Postpartum Haemorrhage – Prevention and Management
Full Clinical Guideline

Reference no.: UHDB/OBST/04:23/H6

Contents

1. Introduction

Post partum haemorrhage is the most common form of obstetric haemorrhage and can be life threatening and unexpected. Blood loss may be significant and is not always apparent externally. Obstetric Haemorrhage is the second leading cause of direct maternal deaths in the UK and Ireland. Major obstetric haemorrhage results in severe morbidity and therefore its impact should not be underestimated.

2. Purpose and Outcomes

Successful outcome depends on prompt recognition and action. Risk assessment for PPH should be carried out continuously during the peripartum period and plans modified according to changing risk. The multidisciplinary team should respond promptly to any woman experiencing a PPH, and follow recognised national guidelines to aid treatment.

3. Abbreviations

AFE - Amniotic Fluid Embolism
ANC - Antenatal Clinic
APH - Antepartum Haemorrhage
BMS - Biomedical Scientist

BP	-	Blood Pressure
CRP	-	C-Reactive Protein
CVA	-	Cerebrovascular Accident
CVP	-	Central Venous Pressure
DIC	-	Disseminated Intravascular Coagulation
ECG	-	Electrocardiograph
ERPC	-	Evacuation of Retained Products of Conception
FBC	-	Full Blood Count
FFP	-	Fresh Frozen Plasma
Hb	-	Haemoglobin
HDU	-	High Dependency Unit
ICU	-	Intensive Care Unit
IM	-	Intramuscular
IMM	-	Intramyometrial
INR	-	International Normalised Ratio
IR	-	Interventional Radiology
IU	-	International Units
IV	-	Intravenous
KCCT	-	Kaolin Cephalin Clotting Time
LFT	-	Liver Function Test
LSCS	-	Lower Segment Caesarean Section
MOEWS	-	Modified Early Warning Score
NIBP	-	Non-invasive Blood Pressure
ODP	-	Operating Department Practitioner
PE	-	Pumonary Embolism
PPH	-	Post Partum Haemorrhage
PT	-	Prothrombin Time
PVD	-	Peripheral Vascular Disease
rFVIIa	-	Recombinant Factor 7a
Rh	-	Rhesus (group)
RDH	-	Royal Derby Hospital
ROM	-	Rupture of Membranes
U&E	-	Urea & Electrolytes
USS	-	Ultrasound Scan

4. Definitions

Primary postpartum haemorrhage:

Blood loss of ≥500ml from the genital tract within the first 24hours following birth.

Minor PPH: 500 – 1000ml

Major PPH: >1000ml (moderate 1001-2000ml and severe >2000ml)

Note however that blood loss is less tolerated by women with low haemoglobin concentrations, small body frames <60kg (low blood volume) and in women with other medical comorbidities. Major obstetric haemorrhage should be declared when blood loss reaches 1500ml or there is ongoing clinical concern.

Healthy pregnant women initially compensate well during haemorrage therefore initial observations may be falsely reassuring.

Secondary postpartum haemorrhage:

Abnormal or excessive bleeding from the birth canal between 24 hours and 12 weeks postnatally.

5. Causes of post partum haemorrhage

80% of post partum haemorrhage is caused by uterine atony. Other causes include trauma and injury to the genital tract, retained placental tissue and coagulopathies (inherited or acquired). There has also been a recent increase in the incidence of morbidly adherent placental disease (see separate guideline).

6. Risk Assessment

ANTENATAL RISK

Standard risk assessment should take place when any woman presents antenatally.

Patients at increased risk of / from PPH include those with:

- Anaemia or bleeding disorder (Hb<95, plt <100)
- BMI <18 or >35, or booking weight <55kg
- >5 previous vaginal births
- Previous uterine surgery
- Previous PPH >1 litre
- Multiple pregnancy or estimated fetal weight >4.5kg
- Abnormal placental implantation
- Polyhydramnios
- Known abruption or antepartum haemorrhage
-

If a woman is identified as being at increased risk, the following actions should be undertaken:

- Consultant led care
- Proactive management of antenatal anaemia (see guideline)
- Care according to placenta accreta / percreta guideline if appropriate
- IV access (16G) sited early on admission
- Discussion with blood bank regarding eligibility for electronic issue of blood
- If not suitable for electronic issue, for 2 or 4 unit crossmatch urgently.

