All Wales Guideline

Prevention and Management of Postpartum Haemorrhage

MATERNITY NETWORK WALES

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Introduction and Background

Major severe obstetric haemorrhage is the leading cause of maternal death worldwide, accounting for 27% of all deaths in the most recent WHO review. In the UK, 13 women died from obstetric haemorrhage between 2012 and 2014. It is also a leading cause of serious maternal morbidity, and the incidence is increasing. The recommendations from the most recent MBRRACE report focus on basic clinical skills, with prompt recognition of the severity of a haemorrhage, and emphasise communication and teamwork in the management of PPH.

Purpose and Scope

Primary postpartum haemorrhage (PPH) is the most common form of major obstetric haemorrhage. The traditional definition of primary PPH is the loss of $\geq$ 500 ml of blood after vaginal delivery or $\geq$ 1000ml of blood after caesarean delivery within 24 hours of delivery. PPH can be broken down into stages:

- Stage 1: 500–999 ml
- Stage 2:1000-1499ml
- Stage 3: $\geq$1500mll (major obstetric haemorrhage)

In women with lower body mass (e.g. less than 60 kg), a lower level of blood loss may be clinically significant.

Secondary PPH is defined as abnormal bleeding from the birth canal between 24 hours and 12 weeks postnatally. This guideline includes recommendations for the management of secondary PPH.

Women with pre-existing bleeding disorders and women taking therapeutic anticoagulants are at increased risk of PPH; this guideline does not include specific recommendations for the management of such situations or for managing haemorrhage in women who refuse blood transfusion and in these situations the input of a local haematologist should be sought.

This guideline aims to support health professionals practice in all settings but recognises that some of the recommendations specifically apply to management within hospital settings and may not be suitable for out of hospital births where facilities and resources may require different practices.

Pathophysiology

The total circulating blood volume in late pregnancy increases to 100ml/kg of ideal body weight (around 6 to 7 litres). This combined with increase in coagulation factors provides physiological protection against haemorrhage. Healthy pregnant women can compensate very well during haemorrhage, and therefore initial clinical observations may be falsely reassuring.

Clinical features of shock related to volume of blood loss

Blood Loss	Clinical Features
10% blood loss (700ml if 70kg)	• Mild tachycardia • Normal blood pressure
15% blood loss (1050ml if 70kg)	• Tachycardia (>100bpm) • Hypotension (Systolic blood pressure 90-80 mmHg) • Tachypnoea (Respiratory rate> 20 breaths per minute) • Pallor, sweating • Weakness, faint, thirst
30% blood loss (2100ml if 70kg)	• Rapid, weak pulse (>120bpm) • Moderate hypotension (Systolic blood pressure 80-70mmHg) • Tachypnoea (Respiratory rate> 20 breaths per minute) • Pallor, cold clammy skin • Poor urinary output (<0.5ml/kg/hr) • Restlessness, anxiety, confusion
40% blood loss (2800ml if 70kg)	• Rapid, weak pulse (>140bpm) • Severe hypotension (Systolic blood pressure <70mmHg) • Pallor, cold clammy skin, peripheral cyanosis • Air hunger • Anuria • Confusion, unconsciousness, collapse

Prediction and Prevention of PPH

Risk Assessment

Health professionals must be aware of risk factors for PPH and should take these into account when counselling women about place of birth. Women with known risk factors for PPH should be strongly advised to plan to give birth in a hospital with a blood bank on site. A standard risk assessment should be completed when any woman presents in labour (See Appendix One).

Risk Factors

Risk factors for PPH may present antenatally or intrapartum; care plans must be modified as and when risk factors arise. **It is important to note that most cases of PPH have no identifiable risk factors.**

The four 'T's	Risk factors/ notes
Tone: **abnormalities of uterine contraction**	
Over-distension of uterus	Polyhydramnios, multiple gestation, macrosomia
Intra-amniotic infection	Suspected infection, prolonged rupture of membranes
Functional/anatomical distortion of uterus	Rapid labour, prolonged labour, fibroids, placenta praevia, uterine anomalies
Uterine relaxants	Terbutaline, nifedipine, magnesium, volatile anaesthetic agents, GTN
Bladder distension	May prevent uterine contraction
Tissue: retained products of conception	
Retained cotyledon, succenturiate lobe or membranes	
Abnormal implantation	Previous uterine surgery
Retained blood clots	
Trauma: genital tract injury	
Lacerations of the cervix, vagina or perineum	Precipitous delivery, operative delivery
Extensions, lacerations at caesarean section	Malposition, deep engagement, difficult fetal extraction

