycle. Rapid detection and treatment of coagulopathy is therefore an essential part of haemorrhage management.

Aetiology

- The most common mechanism is dilution of fibrinogen and coagulation factors, as blood containing these elements is lost. Increasing blood loss and concomitant volume replacement increases the risk of coagulopathy.
- More rarely, pathological states can directly lead to a consumptive process (e.g. placental abruption, amniotic fluid embolism, severe preeclampsia, severe sepsis). This may involve widespread disruption of coagulation (eg. DIC), which may not be related to the extent of blood loss, and should be considered early in these conditions.
- It is important to note that changes can occur rapidly, and a single measure of coagulation is not sufficient when bleeding is ongoing (MBRRACE report, 2023).

When to test

- Initial coagulation tests should be performed at 1-1.5l blood loss - but should be considered earlier if a consumptive cause suspected (abruption, AFE, severe PET, severe sepsis).
- Tests should be repeated during ongoing bleeding, as changes can occur rapidly. Aim to repeat approximately every 30 minutes or with every further 500ml blood loss.

What tests to use

- Point of care testing (POCT) of coagulation is the recommended standard of care for obstetric haemorrhage. This provides rapid, contemporaneous results, and is easily repeated. Viscoelastic tests (eg. ROTEM, TEG) provide rapid information about overall clotting and fibrinogen activity.
- When using POCT, a locally agreed treatment algorithm should be used to guide blood product replacement (see **Appendix 9** for example LWH algorithm) and units should ensure appropriate training in its use and interpretation.
- Laboratory tests may also be used (FBC, PT/APTT and Clauss Fibrinogen). However there should be an awareness that coagulation may have changed by the time results are available. Local systems should ensure rapid transportation and processing.

5.6.4 Blood product treatment

Due to the increase in most coagulation factors during pregnancy, the majority of patients maintain adequate levels even during PPH. Therefore treatment should ideally be based on test results (ideally POCT) and empirical treatment for all patients with PPH is not recommended. If results are not available, and bleeding is ongoing, then empirical treatment may be implemented after 4 units RBC have been transfused (see below).

Fibrinogen

Fibrinogen has been shown to be the most important factor in obstetric haemorrhage, being the first to fall and highly predictive of haemorrhage progression.

Fibrinogen level should be maintained >2g/L, or POCT equivalent (e.g. FIBTEM A5 >12mm if using ROTEM).

Options for fibrinogen replacement are Fibrinogen Concentrate, or Cryoprecipitate. FFP is NOT a suitable means of fibrinogen replacement in obstetric haemorrhage (see below).

Fibrinogen concentrate

Fibrinogen derived from the plasma of pooled donors. Virally inactivated, pasteurised and freeze dried, presented as a powder for reconstitution with sterile water. Preparations include Riastap, Fibclot, Fibryga etc. Each vial contains 1-1.5g fibrinogen, with the usual dose being between 2-4g per administration. It may be kept in the clinical area or the laboratory according to local processes. It is rapidly available and often acceptable to patients who may refuse other blood products.

Cryoprecipitate

Also derived from pooled plasma, contains a concentrated source of fibrinogen as well as Factor VIII and von Willebrand Factor. A dose of '2 pools' typically increases plasma fibrinogen by 1g/l. It is stored in the laboratory and must be defrosted before use, which must be factored into the time to reach the clinical area.

Fresh Frozen Plasma (FFP)

FFP contains only a low concentration of fibrinogen and is *not* a suitable source for fibrinogen replacement in PPH. However, it does contain other clotting factors and may be indicated during rarer circumstances of disseminated intravascular coagulation (DIC) or following loss of one blood volume or more. Indication for FFP is assessed based on ROTEM or lab tests. It should only be used empirically if haemostatic results are not available, and 4units RBC have been transfused (see below)

FFP is indicated if: PT/APTT >1.5, POCT (EXTEM CT >100s if using ROTEM) or after 4U RBC have been transfused (only if no haemostatic results).

Platelets

Platelets are rarely required during PPH, unless the level was low before PPH occurred. They are usually only required after loss of one blood volume. Level should be maintained >50x109 /l, so transfusion is recommended at <75x109 /l in order to maintain this. Laboratory FBC is the most reliable measure of platelet count, but ROTEM can also indicate low platelets, if EXTEM A5 remains low after correction of fibrinogen.

Platelet count should be maintained at >50x10^9 /l (transfuse when <75x10^9 /l during PPH).

5.6.5 If coagulation results are unavailable/empirical treatment

POCT should allow rapid results to guide blood products. If not available, blood should be sent urgently for FBC, fibrinogen level and PT/APTT. This may result in a delay in obtaining coagulation results. In the absence of haemostatic results, and with ongoing blood loss, the RCOG and AAGBI advise that 4 units of FFP should be given after 4 units RBCs have been transfused (and thereafter in a 1:1 ratio until haemostatic results are available). It should be noted in this situation that by the time coagulation results are available, the clinical and coagulation status may have changed.

5.6.6 Major Haemorrhage Pack (MHP)

MHP may be used to allow rapid release of blood products. If POCT of coagulation (eg. ROTEM) is being used (as is recommended), then initial suggested blood product order would be 4 units RBC (with further products based on ROTEM results).

However individual units should refer to their local policies for availability and release of products. Some units especially if POCT not in use, may wish to use MHP. A suggested MHP for obstetric haemorrhage would then be:

- 1st pack 4U RBC
- 2nd pack 4U RBC and 4U FFP

5.6.7 Other parameters affecting coagulation

Coagulation can be worsened by:

- Hypothermia – aim for normothermia. Monitor temperature and warming measures commenced early (forced air warmers, fluid/blood warmer used in theatre).
- Acidosis – aim pH >7.35. Optimising organ perfusion and haemodynamic status will optimise acid base balance. Vasopressor infusion may be required in addition to intravenous fluids and blood products.
- Hypocalcaemia – aim Ca^{2+} >1.0mmol/l (10ml 10% calcium gluconate slow IV bolus can be used in theatre to replace calcium).

5.7 Care required following control of major obstetric haemorrhage

5.7.1 Principles and location of care

Care following major haemorrhage is aimed at monitoring for signs of under transfusion, continuing haemorrhage, and the consequences of hypovolaemia. Underestimation of blood loss is common and the use of large volumes of intravenous fluids may make estimation of the final haemoglobin difficult. The distinction between a low result due to underestimates and that due to further loss can be difficult.

There should be continuous observation for further blood loss. This requires abdominal examination, assessment of vaginal loss and monitoring drain output.

Hypovolaemia can cause acute renal failure as well as hypoxic damage to other organs. Where there have been clearly documented periods of poor perfusion during the resuscitation process then particular care and assessment may be needed.

Following major obstetric haemorrhage women should be cared for in an area equipped to provide an **escalation of maternity care or HDU care**.

Monitoring of central venous pressure and invasive monitoring of blood pressure could be considered if required, where appropriately trained staff are available.

One nurse or midwife to one patient must be provided until medical assessment allows step down from critical care level 2.

Documentation should be carried out on a maternity HDU and MEWS chart. Maintenance of fluid balance should be documented on maternity HDU chart.

Observations should be:

- Every 15 minutes for 1 hour
- Every 30 minutes for 1 hour
- Hourly for 6 hours
- 4 hourly for 24 hours

Observation frequency may be reduced after joint review by obstetric and anaesthetic teams.

Uterine contraction should be maintained by an oxytocin infusion (40 units of oxytocin in 500ml 0.9% NaCl at 125 ml/hr). A more concentrated oxytocin infusion can be given if fluid restriction is required e.g. severe pre-eclampsia.

Repeat blood sampling should be individualised and include assessment of renal function.
If intraoperative cell salvage (IOCS) is used in RhD negative women and the blood reinfused, use the 'Anti-D guideline' to determine the need for anti-D. If anti-D is required, take a maternal blood sample for Kleihauer testing 1 hour after completion of reinfusion and inform the laboratory of use of IOCS.