INTRAPARTUM RISK

Risk assessment should be completed as above when any woman presents in labour, for induction of for an elective LSCS. This should be done by completing the PPH proforma on all women at the soonest opportunity.

Assessment should include documentation of post recent haemaglobin and platelet count.

Risk should be continuously reassessed and documented throughout labour.

In addition to those identified antenatally, women with the following are at increased risk of post partum haemorrhage:

- Suspicion of chorioamnionitis / sepsis
- Labour augmented with syntocinon
- Prolonged labour
- Instrumental delivery
- Retained products of conception

Women with known risk factors for PPH:

- Should only be delivered on CLC labour ward
- Should have a clear management plan documented to include the following considerations:
    - Active 3rd stage of labour (recommended)
    - Early IV access
    - Cross match if applicable (in presence of antibodies: 2 units)

Click here for care in labour guideline

POST PARTUM RISK

Those women identified as being high risk of PPH in the postpartum period should be reviewed by the senior multidisciplinary team, with appropriate monitoring and escalation plans clearly documented and communicated.

7. Initial Management of Primary PPH

- Resuscitation, monitoring, investigation and treatment should occur simultaneously.
- Early IV access (16G x2) if not already in situ
- 10-15L/min oxygen via non rebreathe mask
- Clinicians should be aware that the visual estimation of peripartum blood loss is inaccurate and therefore:
    - Blood loss should be weighed with measured cumulative loss calculated to guide management and escalation
    - Clinical signs and symptoms should be included in the assessment of a PPH

The team leader (midwife in charge) is responsible that the following are informed when appropriate;

- Theatre Team
- Consultant Obstetrician
- Consultant Anaesthetist
- Blood Bank (haematology BMS) and possibly Haematology Consultant (See Trust Guideline: Massive Haemorrhage links below)

click here for QHB blood transfusion - massive haemorrhage guidelines

click here for RDH massive haemorrhage guideline

AT >500ml ONGOING LOSS:	
Call for help Notify midwife in charge to cascade information	
Measure cumulative blood loss	
Record observations every 10 mins on MEOWS chart	
Consider cause of bleeding (tone / trauma / tissue / thrombin)	
Treatment:	Uterine massage Give uterotonics Inspect genital tract Empty bladder Check placenta and membranes Bimanual compression
AT >1000ml loss / ongoing clinical concerns / abnormal vital signs	
Ensure MDT help present	
Measure and record cumulative blood loss	
Measure and record maternal observations every 5 mins on MEOWs chart	
2nd IV access sited	
Take bloods - FBC, U&E, coag, fibrinogen, Xmatch, venous lactate, *ROTEM	
Review uterotonics	
Give 1g IV tranexamic acid	
Bimanual compression	
Consider PPI	
Insert urinary catheter and empty bladder	
AT >1500ml loss or ongoing clinical concern - move to theatre	
Communicate current loss to MDT	
Activate MOH protocol	
Inform obstetric and anaesthetic Consultants	
Order blood and coagulation products as per MOH and *ROTEM protocol	
Consider repeat tranexamic acid	
Consider advanced surgical techniques	

* NOTE: implementation of ROTEM is part of a QI project and is not expected to be used in all cases (cases where ROTEM is not available) until fully embedded.

7.1.1. Uterotonics

- Syntocinon 5 units IV or 10 units IM (care in women with known cardiac disease)
- Syntometrine® 1 ml IM (if not already administered as part of active 3rd stage) - caution in women with hypertensive disorders / PET / cardiac disease.
- 40 units Syntocinon in 40ml normal saline at 10mls/hr IV

If above not available (eg Home birth/ SJCH): consider repeat syntometrine or Ergometrine 500mcg IM to stabilise prior to transport to hospital

Pharmaceutical interventions

- Carboprost (Hemabate) *250mcg IM repeated every 15mins up to 2mg (8 doses). Avoid Carboprost in patients with severe asthma, and other pulmonary, cardiovascular, renal or hepatic disorders.*

- Misoprostol 800 micrograms PV/ Sublingual or PR

7.1.2. Surgical interventions

- Intrauterine balloon tamponade (Appendix C)
- The brace (B-Lynch) suture technique, especially for PPH at Caesarean section is described in Appendix D
- Consider:
    - uterine packing,
    - ligation,
    - balloon occlusion,
    - embolisation of uterine or internal iliac arteries
- Total or subtotal hysterectomy

7.2. Care Post Primary PPH

Women should have care provided in the location felt clinically appropriate by the MDT (labour suite, labour suite HDU or ICU).