Uterine rupture Uterine inversion	Previous uterine surgery High parity with excessive cord traction, abnormally adherent placenta
Thrombin: abnormalities of coagulation **Acquired in pregnancy:** Gestational thrombocytopenia Pre-eclampsia with thrombocytopenia e.g. HELLP Severe infection Abruption Amniotic fluid embolus Rare conditions including Thrombocytic thrombocytopaenica purpura (TTP) and Idiopathic thrombocytopaenica purpura (ITP) **Pre-existing states:** Including inherited clotting disorders (eg Haemophilia A, Von Willebrand's disease). **Therapeutic anticoagulation**	 Pre-eclampsia with abnormal blood profile Fetal demise, maternal sepsis Antepartum haemorrhage, suspicion of concealed bleeding Sudden collapse Variable effect on coagulation History of hereditary coagulopathies or liver disease, bruising and excessive bleeding history including previous PPH History of thromboembolic disease Cardiac valve replacement

Minimising Risk

Treating antenatal anaemia

Antenatal anaemia should be investigated and treated appropriately as this may reduce the morbidity associated with PPH. NICE recommend that all pregnant women should be offered screening for anaemia. Haemoglobin (Hb) levels outside the normal range for pregnancy (110 g/l at first contact and 105 g/l at 28 weeks) should be investigated and iron supplementation considered. Parenteral iron therapy should be considered antenatally for women with iron deficiency anaemia who do not respond to oral iron, or who have unwanted gastrointestinal side-effects.

Prophylactic measures to reduce blood loss at delivery

- Bimanual uterine massage should be performed if the uterus is not contracted.

- Prophylactic uterotonics should be routinely offered in the management of the third stage of labour in all women as they reduce the risk of PPH. Current practice varies across Wales regarding the use of a prophylactic uterotonic. The RCOG recommends:

  - For women without risk factors for PPH having a spontaneous vaginal birth, oxytocin (10 iu by intramuscular injection (IM)) should be given as the baby's shoulders deliver, or as soon as possible after.

  - For women giving birth by caesarean section, oxytocin (5 iu by slow intravenous injection) should be given as soon as the baby is delivered. In high risk cases, a syntocinon infusion should be commenced (40IU over 4 hours). Carbetocin may also be considered as an alternative to syntocinon.

  - Ergometrine–oxytocin (Syntometrine 500mcg/5IU) IM may be used for prophylaxis in women at increased risk of haemorrhage, in the absence of hypertension.

Anyone at very high risk of bleeding, such as a known placenta accreta should ideally have birth planned in a unit where 24 hour interventional radiology and vascular surgery services are available. Currently, this is not available in Wales, therefore senior obstetric surgeons able to undertake advanced surgical and or mechanical measures should be on site.

In patients who are unable to receive autologous blood transfusion, cell salvage should be available.

Management of PPH

Identifying the severity of haemorrhage

Visual estimation of blood loss is inaccurate. Measured blood loss and clinical signs and symptoms should be included in the assessment of PPH. **All** blood loss after birth should be measured by means of weighing all collection drapes, incontinence pads, sanitary pads, swabs and suction (see Appendix Three).

There may be circumstances under which weighing blood loss is not possible, for instance in the case of pool births. In these cases, visual estimation will have to be relied upon, along with clinical findings.

Identify the cause of haemorrhage

Early identification and specific management initiated by appropriately trained members of the multidisciplinary team is essential.

Communication

The woman and partner

PPH often occurs unexpectedly and communication with the woman and her birthing partner is important, clear information of what is happening should be given throughout.

Staff

Relevant staff with an appropriate level of expertise should be alerted of PPH. As a minimum, the labour ward co-ordinator (Band 7 midwife) should be alerted when blood loss is 500–1000 ml.

Outside of the hospital setting, immediate transfer to the nearest obstetric unit via emergency ambulance should be arranged when blood loss is greater than 500ml and ongoing. Staff at the obstetric unit should be informed of the transfer. Resuscitation should be undertaken as time and equipment allows.

At 1000ml blood loss with ongoing bleeding or clinical concern (Stage 2), a multidisciplinary team should attend at the patient's bedside. As a minimum the following staff should attend:

- The labour ward co-ordinator (Band 7 midwife)
- Obstetric registrar
- Obstetric anaesthetist
- A healthcare support worker or maternity care assistant

One member of the team should be assigned the task of recording events (scribe).

At 1500ml blood loss (Stage 3) the consultant obstetrician and anaesthetist should be informed, and attend in person where bleeding continues. The use of the term 'controlled major obstetric haemorrhage' or 'ongoing major obstetric haemorrhage' should be used to communicate the urgency.

Where bleeding continues the Major Obstetric Haemorrhage Protocol should be initiated. Activation of the major obstetric haemorrhage protocol is specific to each hospital in Wales. Switch board, Blood bank, Laboratory services, porters, theatre staff and should be alerted during a major obstetric haemorrhage. Haematology input may also be required if the patient has congenital or acquired coagulation failure.