In major PPH where a woman has received a transfusion (allogenic blood or cell salvaged blood), there should be a documented multidisciplinary discussion and postnatal management plan to include location of care, frequency of observations, timing of investigations and indications for medical review. This should involve the most senior obstetrician and anaesthetist on site along with the midwife caring for the woman. Women who have received emergency O Negative blood or uncrossmatched blood require particularly close monitoring for potential transfusion reactions.

5.7.2 Thromboprophylaxis

Thromboprophylaxis is essential to consider once bleeding has stopped and coagulopathy corrected. Timing of administration should be considered in conjunction with the anaesthetic team, with consideration of the timing of removal of an epidural. Thrombocytopenia (<50 x 10^9/L) is a contraindication to thromboprophylaxis. Pneumatic compression devices should be used in addition in the HDU/ITU setting, especially where pharmacological thromboprophylaxis is contraindicated.

5.7.3 Management of postpartum anaemia

Postnatal transfusion should rarely be considered where the haemoglobin is >70g/L. However, there should be recognition of the percentage blood volume lost which may prompt transfusion where the Hb is above 70g/L. Single unit transfusion should be used with reassessment of clinical status and Hb after each unit.

Consider parenteral iron with vitamin B12 and folic acid for severe anaemia, as oral iron can be slow and unreliable due to limited absorption and adverse gastrointestinal effects. Hb increases in 1 week with intravenous iron are faster than oral iron and comparable to two-unit blood transfusion.

Consult local guidance for further information.

5.7.4 Documentation

- Ensure all management documented on trust PPH proforma
- Update delivery summary as required
- Complete incident report for PPH >1500ml

5.7.5 Debrief

Women and their families should be offered an opportunity to discuss events with a senior member of the clinical team whilst an inpatient and once discharged.

In event of major haemorrhage, debrief should also be offered to staff involved.

6 Monitoring / Audit

This guideline has been subject to a cross-regional consultation process including with users and Maternity Voices Partnership groups. It has also been reviewed by the Regional Guidelines Group.

The guideline will next be routinely reviewed in 3 years' time (2028) unless new research or

updated guidance becomes available in the meantime.

Suggested performance indicators/audit outcomes are:

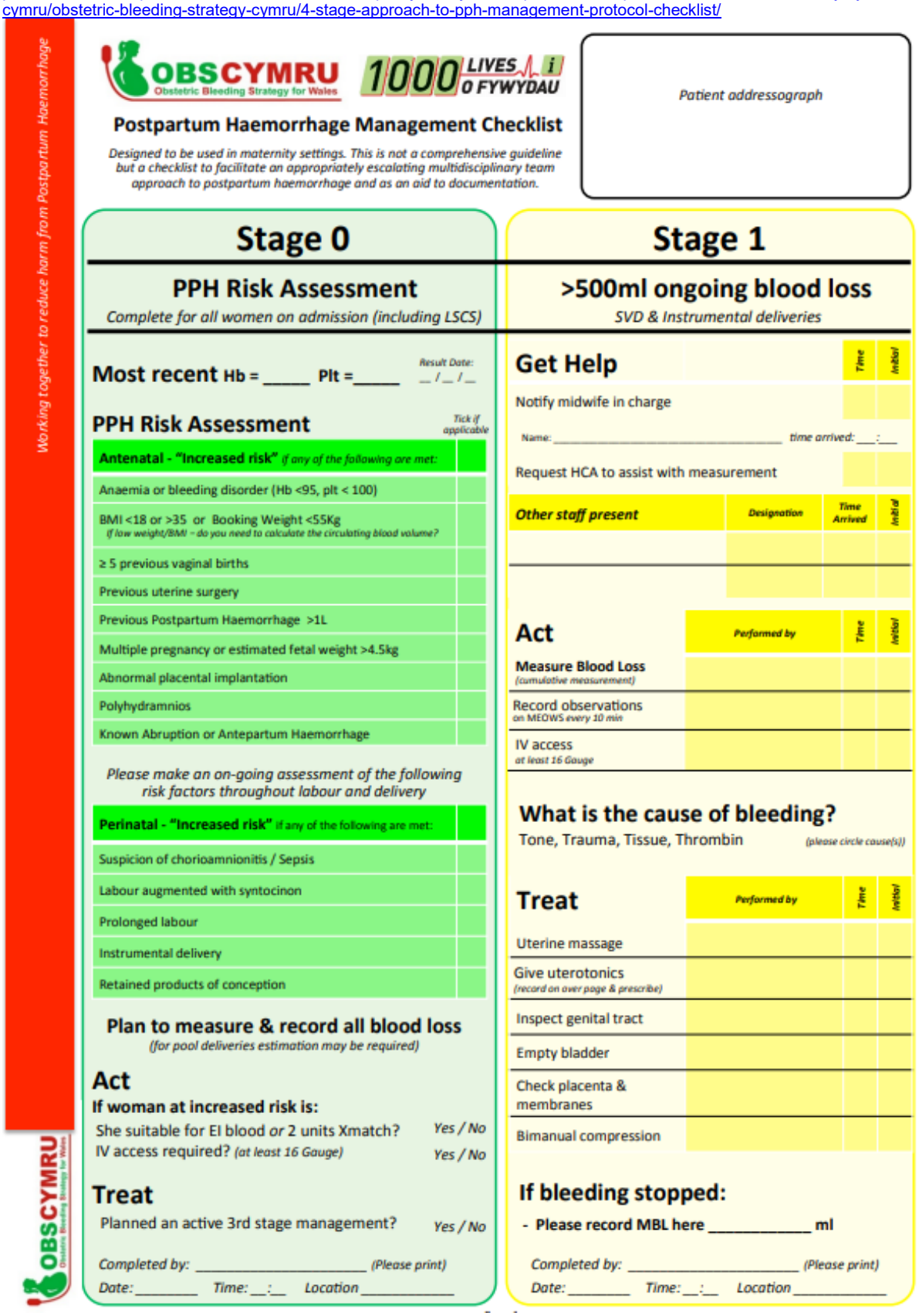
- Documentation of communication to appropriate health care professionals either being informed or already present
- Completion of OBS Cymru checklist
- Weighed blood loss in each birth
- Documentation of level of blood transfusion process
- Activation the massive haemorrhage protocol
- Documentation of blood loss and intravenous fluids, including blood and blood products
- Use of cell saver
- Documentation of invasive haemodynamic lines for massive haemorrhage
- Documentation of fluid balance
- Need for transfer to critical care level 3
- Presence on site of consultants in anaesthesia and obstetrics for massive haemorrhage

7 Details of attachments (e.g. list of appendices)

- **Appendix 1:** Obs Cymru Postpartum Haemorrhage Proforma
- **Appendix 2:** Postpartum Haemorrhage Quick Reference Guide. From Obstetric Anaesthetists' Association Quick Reference Handbook for Obstetric Emergencies.
- **Appendix 3:** Pictorial guidelines to facilitate visual estimation of blood loss at obstetric haemorrhage.
- **Appendix 4:** Dry weights to aid more accurate measurement of blood loss.
- **Appendix 5:** Guide for Bakri balloon insertion and removal
- **Appendix 6:** B Lynch uterine compression suture visual guide
- **Appendix 7:** Modified B Lynch (Hayman) uterine compression suture visual guide
- **Appendix 8:** Pictorial guide – stepwise uterine devascularisation
- **Appendix 9:** ROTEM Algorithm for major obstetric haemorrhage
- **Appendix 10:** 2025 National Patient Safety Alert for oxytocin overdose
- **Appendix 11:** Roles and responsibilities of staff when attending a major PPH
- **Appendix 12:** Management of PPH at home

Appendix 1: Obs Cymru Postpartum Haemorrhage Proforma

performanceandimprovement.nhs.wales/functions/quality-safety-and-improvement/improvement/our-work/maternity-cymru/obs-cymru/obstetric-bleeding-strategy-cymru/4-stage-approach-to-pph-management-protocol-checklist/



Working together to reduce harm from Postpartum Haemorrhage

OBSCYMRU Obstetric Bleeding Strategy for Wales

1000 LIVES i 0 FYWYDAU

Postpartum Haemorrhage Management Checklist

Designed to be used in maternity settings. This is not a comprehensive guideline but a checklist to facilitate an appropriately escalating multidisciplinary team approach to postpartum haemorrhage and as an aid to documentation.