Any woman with an estimated blood loss >1500ml should receive a minimum of 6 hours enhanced maternity care on delivery suite.

Bloods should be checked 6 hours post delivery, unless clinically indicated sooner. An FBC should then be re-checked at 24-48 hours post delivery.

VTE prophylaxis should be reviewed - consider mechanical thromboprophylaxis (flotron boots / TEDS stocking) if not receiving enoxaparin.

Ensure patient, partner and team offered a debrief.

Complete post PPH checklist:

Post PPH checklist
WHO sign out completed if care in theatre?
Have all drugs given been prescribed and signed for?
Is syntocinon infusion running / required?
Vaginal pack in situ?
Bakri balloon in situ?
Can NSAIDs be given?
VTE plan documented?
Level of post event care required?
Post op bloods required? When?
Frequency of observations required?
MOH stood down as appropriate?
Datix form completed?
Patient debriefed?
Staff debriefed?

8. Use of Cell Saver in Obstetrics in RDH (NOT available in Queens Hospital Burton)

The cell saver can be used in unexpected major obstetric haemorrhage (if necessary, with minimal or no discussion with the patient), or in anticipated haemorrhage following discussion and reading of the patient information leaflet.

Click here for UHDB cell saver guidelines

A Rhesus negative woman should have a Kleihauer test one hour after the infusion is complete, to estimate the amount of fetal red cells which have entered the circulation.

click here for Anti-D in pregnancy guidelines

It is most important that someone calls Blood Bank to establish/confirm the Rh D status of ladies receiving salvaged blood , as any RhD negative lady who has a Rh D positive infant must receive a minimum dose of 1500iu anti-D Immunoglobulin following cell salvage.

The ODP will attach a print-out from the cell saver to the patient's medical notes and complete an audit form.

9. Management of Secondary PPH

Initial clinical assessment and resuscitation to occur as per primary PPH guideline.

Full assessment to include:

- Vaginal examination
- Bimanual examination
- Speculum
- HVS and LVS
- Blood tests (CRP; FBC; Group and Save / Cross match depending on degree of blood loss and/or Hb)
- Blood cultures if pyrexial

Additionally to consider:

- USS (senior obstetrician decision only)
- Pelvic USS if late presentation

Consider admission to the most appropriate clinical area/ward

Treatment considerations:

- IV access
- IV antibiotics (Click here for full guideline)
- If heavy bleeding, give 5 units IV or 10 units IM oxytocin (or 500micrograms IM ergometrine), followed by IV Syntocinon 40 units in 500mls normal saline at 125 ml/hour. Continue oxytocic therapy until ERPC is performed).

If ERPC is indicated, unless bleeding is profuse, it is better to delay ERPC until IV antibiotics have been given for 12 – 24 hours

10. Major Obstetric Haemorrhage

Activate the major obstetric haemorrhage protocol for any woman experiencing >1500mls ongoing blood loss or where there is clinical concern.

See MOH guideline in appendix.

11. ROTEM

This is a point of care viscoelastic device which uses whole blood samples to assess coagulation and fibrinolysis.

Perform ROTEM testing when EBL >1000ml

Repeat every 30 mins in ongoing haemorrhage / if clinical concern.

Sample required - blue top coagulation bottle, filled to line.

See protocol published under the main guideline.

NOTE: implementation of ROTEM is part of a QI project and is not expected to be used in all cases (cases where ROTEM is not available) until fully embedded.

12. POWDERED FIBRINOGEN CONCENTRATE

To be used in the management of major obstetric haemorrhage in accordance with the MOH and ROTEM protocols.

Stored in the anaesthetic room cupboards - only to be administered by the anaesthetic team if indicated according to the ROTEM results.

NOTE: implementation of ROTEM is part of a QI project and is not expected to be used in all cases (cases where ROTEM is not available) until fully embedded.

13. Training

All obstetric, midwifery and anaesthetic staff will have annual multidisciplinary training in Major Obstetric Haemorrhage

Live skills drills will include theatre staff and be held on labour ward.

Training record will be recorded, as stated in Training Needs Analysis Guideline Ref: (O4)

14. Monitoring Compliance and Effectiveness

Monitoring requirement:	All major and massive PPH cases to be reviewed on individual basis through DATIX reporting.
Monitoring method:	Continuous reporting form, DATIX and Maternity Dashboard
Report prepared by:	Risk Co-ordinator and Consultant Lead for Risk
Monitoring report sent to:	Maternity Risk Meeting
Frequency of report:	Monthly

15. References

RCOG Green top Guideline No52. Postpartum Haemorrhage, Prevention and Management. Royal College of Gynaecology December 2016.