Resuscitation and Management of PPH

- **Resuscitation should be guided by the 4 stage approach** (Appendix One).
- The patient should be resuscitated in the left lateral position until delivery due to the exacerbation of hypotension from aorto-caval compression.
- Oxygen should be administered if maternal oxygen concentration is < 96% on air, or maternal conscious level is reduced.
- If clinically required, warmed isotonic fluids should be infused. This should be titrated to maintain a palpable peripheral pulse. Rapid infusion devices should be used when appropriate.

- The local major obstetric haemorrhage protocol should be followed.
- Transfuse blood if clinically indicated and guided by point of care testing as soon as possible.
- Lactate >2mmol/L may indicate significant hypovolaemia. and point of care testing may be falsely reassuring. Repeat testing and ongoing clinical assessment is important.
- Maintaining normothermia is important. Temperature should be monitored every 15 minutes and active warming measure undertaken.
- Invasive blood pressure monitoring will improve cardiovascular monitoring and facilitate ongoing blood testing.
- Cell salvage should be considered.

Blood Transfusion

The decision to provide blood transfusion should be based on both clinical and haematological assessment. While blood transfusion is almost always required when the haemoglobin is less than 60 g/l, it is rarely required when the haemoglobin is more than 100 g/l. Patients with acute haemorrhage can have normal haemoglobin due to haemo-concentration. Clinical evaluation and regular point of care testing (ROTEM, haemoglobin and lactate) in this situation is important.

Major obstetric haemorrhage protocols must include the provision of emergency blood with immediate issue of group O, rhesus D (RhD)-negative and K-negative units, with a switch to group-specific blood as soon as feasible.

If clinically significant red cell antibodies are present, close liaison with the transfusion laboratory is essential to avoid delay in transfusion in life-threatening haemorrhage.

The hospital transfusion laboratory can readily provide red cells that are ABO and RhD compatible using electronic issue with no cross-matching needed, provided that the woman does not have any antibodies and there are robust automated systems in place for antibody testing and

identification of the patient. In this setting, there is no need to reserve units for individual cases.

- Intraoperative cell salvage should be considered for use in PPH (Appendix Four). If blood is returned to the woman, guidance should be followed regarding potential maternal alloimmunisation (NICE 2008).

Blood coagulation management

Coagulopathies may evolve rapidly and repeated testing (every 30 minutes or every 500ml blood loss) during continued bleeding and observation of trends are more useful than single measurements. Point of care testing using viscoelastometry (ROTEM), combined with an agreed treatment algorithm has been associated with decreased blood loss and blood product use within the obstetric setting. The main advantage is that results are known sooner than laboratory tests.

During bleeding coagulation factor concentrations should be maintained within normal ranges. Clinicians should aim for:

- Normal PT/aPTT (refer to local laboratory ranges)
- Fibrinogen (>2 g/L)
- EXTEM CT (<75 seconds)
- Fibtem A5 (>11 mm)

Blood Product Transfusion

Point of care testing of coagulation will inform decision making regarding the administration of blood components (see Appendix Five and Six). This includes Fibrinogen concentrate, cryoprecipitate and FFP.

Platelets should be transfused when the platelet count is < $75x10^9$/L.

If no haemostatic tests are available, early 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.

If no haemostatic results are available and bleeding is continuing, then, after 4 units of red blood cells, FFP should be infused at a dose of 12–15 ml/kg until haemostatic test results are known.

Clinicians should be aware that blood components must be ordered as soon as a need for them is anticipated, as there may be a delay in supply.

Pharmacological, Mechanical and Surgical Measures

Clinicians should be prepared to use a combination of pharmacological, mechanical and surgical methods to arrest PPH. These methods should be directed towards the causative factor. When uterine atony is thought to be a cause of the bleeding, then a sequence of mechanical and pharmacological measures should be instituted in turn until the bleeding stops. If pharmacological measures fail to control the haemorrhage, surgical interventions should be initiated sooner rather than later.

Pharmacological

After administration of a prophylactic uterotonic (detailed in prophylactic measures), the following additional uterotonic medications may be given:

- Oxytocin 5 iu by slow IV injection
- Ergometrine 0.5 mg (in 20ml 0.9% saline) by slow IV or 0.5mg 1ml IM injection (contraindicated in women with hypertension). Consider giving an antiemetic with administration.
- Oxytocin infusion (40 iu over 4 hours).
- Carboprost 0.25 mg by intramuscular injection repeated at intervals of 15 minutes to a maximum of eight doses, although more than four doses are rarely effective and alternative interventions are usually required in this instance (caution with asthma).
- Misoprostol 800 micrograms rectal, vaginal or sublingual administration.