Patient addressograph

Stage 0

PPH Risk Assessment

Complete for all women on admission (including LSCS)

Most recent Hb = _____ Plt =_____ Result Date: __ / __ / __

PPH Risk Assessment (Tick if applicable)

Antenatal - "Increased risk" *if any of the following are met:*	
Anaemia or bleeding disorder (Hb <95, plt < 100)	
BMI <18 or >35 or Booking Weight <55Kg *If low weight/BMI – do you need to calculate the circulating blood volume?*	
≥ 5 previous vaginal births	
Previous uterine surgery	
Previous Postpartum Haemorrhage >1L	
Multiple pregnancy or estimated fetal weight >4.5kg	
Abnormal placental implantation	
Polyhydramnios	
Known Abruption or Antepartum Haemorrhage	

Please make an on-going assessment of the following risk factors throughout labour and delivery

Perinatal - "Increased risk" if any of the following are met:	
Suspicion of chorioamnionitis / Sepsis	
Labour augmented with syntocinon	
Prolonged labour	
Instrumental delivery	
Retained products of conception	

Plan to measure & record all blood loss

(for pool deliveries estimation may be required)

Act

If woman at increased risk is:

She suitable for EI blood *or* 2 units Xmatch? *Yes / No*

IV access required? *(at least 16 Gauge)* *Yes / No*

Treat

Planned an active 3rd stage management? *Yes / No*

Completed by: _____ *(Please print)*

*Date:*_____ *Time:* __:__ *Location* _____

Stage 1

>500ml ongoing blood loss

SVD & Instrumental deliveries

Get Help | Time | Initial

Notify midwife in charge

Name: _____ time arrived: __:__

Request HCA to assist with measurement

Other staff present	Designation	Time Arrived	Initial

Act

	Performed by	Time	Initial
Measure Blood Loss *(cumulative measurement)*			
Record observations on MEOWS *every 10 min*			
IV access *at least 16 Gauge*			

What is the cause of bleeding?

Tone, Trauma, Tissue, Thrombin *(please circle cause(s))*

Treat

	Performed by	Time	Initial
Uterine massage			
Give uterotonics *(record on over page & prescribe)*			
Inspect genital tract			
Empty bladder			
Check placenta & membranes			
Bimanual compression			

If bleeding stopped:

- **Please record MBL here _____ ml**

Completed by: _____ *(Please print)*

*Date:*_____ *Time:* __:__ *Location* _____

Stage 2 >1000mL blood loss *OR* clinical concern (eg. Abruption or concealed bleeding) *OR* abnormal vital signs RR > 30, HR ≥120, BP ≤90/40mmHg, SpO2<95%

Progress to here from stage 1 if SVD / instrumental delivery. Re-start here after stage 0 if LSCS

Get Help

		Time arrived:	Other staff:		Time arrived:
MW in charge	Name:_____	time:__:__	Name:_____ Designation:_____	time:__:__	
Obstetrician	Name:_____	time:__:__	Name:_____ Designation:_____	time:__:__	
Anaesthetist	Name:_____	time:__:__	Name:_____ Designation:_____	time:__:__	
HCA	Name:_____	time:__:__			

Act

	Performed by	Time	Initial
Measure & record cumulative blood loss			
Record observations on MEOWS *every 10 min*			
2nd IV access (*at least 16 Gauge*) & fluid bolus			
Take bloods — Point of care tests - ROTEM, venous lactate, venous Hb; Lab test - FBC, Coag, XMatch, U&E			

	Initial VBG Test Results		Initial ROTEM Test Results	
Time:	*Hb =*	*Lactate =*	*FIBTEM A5 =* (Aim ≥ 12mm)	*EXTEM CT =* (Aim < 75 sec)

Review causes *(circle all identified)* Tone / Trauma / Tissue / Thrombin

Treat

	Performed by	Time	Initial
Review uterotonics *(record on page 3)*			
Give tranexamic acid *(1g IV, if no CI's)*			
Bimanual compression			
Consider ranitidine			

	Performed by	Time	Initial
Empty bladder			
Foley catheter inserted			
Inspect genital tract			
Repair genital tract			
Check placenta & membranes			

If bleeding stopped ensure PPH post-event checklist completed & Management plan written in notes

Completed by: _____ *(Please print)* *Date:*_____ *Time:*__:__ *Location* _____

If bleeding *ongoing* transfer patient to theatre *time arrived:*___:___

Stage 3 >1500mL blood loss *OR* ongoing clinical concern

Act

	Performed by	Time	Initial
Communicate current measured blood loss to team			
Activate MOH protocol			
Inform Obstetric and Anaesthetic consultants			
Order blood and coagulation products as per MOH and ROTEM protocol - *Do you need to discuss the case with a haematologist?*			

Review causes *(circle all identified)* Tone / Trauma / Tissue / Thrombin

Treat

	Performed by	Time	Initial
Review uterotonics *(Record on page 3)*			
Consider repeat tranexamic acid if bleeding ongoing *(1g IV, if no CI's)*			
Consider advanced surgical techniques *(Document on page 4)*			

Additional Staff Present:		Time arrived:			Time arrived:
*Name:*_____	*Designation:*_____	*time:*__:__	*Name:*_____	*Designation:*_____	*time:*__:__
*Name:*_____	*Designation:*_____	*time:*__:__	*Name:*_____	*Designation:*_____	*time:*__:__

Once bleeding stopped ensure PPH post-event checklist completed & Management plan written in notes

Completed by: _____ *(Please print)* *Date:*_____ *Time:*__:__ *Location* _____

Record of Uterotonics used

Please record all uterotonics used here and prescribe on medication or anaesthetic chart

Drug	Dose *(please circle route)*	Time
Oxytocin	10 units IM *or* 5 units IV	
Other		
Ergometrine *(caution in HTN/PET)*	500 microg IV or IM	
Syntometrine *(caution in HTN/PET)*	500 microg/5 units IM or IV	
Oxytocin INF	40 units over 4hr IV	
Other		
Misoprostol		
Misoprostol		

Drug	Dose	Time
Carboprost *(caution in asthma)*	250microg IM *(repeat up to every 15min)*	
Carboprost	250microg IM	
Carboprost	250microg IM	
Carboprost	250microg IM	
Carboprost	250microg IM	
Carboprost	250microg IM	
Carboprost	250microg IM	
Carboprost	250microg IM	
Other		

Blood & Blood products transfused

Time	Product given	Time	Product given

Measured cumulative blood loss

Time	Blood Loss (ml)	Running Total (ml)

Total Measured Blood Loss = _____ml

Record of further blood test results

(Please do not duplicate records of blood results recorded in stage 2)

	Further VBG Test Results		Further ROTEM Test Results	
Time Taken	*Hb*	*Lactate*	*FBTEM A5 (Aim ≥ 12mm)*	*EXTEM CT (Aim < 75 sec)*

Working together to reduce harm from Postpartum Haemorrhage

Date/Time	Documentation of concerns, deviations & other information

PPH Post-event Checklist

WHO sign-out completed? *Yes / No / NA (Patient did not require care in theatre)*
Have all drugs been prescribed and signed for? *Yes / No / NA*

Post-event Re-bleed Risk Assessment

Syntocinon infusion running or required?		*Yes / No*	Time expected to finish ___:___
Vaginal pack insitu?		*Yes / No*	Planned removal time ___:___
Bakri Balloon insitu?		*Yes / No*	Planned removal time ___:___
Can NSAID be given?		*Yes / No / Not yet*	
Thromboprophylaxis plan:	LMWH	*Yes / No*	Time of first dose: ___:___
	TEDS	*Yes / No*	