MBRRACE 2016

ObsCymru 2019

Balloon Tamponade – Rush Balloon Catheter

You will need:

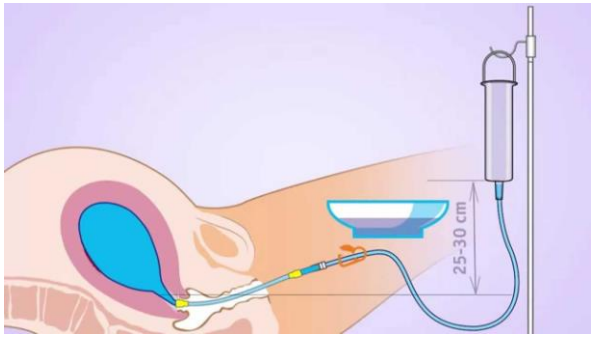
- Rusch catheter
- 50ml ***bladder syringe***
- sterile receiver or jug for saline
- 2x sponge holders (Rampley's)
- 500ml bag of saline, preferably warm for catheter's balloon
- Syntocinon infusion, 40units in 500ml saline

Procedure:

- To be inserted in theatre with appropriate analgesia and aseptic preparation.
- Syntocinon 40 units in 40ml normal saline, running at 10ml/hr.
    - Place patient in lithotomy position
    - Insert in-dwelling Foley catheter to empty bladder
    - Insert Rusch catheter into uterine cavity, using sponge holders
    - Fill catheter balloon (***through drainage port, not Luer port***) with 400 – 500mls of warm saline, using 50ml bladder syringe.
- Apply gentle traction to the catheter to confirm that the balloon is firmly placed within the uterine cavity.
- Little or no bleeding should be seen through the cervix or the lumen of the catheter.
- If bleeding is profuse, further surgical measures are indicated.
- If haemorrhage is controlled, the balloon and catheter should be retained with a vaginal pack
- Start intravenous antibiotics and transfer to Labour Ward HDU. Monitor continuous pulse rate, oxygen saturation, respiratory rate; blood pressure every 5 minutes; hourly urine output, fundal height and vaginal blood loss.
- Continue syntocinon (40units/500ml @ 125 ml/hr) for at least 8 hours to keep the uterus well contracted over the balloon.
- Correct anaemia and/or coagulopathy.

Balloon catheter stays in situ for 24 hours. Place a sticker in the notes to document what is in situ.

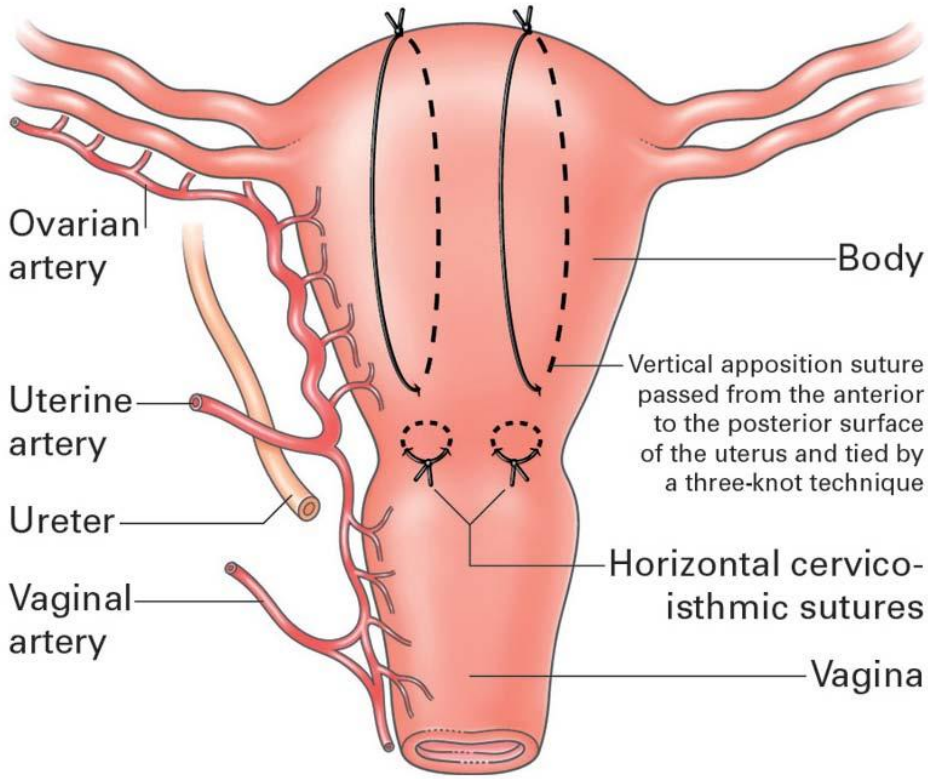
Removal may be done in stages, taking out 250mls, followed by the vaginal pack after 2 hours and the remaining 250mls and the catheter a further 2 hours later. Complete the sticker to document removal.