Post-event Monitoring Requirements

Level of post-event care required *(circle applicable)*		Level 1	Level 2 *(HDU)* Level 3 *(ICU)*
Post-op bloods *(FBC/Coag/U&E)* to be taken at		*Time:* ___:___	Plan to transfuse if Hb < _____
PV loss monitoring required?		*Yes / No*	Frequency of monitoring _____
Urine output monitoring required?		*Yes / No*	Frequency of monitoring _____

MOH stand down *Yes / No / NA*
Any blood/products to return to blood bank? *Yes / No / NA*
If the MOH protocol was activated before stage 3 *or* not activated at stage 3 then please detail reason(s) why:
_____

Does a Datix form need completing? *Yes / No*
If yes record:
- Datix form number _____
- Person responsible for completing Datix form _____

Does the case need **highlighting to OBS Cymru Champion**? *Yes / No* *(triggers include MBL ≥1000ml, ROTEM performed, blood products given)*

Has the event been discussed with the patient? *Yes / No*
Has **written information** been provided to the patient? *Yes / No*
Does a **formal team debrief** need to take place? *Yes / No*

Completed by: _____ *(Please print)* *Date:* _____ *Time:* __:__ *Location* _____

2-6 Postpartum haemorrhage v.1

Major PPH > 1.5L. Massive PPH >2.5L

START

1. **Call for help** (obstetrician, midwife, anaesthetist)
   - **Ask**: "who will be the team leader?"
   - **Team leader assigns** checklist reader and scribe
   - Request **postpartum haemorrhage drugs**
   - If major or massive PPH ➔ Activate **major haemorrhage protocol**
2. **Check clinical status using ABCDE approach**
   - Start oxygen at 15 L/min via reservoir mask, titrate to SpO_2 95-98%
   - Start continuous monitoring: SpO_2, respiratory rate, 3-lead ECG and blood pressure
   - Insert 2 x wide-bore IV access (take FBC, clotting, fibrinogen, cross match)
   - Give tranexamic acid 1 g IV
   - Start IV crystalloid fluid bolus (warm)
   - Give blood and blood products early in ongoing haemorrhage
3. **Check for *-and-* treat source of bleeding** (**Box A**)
4. **Check for atony ➔ treat if identified**
   - Manual ➔ rub contraction or bimanual uterine compression
   - Give uterotonics (**Box B**)
   - Insert urinary catheter
   - If still atony ➔ transfer to theatre for EUA and haemorrhage control (**Box C**)
5. **Weigh all swabs and announce total blood loss every 10 minutes**
6. **Use point of care testing to guide blood and blood product replacement** (**Box C**)
   - Check for hypocalcaemia (**Box B**)
7. **Keep woman warm**
   - Warm fluids *-and-* warm woman
8. **Use cell salvage where possible**

Box A: Source of bleeding. 4 Ts of obstetric haemorrhage

- Tone – uterine atony
- Tissue – retained placental tissue
- Trauma – lacerations of birth tract
- Thrombin – clotting abnormalities

Box B: Drug doses and treatments

Uterotonics:

- **Syntometrine or Ergometrine IM** one dose only and avoid if hypertensive *-or-*
- **Oxytocin IV** 5 iu diluted in 10 ml normal saline given over at least 2 min, up to 2 doses
- **Oxytocin** infusion (40 iu in 50 ml normal saline at 12.5 ml/hr) *Or as per local protocol*
- **Carboprost** (Hemabate) 250 mcg IM repeated every 15 min maximum 8 doses (avoid if asthmatic)
- **Misoprostol** 1000 mcg (5 x 200 mcg tablets) PR / or 800 mcg sublingual

Calcium replacement

10 ml IV 10 % calcium chloride *-or-* 30 ml IV 10 % calcium gluconate

Box C: During resuscitation

Haemorrhage control strategies

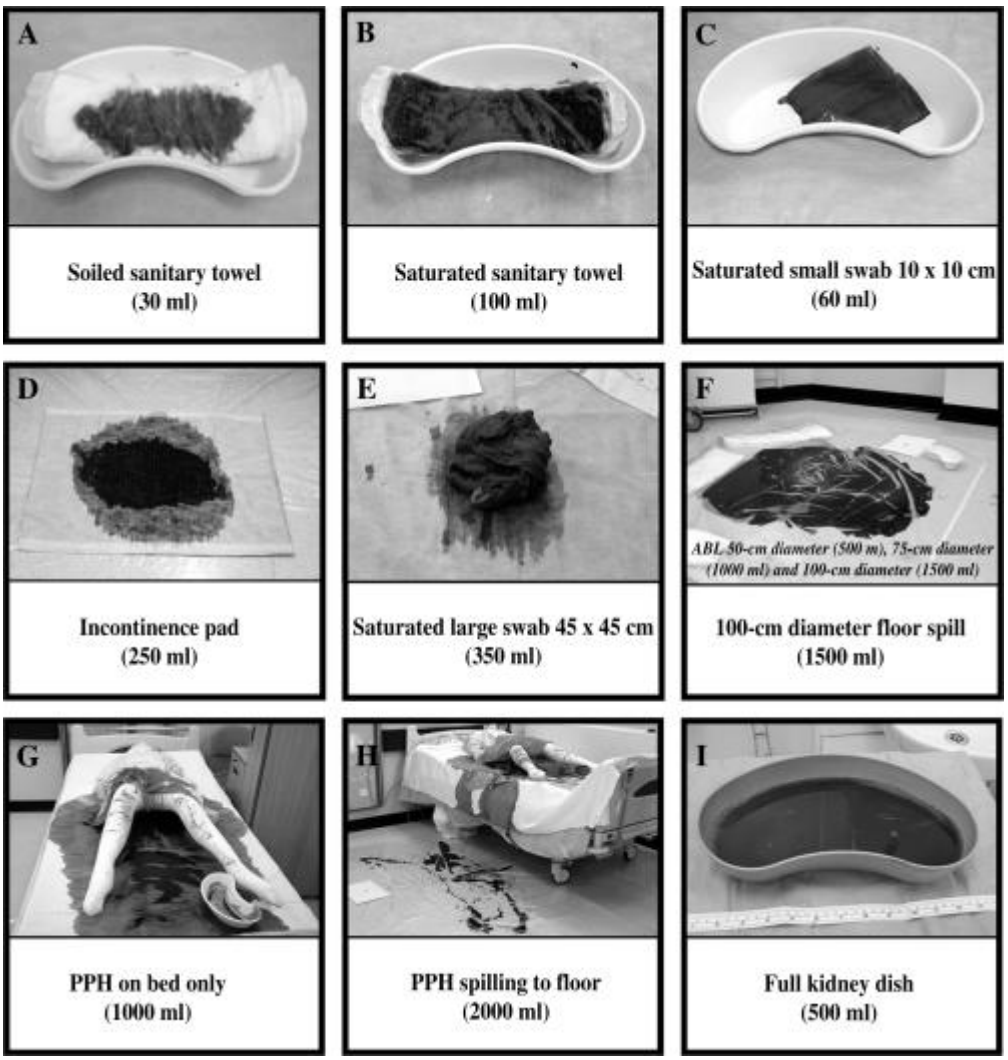
- Aortic compression
- Intrauterine tamponade device (e.g., Bakri balloon®)
- Uterine brace sutures
- Interventional radiology
- Hysterectomy

Point of care testing to guide blood product and fluid resuscitation

- Thromboelastography (TEG®) *-or-* rotational thromboelastometry (ROTEM®) *-and-* blood gas

Do not be reassured by normal Hb before adequate fluid resuscitation

Appendix 3: Pictorial guidelines to facilitate visual estimation of blood loss at obstetric haemorrhage.



Appendix 4: Dry weights to aid more accurate measurement of blood loss.

Swabs, pads and drapes	Dry weight
Small swab	12g
Large swab	45g
Inco pad (60 x 60cm)	32g
Large inco pad (60 x 90cm)	50g
Sanitary towel	27g
Maternity sanitary towel	42g
Under buttock drape	230g
Theatre sterile drape	44g

Appendix 5: Guide for Bakri balloon insertion and removal

Bakri®

POSTPARTUM BALLOON WITH RAPID INSTILLATION COMPONENTS

Tamponade technique for postpartum hemorrhage

Refer to the Instructions for Use for complete information on product usage and a complete list of precautions, warnings, and contraindications.

1 Confirm before placement.

Confirm that these statements are true:

- The uterus is free of placental fragments.
- The genital tract has no trauma or lacerations.
- The source of the bleeding is not arterial.
- Patient does not present with any contraindications for use of this device.

2 Determine the uterine cavity's volume.

- For transvaginal placement, determine uterine volume by direct examination or ultrasound examination. For transabdominal placement, determine uterine volume by direct examination.
- Place the predetermined volume of sterile fluid in a separate container.
- If you will use the rapid instillation components, note the predetermined volume for rapid instillation.
- The maximum balloon volume is 500 mL.

3 Place the balloon.

Transvaginal placement, postvaginal delivery (Fig. 1)

- Insert the balloon portion of the catheter into the uterus, making certain that the entire balloon is inserted past the cervical canal and internal ostium.

Transabdominal placement, postcesarean delivery (Fig. 2)

- Pass the uninflated balloon, inflation port first, through the cesarean incision and into the uterus and cervix. Remove the stopcock to aid in placement and reattach prior to filling the balloon.
- Have an assistant pull the balloon shaft through the vaginal canal until the base of the balloon contacts the internal cervical ostium.
- Close the incision, being careful not to puncture the uninflated balloon while suturing.

4 Fill the balloon with sterile liquid.

- **Never inflate with air, carbon dioxide, or any other gas.**
- **Do not fill with more than 500 mL. Overinflation may result in the balloon being displaced into the vagina.**
- **Ensure that all product components are intact and that the hysterotomy is securely sutured prior to balloon inflation.**

- Place a Foley catheter in the patient's bladder to collect urine and monitor urine output.
- Use the enclosed syringe or rapid instillation components to fill the balloon to the predetermined volume through the stopcock.
- If desired, apply traction to the balloon's shaft. In order to maintain tension, secure the balloon shaft to the patient's leg or attach to a weight, not to exceed 500 grams. Note: To prevent displacement of the balloon into the vagina, counterpressure can be applied by packing the vaginal canal with iodine- or antibiotic-soaked gauze.
- **Use ultrasound to confirm that the balloon is properly placed.**

5 Flush the lumen and monitor hemostasis.

- Connect the drainage port to a fluid collection bag to monitor hemostasis.
- The balloon drainage port and tubing may be flushed clear of clots with sterile isotonic saline to facilitate monitoring.
- Monitor the patient for signs of increased bleeding and uterine cramping.

6 Remove the balloon.

- **Maximum indwelling time: 24 hours.**
- **The attending clinician determines when the balloon is removed after bleeding is controlled and the patient is stable.**

- Release the tension on the shaft and remove any vaginal packing.
- Aspirate balloon contents until the balloon is completely empty. The fluid may be removed incrementally to allow for periodic observation of the patient. In an emergency, the shaft may be cut to rapidly deflate the balloon.
- Gently retract the balloon and discard it.
- Monitor the patient for signs of bleeding.

Illustrations for placing the Bakri balloon (step 3)

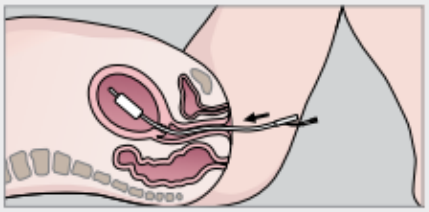


Fig. 1: Transvaginal placement, postvaginal delivery

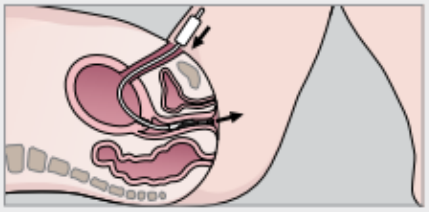
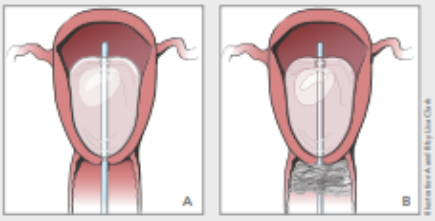


Fig. 2: Transabdominal placement, postcesarean delivery

Proper placement



- Make sure that the entire balloon is inserted past the cervical canal and internal ostium.
- After the balloon is inflated to the predetermined volume, use ultrasound to confirm that it is properly placed.
- If necessary, pack the vagina with iodine- or antibiotic-soaked gauze.
- Do not extend the packing into the uterus.

CONTRAINDICATIONS

- Arterial bleeding requiring surgical exploration or angiographic embolization
- Cases indicating hysterectomy
- Pregnancy
- Cervical cancer
- Purulent infections in the vagina, cervix, or uterus
- Untreated uterine anomaly
- Disseminated intravascular coagulation
- A surgical site that would prohibit the device from effectively controlling bleeding