Brace (B-Lynch) Suture – especially for PPH at caesarean section

Procedure:

1. Place suture (no 2 Vicryl on round-bodied needle),
2. *Close lower segment incision*
3. *Squeeze uterus before tying brace knot*



MOH Protocol QHB

ACTIVATION

Dial 2222 stating major obstetric haemorrhage and location
Nominated person to remain by phone at activating location to communicate patient details with blood bank
Support worker/ porter or other staff member to attend blood bank to collect blood if required

ABCDE assessment
2 x large bore IV access
Consider warmed crystalloid
1g TXA given IV (repeat after 30 mins)
FBC, U&E, LFT, coag, fibrinogen and G&S samples to lab
ABG / VBG
Commence ROTEM

TRANSFUSE blood (guided by clinical condition)

Consider 10ml 10% calcium gluconate / chloride
NB Consider 0 neg if delay in group specific / cross matched blood

Review ROTEM and consider second study – repeat every 30 mins if concern
Give 2nd TXA bolus (if not already given)
FBC, U&E, LFT, coag, fibrinogen and G&S samples to lab
ABG / VBG

TRANSFUSE – blood / FFP guided by clinical condition and ROTEM

If ROTEM available – see ROTEM protocol
If no ROTEM available – continue to be led by clinician
If bleeding ongoing / clinical concern discuss with haematology regarding cryo and platelets
INFORMBLOOD BANK ONCE MOH STOOD DOWN

Activate MOH at:

- 1500ml blood loss
- ongoing losses
- clinical concern

Consider transfer to theatre

Set up:

- Blood warmer
- Level 1 infuser
- Bair hugger

STOP MOMENT / SITREP every 20 mins

- Current loss? Ongoing losses?
- Patient condition
- Ongoing plan
- ? Critical care referral

TRANSFUSION AIMS

- HB > 80G/dL
- Platelets > 75
- Extem CT <75s
- Normal APTT / PT
- Fibtem AS >12mm
- Fibrinogen >2g/dL

Suitab

MOH protocol RDH

ACTIVATION

Dial 2222 stating major obstetric haemorrhage and location
Nominated person to remain by phone at activating location to communicate patient details with blood bank
Support worker to attend blood bank to collect MOH pack 1 and transport to patient

ABCDE assessment
2 x large bore IV access
Consider warmed crystalloid
1g TXA given IV (repeat after 30 mins)
FBC, U&E, LFT, coag, fibrinogen and G&S samples to lab
ABG / VBG
Commence ROTEM

TRANSFUSE (guided by clinical condition)

Pack 1 – 4 units RBC
Consider 10ml 10% calcium gluconate / chloride after pack 1
(Remember 2 units o neg blood in gynae fridge if required)

Review ROTEM and conside second study – repeat every 30 mins if concern
Give 2nd TXA bolus (if not already given)
FBC, U&E, LFT, coag, fibrinogen and G&S samples to lab
ABG / VBG

TRANSFUSE – guided by clinical condition and ROTEM

If ROTEM available – see ROTEM protocol
If no ROTEM available – transfuse pack 2 (4 units RBC and 3 units FFP)
If bleeding ongoing / clinical concern discuss with haematology regarding cryo and platelets
INFORM BLOOD BANK ONCE MOH STOOD DOWN

Activate MOH at:

- 1500ml blood loss
- ongoing losses
- clinical concern

Consider transfer to theatre

Set up:

- Blood warmer
- Level 1 infusor
- Bair hugger
- Cell salvage if appropriate

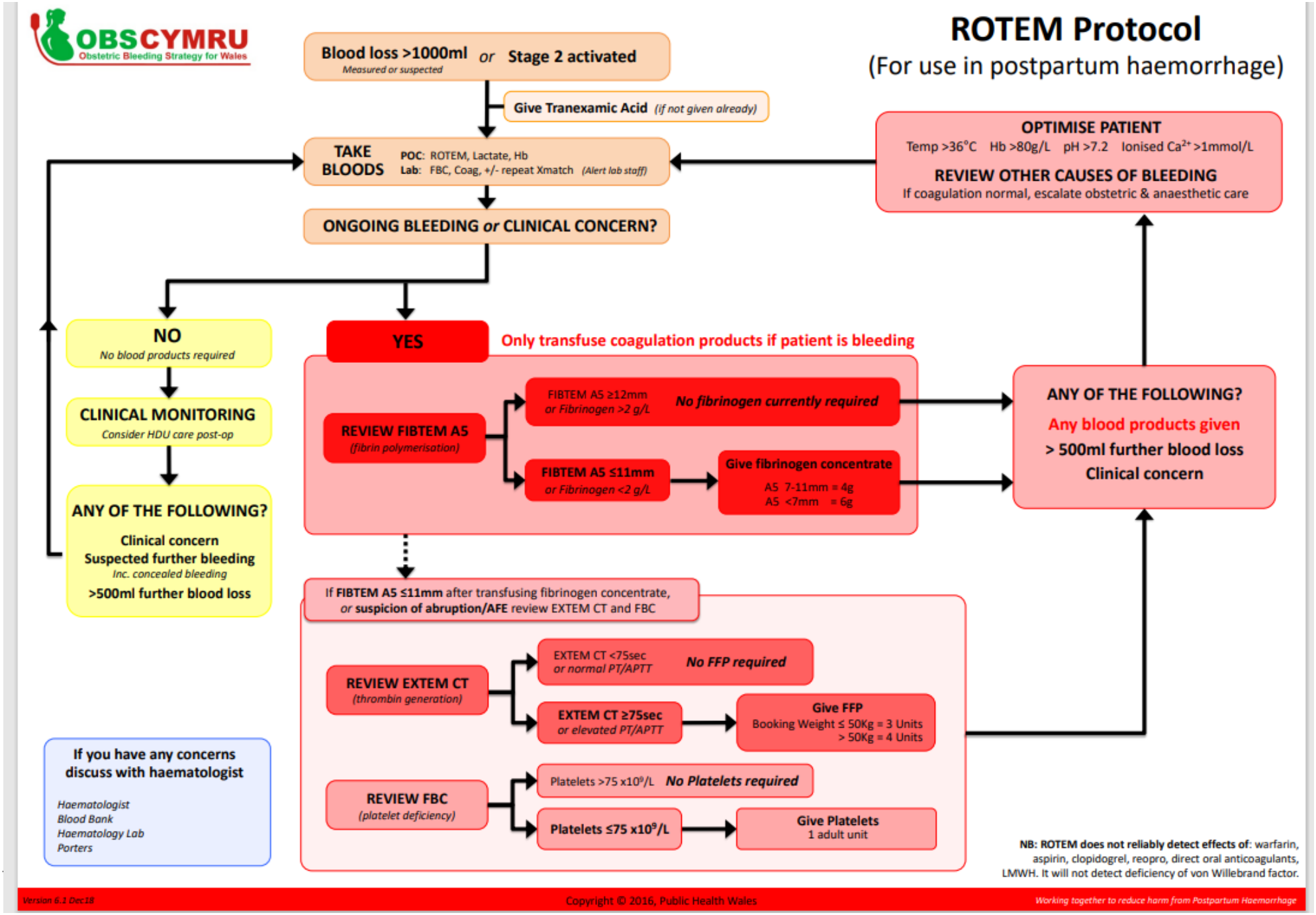
STOP MOMENT / SITREP every 20 mins

- Current loss? Ongoing losses?
- Patient condition
- Ongoing plan
- ? Critical care referral