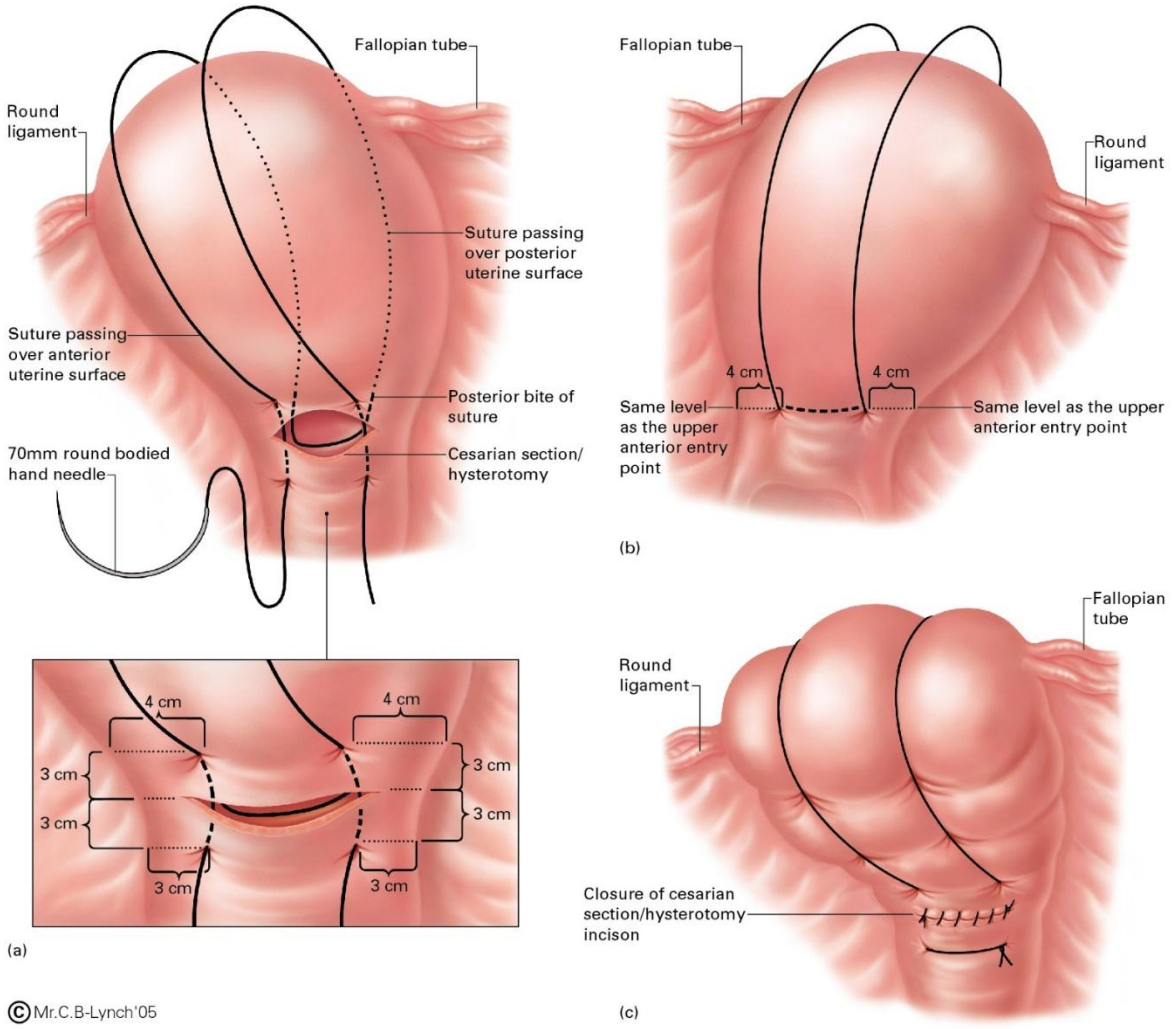
WARNINGS

- This device is intended as a temporary means of establishing hemostasis in cases indicating conservative management of postpartum uterine bleeding.
- The Bakri Postpartum Balloon is indicated for use in the event of primary postpartum hemorrhage within 24 hours of delivery.
- The device should not be left indwelling for more than 24 hours.
- The balloon should be inflated with a sterile liquid such as sterile water, sterile saline, or lactated Ringer's solution. The balloon should never be inflated with air, carbon dioxide, or any other gas.
- The maximum inflation is 500 mL. Do not overinflate the balloon. Overinflation of the balloon may result in the balloon being displaced into the vagina.
- Patients in whom this device is being used should be closely monitored for signs of worsening bleeding and/or disseminated intravascular coagulation (DIC). In such cases, emergency intervention per hospital protocol should be followed.
- There are no clinical data to support the use of this device in the presence of DIC.
- Patient monitoring is an integral part of managing postpartum hemorrhage. Signs of a deteriorating or unimproving condition should lead to a more aggressive treatment and management of the patient's uterine bleeding.
- The patient's urine output should be monitored while the Bakri Postpartum Balloon is in use.

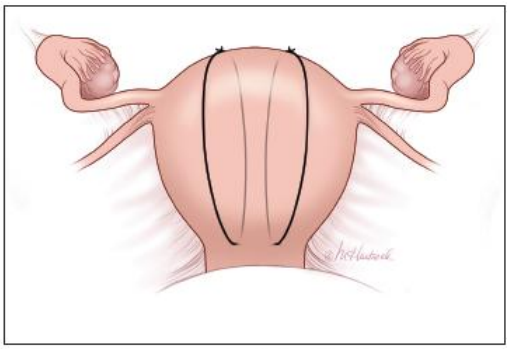
PRECAUTIONS

- Avoid excessive force when inserting the balloon into the uterus.
- This product is intended for use by physicians trained and experienced in obstetrics and gynecological techniques.

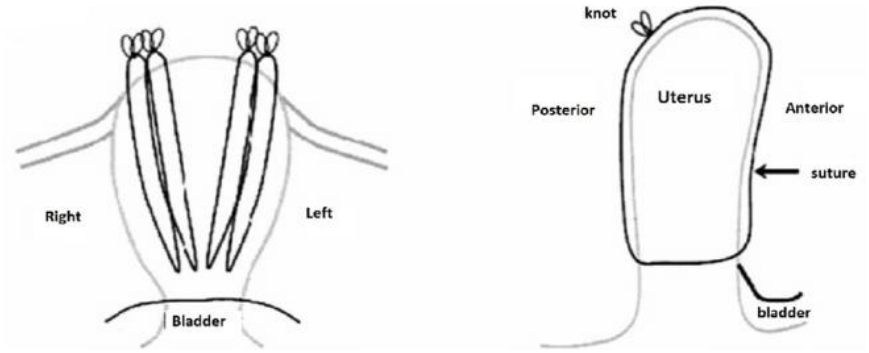
Appendix 6: B Lynch uterine compression suture visual guide



Appendix 7: Modified B Lynch (Hayman) uterine compression suture visual guide



The Hayman suture passes directly from the anterior uterine wall through the posterior uterine wall. Two to four longitudinal sutures can be placed. Two longitudinal sutures are pictured in this figure. A transverse cervicoisthmic suture also can be placed, if needed, to control bleeding from the lower uterine segment.



Appendix 8: Pictorial guide – stepwise uterine devascularisation

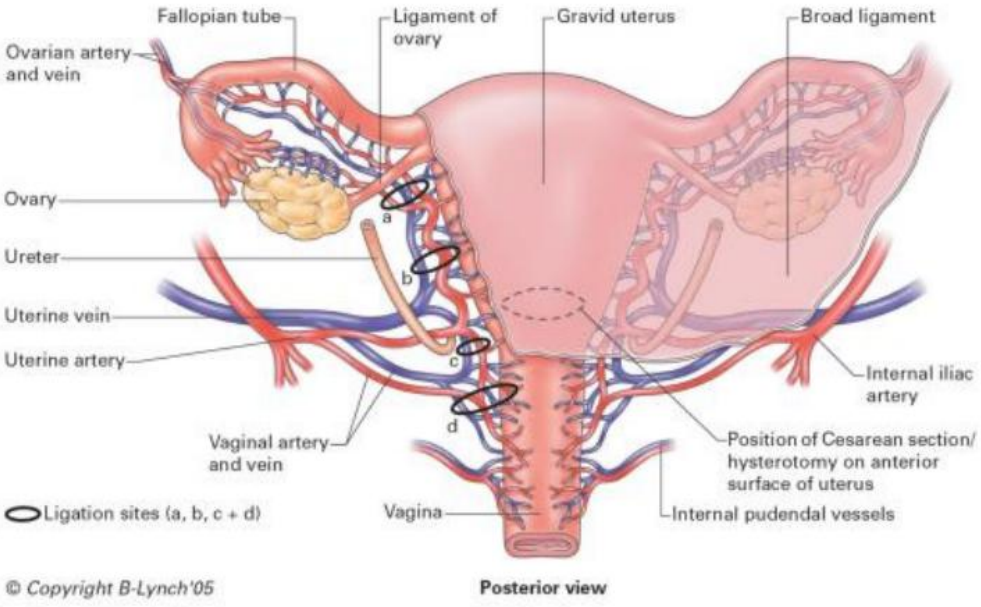
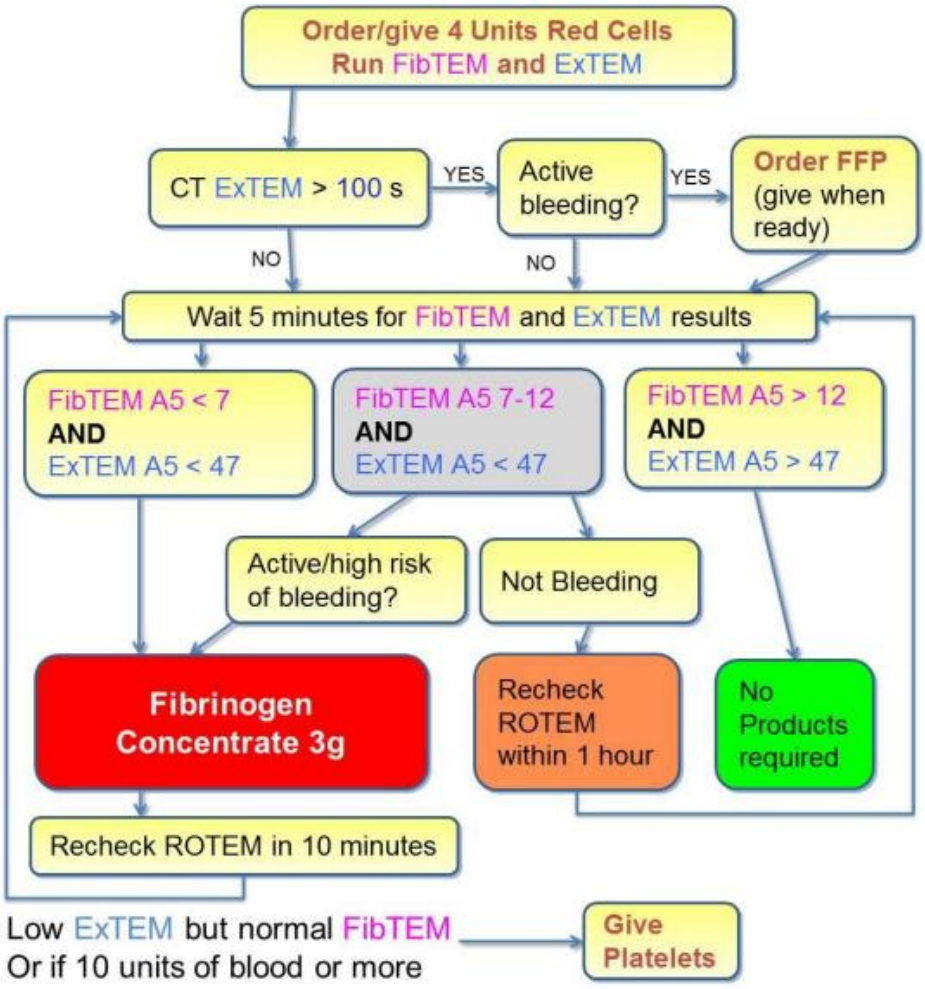


Figure 7 Placement of ligatures in the process of stepwise devascularization, including ligature of the descending uterine and vaginal arteries

Appendix 9: ROTEM Algorithm for major obstetric haemorrhage



***On agreement between Consultant Anaesthetist and Obstetrician**

NB Always base treatment upon clinical scenario

Appendix 10. 2025 National Patient Safety Alert

National Patient Safety Alert | RCOA Royal College of Anaesthetists | Royal College of Midwives | Royal College of Obstetricians & Gynaecologists | NHS

Risk of oxytocin overdose during labour and childbirth

Date of issue:	24 September 2024	Reference no:	NatPSA/2024/010/NHSPS

This alert is for action by: Organisations providing maternity services.

This is a safety critical and complex National Patient Safety Alert. Implementation should be co-ordinated by an executive lead (or equivalent role in organisations without executive boards) and supported by clinical leads in maternity, anaesthetics, theatres, and pharmacy.

Explanation of identified safety issue:

Oxytocin can be given in low dose infusions to induce labour or to augment contractions during labour (intrapartum), and in significantly higher doses following birth (postpartum) to manage a postpartum haemorrhage (PPH).

Midwives need to complete several tasks immediately and simultaneously following birth to ensure the safety of both the mother and baby. To support this, postpartum oxytocin infusions have been prepared in advance of being required.

If a pre-prepared oxytocin infusion is unintentionally given before the baby is born, for example if it is confused with standard fluids or the intrapartum and postpartum infusions are confused, the woman's contractions will increase in frequency and strength. This can lower the baby's oxygen levels and alter their heart rate, increasing the risk of placental abruption (where the placenta prematurely separates from the uterus and deprives the baby of oxygen).

A review of the National Reporting and Learning Systems over a 5 year period identified 25 incidents including one report of a woman receiving a pre-prepared postpartum oxytocin infusion in place of IV fluids while in labour. The baby's heart rate slowed, and the woman required an emergency caesarean section due to a placental abruption. The baby was born in poor condition and admitted to the neonatal intensive care unit (NICU) for close monitoring.

Other reports described:

- postpartum oxytocin regimens accidentally given during labour or in theatre pre caesarean section
- oxytocin infusions and IV fluids being confused, leading to oxytocin infusions running through freely or at a significantly increased rate during labour.

This alert seeks to balance the benefit of ensuring an oxytocin infusion can be started immediately after a woman (at high-risk of PPH) has given birth and mitigate the risk of preparing the oxytocin infusion in advance.

Actions required

Actions to be completed as soon as possible but no later than 31 March 2025

Review and update local clinical procedures (or equivalent documents) to ensure:

1. Oxytocin infusions for any indication are **not** pre-prepared at ward level in any clinical area (including delivery suites and theatres). NOTES A, B, C
2. Post-partum haemorrhage (PPH) kits/ trolleys are immediately available in all clinical areas/theatres where it may be required. NOTE D
3. Where a woman is identified to be at high risk of PPH:
   a. the PPH kit/trolley should be brought into the labour/delivery room/theatre during the second stage of labour
   b. the postpartum oxytocin infusion should be prepared at the time of birth and not before NOTE E
   c. a second midwife should be available to support the administration of the postpartum oxytocin infusion.
4. Roles and responsibilities of staff groups in the labour setting, including theatres, are clearly defined in terms of prescribing, preparation, administration and disposal of oxytocin infusions. NOTE F

   Including:

   - intrapartum oxytocin infusions
   - postpartum oxytocin infusions
   - unused, pre-prepared oxytocin infusions.

For further detail, resources and supporting materials see: https://www.england.nhs.uk/2024/09/national-patient-safety-alert-risk-of-oxytocin-overdose-during-labour-and-childbirth/. For any enquiries about this alert contact: patientsafety.enquiries@nhs.net 1/2

Failure to take the actions required under this National Patient Safety Alert may lead to CQC taking regulatory action

Additional information:

NOTES

A. Oxytocin can also be administered as a bolus injection. The alert does not impact on this method of administration.[1]

B. Preferably, ready-to-administer oxytocin infusions should be available to further reduce the associated risks. Pharmacy services have been asked to consider producing oxytocin infusions and supplying these in a sealed, clearly labelled bag. If such products are used, they should remain sealed and stored outside of the delivery room/theatre until time of birth. Organisations should discuss this option with their pharmacy department or alternatively seek to buy ready-to-administer infusions from a commercial manufacturer.

C. Consideration should be given to the use of carbetocin[2] as this is given by bolus injection and negates the need to prepare an infusion.

D. Current best practice recommends all maternity units should have a PPH emergency kit/trolley.[3,4] The kit/trolley should contain all consumables, treatment algorithms and medication (where possible) and should be checked regularly. The PPH kit/trolley does not necessarily have to be in each delivery room, but should be immediately available. Work is ongoing to standardise PPH kits/trolleys.[5]

E. Organisational medicines policies must reflect good labelling guidance, including the need for visible and consistent labelling of all infusions to clearly differentiate all those being administered.

F. It is not always possible to specify roles and responsibilities for every clinical scenario, especially when oxytocin may be administered in an emergency. However, local clinical procedures should clearly articulate roles and responsibilities in planned situations and in complex situations where there are handovers of care, for example if the woman is transferred to theatre and within the theatre environment.

Patient safety incident data

The NRLS and StEIS were searched on two separate occasions using a combination of keywords to identify relevant incidents (ref: 5255/5431). Incidents were thematically reviewed and the combined searches over a five year period identified a total of 25 incidents in which oxytocin infusions were administered in error during labour or postpartum, leading to oxytocin overdose. In all incidents staff recognised the error and acted rapidly to prevent more serious consequences, for example death or brain damage. Identified concerns/themes included:

- oxytocin infused at too high a rate due to confusion between oxytocin in 500mL or 1000mL bags and IV fluids, or confusion between IV lines running simultaneously for oxytocin and IV fluids
- pre-prepared postpartum oxytocin infusion readily available in the labour room and in theatre, increasing the risk of it being administered at the wrong time.

Two national reports[6,7] highlight the potential significant risk to babies following oxytocin overdose if there are issues with interpretation of their fetal heart rate and timely escalation of concerns.