TRANSFUSION AIMS

- HB > 80G/dL
- Platelets > 75
- Extem CT <75s
- Normal APTT / PT
- Fibtem AS >12mm
- Fibrinogen >2g/dL

uitable


OBSCYMRU
Obstetric Bleeding Strategy for Wales
ROTEM Protocol
(For use in postpartum haemorrhage)
Blood loss >1000ml or Stage 2 activated
Measured or suspected
Give Tranexamic Acid (if not given already)
TAKE BLOODS
POC: ROTEM, Lactate, Hb
Lab: FBC, Coag, +/- repeat Xmatch (Alert lab staff)
ONGOING BLEEDING or CLINICAL CONCERN?
OPTIMISE PATIENT
Temp >36°C Hb >80g/L pH >7.2 Ionised Ca2+ >1mmol/L
REVIEW OTHER CAUSES OF BLEEDING
If coagulation normal, escalate obstetric & anaesthetic care
NO
No blood products required
CLINICAL MONITORING
Consider HDU care post-op
ANY OF THE FOLLOWING?
Clinical concern
Suspected further bleeding
Inc. concealed bleeding
>500ml further blood loss
YES
Only transfuse coagulation products if patient is bleeding
REVIEW FIBTEM A5
(fibrin polymerisation)
FIBTEM A5 ≥12mm
or Fibrinogen >2 g/L
No fibrinogen currently required
FIBTEM A5 ≤11mm
or Fibrinogen <2 g/L
Give fibrinogen concentrate
A5 7-11mm = 4g
A5 <7mm = 6g
ANY OF THE FOLLOWING?
Any blood products given
> 500ml further blood loss
Clinical concern
If FIBTEM A5 ≤11mm after transfusing fibrinogen concentrate,
or suspicion of abruption/AFE review EXTEM CT and FBC
REVIEW EXTEM CT
(thrombin generation)
EXTEM CT <75sec
or normal PT/APTT
No FFP required
EXTEM CT ≥75sec
or elevated PT/APTT
Give FFP
Booking Weight ≤ 50Kg = 3 Units
> 50Kg = 4 Units
REVIEW FBC
(platelet deficiency)
Platelets >75 x10⁹/L
No Platelets required
Platelets ≤75 x10⁹/L
Give Platelets
1 adult unit
If you have any concerns
discuss with haematologist
Haematologist
Blood Bank
Haematology Lab
Porters
NB: ROTEM does not reliably detect effects of: warfarin, aspirin, clopidogrel, reopro, direct oral anticoagulants, LMWH. It will not detect deficiency of von Willebrand factor.
Version 6.1 Dec18
Copyright © 2016, Public Health Wales
Working together to reduce harm from Postpartum Haemorrhage

Suitable

Documentation Control

Reference Number: UHDB/Obst/04:23/H6	**Version:** UHDB 3		**Status: FINAL**	
	Royal Derby prior to merged document:			
Version Amendment	Version	Date	Author	Reason
	1	Nov 2017	Maternity Guideline Group	Previously part of the 'Obstetric Haemorrhage and Transfusion' guideline
	1.1	Oct 2018	Mat Guideline group	Revert back to syntometrine as first line prophylaxis
	Burton Trust prior to merged document:			
WC/OG/01 WC/OG/24 Management of Retained Placenta	13 6	April 2018 Feb 2019	Obstetric lead for labour ward Obstetric Anaesthetic lead Miss Thangavelu – Obstetric Consultant	Amendment to section 2.1, Management of PPH for SJH & Community pending arrival of paramedics or ambulance. Flow chart: add i.v. syntocinon added
Version control for UHDB merged document:				
UHDB	1	June 2021	Miss S Rajendran	Review / merge & implementation of management checklist
	2	Aug 2022	Miss S Rajendran	
	3	Jan 2023	Dr Kathryn James - Anaesthetic Registrar	Review / update and introduction of Rotem
	3.1	Aug 2023	Joanna Harrison - Engwell	Addition of use of PPH proforma
Intended Recipients: All staff with responsibility for caring for women in the case of possible /actual obstetric haemorrhage				
Training and Dissemination: Cascaded through lead midwives/doctors, Published on Intranet, NHS mail circulation list. Article in BU newsletter.				
To be read in conjunction with:				
Consultation with:	Midwifery, Obstetric Staff			
Business Unit sign off:	06/04/2023: Exceptional Guidelines Meeting: Natasha Stringer – Acting HOM			
Divisional sign off:	14-18/04/2023: ACDs Miss S Raouf and Mr R Devaraj MD Mr A Bali DOM G Puckett V3.1 Exceptional ratification - By Sue Whale, Raymond Devaraj 21/08/2023			
Implementation date:	20/04/2023 V3.1			

Review Date:	April 2026
Key Contact:	Joanna Harrison-Engwell