References

1. Royal College of Obstetricians and Gynaecologists. Prevention and management of postpartum haemorrhage (Green-top Guideline No. 52). December 2016.
2. Day A, Barclay P, Page L. Is there a role for carbetocin in the prophylaxis of postpartum obstetric haemorrhage? Drug Ther Bull 2022;60(9):136-140.
3. PROMPT Maternity Foundation. Practical obstetric multi-professional training.
4. WHO Recommendations on the assessment of postpartum blood loss and use of treatment bundle for postpartum haemorrhage. 2023
5. Woodward M, Ansari A, Draycott T, et al. Characterising and describing postpartum haemorrhage emergency kits in context: a protocol for a mixed-methods study. BMJ Open 2021;11:e044310.
6. NHS Resolution. Five years of cerebral palsy claims. 2017.
7. Royal College of Obstetricians and Gynaecologists. Each Baby Counts 2020 final progress report.
8. Specialist Pharmacy Service. Managing risks associated with oxytocin infusions during labour.

Stakeholder engagement

- Royal College of Obstetricians & Gynaecologists
- Royal College of Anaesthetists
- Specialist Pharmacy Service
- NHS England Chief Midwifery Officer
- The Royal College of Midwives
- Obstetric Anaesthetists' Association
- National Clinical Director (Maternity)
- National Patient Safety Response Advisory Panel

Advice for Central Alerting System (CAS) officers and risk managers

This is a safety critical and complex National Patient Safety Alert. In response to CHT/2019/001 your organisation should have developed new processes to ensure appropriate oversight and co-ordination of all NatPSAs. CAS officers should send this Alert to the executive lead nominated in their new process to coordinate implementation of safety critical and complex National Patient Safety Alerts, copying in the leads identified on page 1.

Appendix 11. Staff roles and responsibilities when attending a PPH

Staff have a personal responsibility to ensure that they are familiar with the guidelines and know their respective roles (see National Patient Safety Alert 2025, appendix 10).

- Doctors: decision making, discussion, planning and providing care including prescribing and administering medication.
- Midwives: recognition, decision making, intrapartum and postpartum care including administration of prescribed medication and disposal of unused infusions/medication.

Obstetric Consultant	The Obstetric Consultant has overall clinical responsibility for the management of women with PPH. The consultant should ensure effective communication between medical personnel and the woman/family.
Consultant Anaesthetist	The Consultant Anaesthetist should be aware and available to assist at the request of obstetric staff in all cases of PPH
Labour Ward Shift Leader / Coordinator	Has responsibility to coordinate the management and communication between obstetric staff, anaesthetists, transfusion services /Haematologists, blood couriers and identified scribe.
Midwives	Should assist the team in the management of women with PPH and liaise with the woman/family
Scribe (Midwife/HCA)	Is responsible for documenting all events and management decisions as they occur, including fluids, drugs, blood and components transfused, and vital signs
Haematologist / Blood Transfusion services	Should have continuous communication with the labour ward shift leader/coordinator, clinical lead or delegated individual to ensure adequate resources are available as required.
Blood Courier	Are responsible for the expedited collection and delivery of blood samples for transfusion

Appendix 12: Management of PPH at home

Once PPH has been confirmed, it is important to act quickly, simultaneously managing the patient and summoning help. Community midwifes have limited resources for managing PPH in the home, therefore summoning an ambulance and transferring into hospital as soon as possible is imperative. At this point in a homebirth there will usually be two midwives in attendance.

- ABC and call for help
- **Simultaneously**
- Call 999 requesting an immediate ambulance transfer (Category 1, RED) for life threatening condition
- Attempt to cannulate with biggest bore canula available and take bloods for FBC cross match and coagulation screen
- Commence IV fluid resuscitation, giving 1 litre of Hartman's fluid stat
- Perform observations and chart on MEOWS chart
- Provide oxygen therapy at 15L/min via mask

In PPH

- Tone: **massage** the uterus to rub up a contraction. 70% of PPH are caused by atony of the uterus
- If **oxytocin** has not already been given, give first dose of oxytocin 10 IU IM or slow iv over 2 minutes (this can be repeated once) and attempt to deliver the placenta by CCT after signs of separation
- Give **ergometrine** 500 micrograms IM if not hypertensive
- Ensure bladder is empty, **insert Foley's catheter** and monitor urine output hourly
- Perform **bi-manual compression** if uterus remains atonic
- Assess for other causes of bleeding such as **Trauma** to genital tract and repair if able and retained **Tissue**- examine placenta (if delivered to determine if potential missing lobes) expel blood clots from uterus
- Once the ambulance is in attendance, give **Tranexamic acid** (1g slow iv)

General care

- Keep patient warm
- Transfer as soon as possible with midwife attending in ambulance (ask birth partner to follow on with baby, as it is unlikely baby will be able to transfer in ambulance with mum)
- Estimate (or weigh) blood loss and blood lost in transit to consultant led unit
- Document all above actions with times, as soon after event as possible. Including time left patient's home and arrival time at hospital
- Inform co-ordinating midwife at receiving consultant site of imminent arrival, where possible giving an SBAR handover
- Debrief family once bleeding is under control

8 Details of other relevant or associated documents

RCOG consultant presence document
OAA guidance
North West Trust Guidelines – Liverpool Women's, Countess of Chester, Warrington & Halton, Morecambe Bay

9 Supporting references & national guidance

NICE Guidelines
RCOG Green-Top guidance

10 Definitions / glossary

Included within the text above.

11 Consultation with Stakeholders

The Guideline has been through consultation and ratification at the Regional Guideline Steering Group which has SUV representation

12 Equality Impact Assessment

Section 1: Equality Impact Assessment (EIA) Form

The EIA process allows the group to identify where a policy or service may have a negative impact on an individual or particular group of people.

Information Category	Detailed Information
Name of the strategy / policy / proposal / service function to be assessed:	Full title and version number
Directorate and service area:	Department/Speciality and Care Group or Corporate Group
Is this a new or existing Policy?	New / Existing – delete as appropriate
Name of individual completing EIA (Should be completed by an individual with a good understanding of the Service/Policy):	Name and Job Title
Contact details:	Number in full, not extension only

Information Category	Detailed Information
1. Policy Aim - Who is the Policy aimed at? (The Policy is the Strategy, Policy, Proposal or Service Change to be assessed)	
2. Policy Objectives	
3. Policy Intended Outcomes	
4. How will you measure each outcome?	
5. Who is intended to benefit from the policy?	
6a. Who did you consult with? (Please select Yes or No for each category)	• Workforce: Choose an item. • Patients/ visitors: Choose an item. • Local groups/ system partners: Choose an item. • External organisations: Choose an item. • Other: Choose an item.
6b. Please list the individuals/groups who have been consulted about this policy.	**Please record specific names of individuals/ groups:**
6c. What was the outcome of the consultation?	
6d. Have you used any of the following to assist your assessment?	**National or local statistics, audits, activity reports, process maps, complaints, staff, or patient surveys:**

7. The Impact
Following consultation with key groups, has a negative impact been identified for any protected characteristic? Please note that a rationale is required for each one.

Where a negative impact is identified without rationale, the key groups will need to be consulted again.

Protected Characteristic	(Yes or No)	Rationale
Age	Choose.	
Sex (male or female)	Choose.	
Gender reassignment (Transgender, non-binary, gender fluid etc.)	Choose.	

Protected Characteristic	(Yes or No)	Rationale
Race	Choose.	
Disability (e.g. physical or cognitive impairment, mental health, long term conditions etc.)	Choose.	
Religion or belief	Choose.	
Marriage and civil partnership	Choose.	
Pregnancy and maternity	Choose.	
Sexual orientation (e.g. gay, straight, bisexual, lesbian etc.)	Choose.	

A robust rationale must be in place for all protected characteristics. If a negative impact has been identified, please complete section 2. If no negative impact has been identified and if this is not a major service change, you can end the assessment here.

I am confident that section 2 of this EIA does not need completing as there are no highlighted risks of negative impact occurring because of this policy.

Name of person confirming result of initial impact assessment: Name to be included here.

.....