Tranexamic acid 1g IV should be administered as early as possible during a PPH of 1000ml with ongoing bleeding, and repeated after 30 minutes if bleeding continues (and within 3 hours of bleeding).

Mechanical and Surgical Techniques

- **Balloon Tamponade**

Intrauterine balloon tamponade (Bakri balloon) is an appropriate first-line 'surgical' intervention for most women where uterine atony is the only or main cause of haemorrhage (Appendix Seven). However, its failure rate due to expulsion is higher following vaginal delivery.

- **Brace Suture ('B Lynch suture')**

Conservative surgical interventions may be attempted as second line, depending on clinical circumstances and available expertise. A laminated diagram of the brace suture technique should be kept in theatre (Appendix Eight). This may also be considered as a first line treatment at the time of Caesarean section or laparotomy.

- **Hysterectomy**

Resort to hysterectomy sooner rather than later (especially in cases of placenta accreta or uterine rupture). Ideally and when feasible, a second experienced clinician should be involved in the decision for hysterectomy.

- **Interventional radiology**

Liaison with interventional radiology may be considered where available. Undertaking internal iliac cannulation and insertion of balloons to reduce uterine blood flow can be undertaken in an obstetric theatre if appropriately trained staff are available. Uterine artery embolization requires transfer to a radiology suite and may not be appropriate in a PPH due to maternal haemodynamic instability.

Secondary PPH

A full clinical assessment with initiation of resuscitation as per primary PPH should be undertaken.

Surgical evacuation of retained placental tissue should be undertaken promptly by an experienced clinician in cases of ongoing haemorrhage. A pelvic ultrasound may help to exclude the presence of retained products of conception (but may be misleading), or uterine artery pseudo-aneurysm.

Concurrent or causative infection is very common. An assessment of vaginal microbiology should be performed (high vaginal and endocervical swabs) and appropriate use of antimicrobial therapy should be initiated when endometritis is suspected.

Care Following PPH

Care should be provided as clinically indicated. Ensure the post event care the woman receives is provided in an appropriate environment. Consider the need for enhanced maternity care on delivery suite, or level 2 or 3 care on a critical care unit, depending on local resources.

Anyone with a blood loss of $\geq$ 1500ml should receive a minimum of 6 hours enhanced maternity care on delivery suite by appropriately trained staff. The patient should have repeat blood tests taken at a minimum of 6 hours after the bleed, unless clinically indicated sooner. Thromboprophylaxis is important once bleeding has stopped.

Documentation

Accurate documentation is essential. The 4 stage PPH management checklist should be completed contemporaneously for anyone whose measured blood loss exceeds 500ml.

Debriefing

An opportunity to discuss the events surrounding a major obstetric haemorrhage should be offered to the woman (possibly with her birthing partner/s) at a mutually convenient time.

The team of health professionals involved in care may also wish to conduct a debrief in the case of major haemorrhage.

Risk Management

All staff should receive training in the management of obstetric emergencies, including the management of PPH.

Training for PPH should be multi-professional and include team rehearsals.

A Datix incident reporting form should be completed at locally agreed thresholds.

Audit

- Annual attendance at mandatory emergency skills training
- The proportion of women who undergo standard risk assessment when they present in labour
- Use of Measuring Blood Loss Pro Forma for all births
- 4 stage approach compliance

References

MBRRACE-UK: *Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK*, December 2016 https://www.npeu.ox.ac.uk/mbrrace-uk/reports#primary-content

National Maternity Services Review, *Better Births, Improving outcomes of maternity services in England*, 2016

NICE, *Routine Antenatal Anti-D Prophylaxis for Women who are Rhesus negative. NICE Technology Appraisal Guidance 156.*

NICE, *Intrapartum Care for Healthy Women and their babies during childbirth*, 2014

PROMPT Course Manual 2016 (Third edition)

RCM, *Third Stage of Labour*, December 2012

RCOG Green-top guideline No 52, Royal College of Obstetricians and Gynaecologists, December 2016 https://www.rcog.org.uk/en/guidelines-research-services/guidelines/gtg52/

WHO, *WHO Recommendations for the Prevention and Treatment of Postpartum Haemorrhage*, WHO Guidelines, 2012

WOMAN: reducing maternal deaths with tranexamic acid, The Lancet, April 2017, Volume 389, Issue 10084

Guideline Summary

- Antenatal anaemia should be identified and treated

- All women should have a risk assessment completed on admission in labour

- **ALL** blood loss should be measured and recorded following **ALL** births, wherever practical. There may be exceptions to this, such as in the case of pool births.

Local protocol should be followed regarding prophylactic uterotonic following vaginal delivery

- For women undergoing caesarean section, Oxytocin 5iu should be given IV

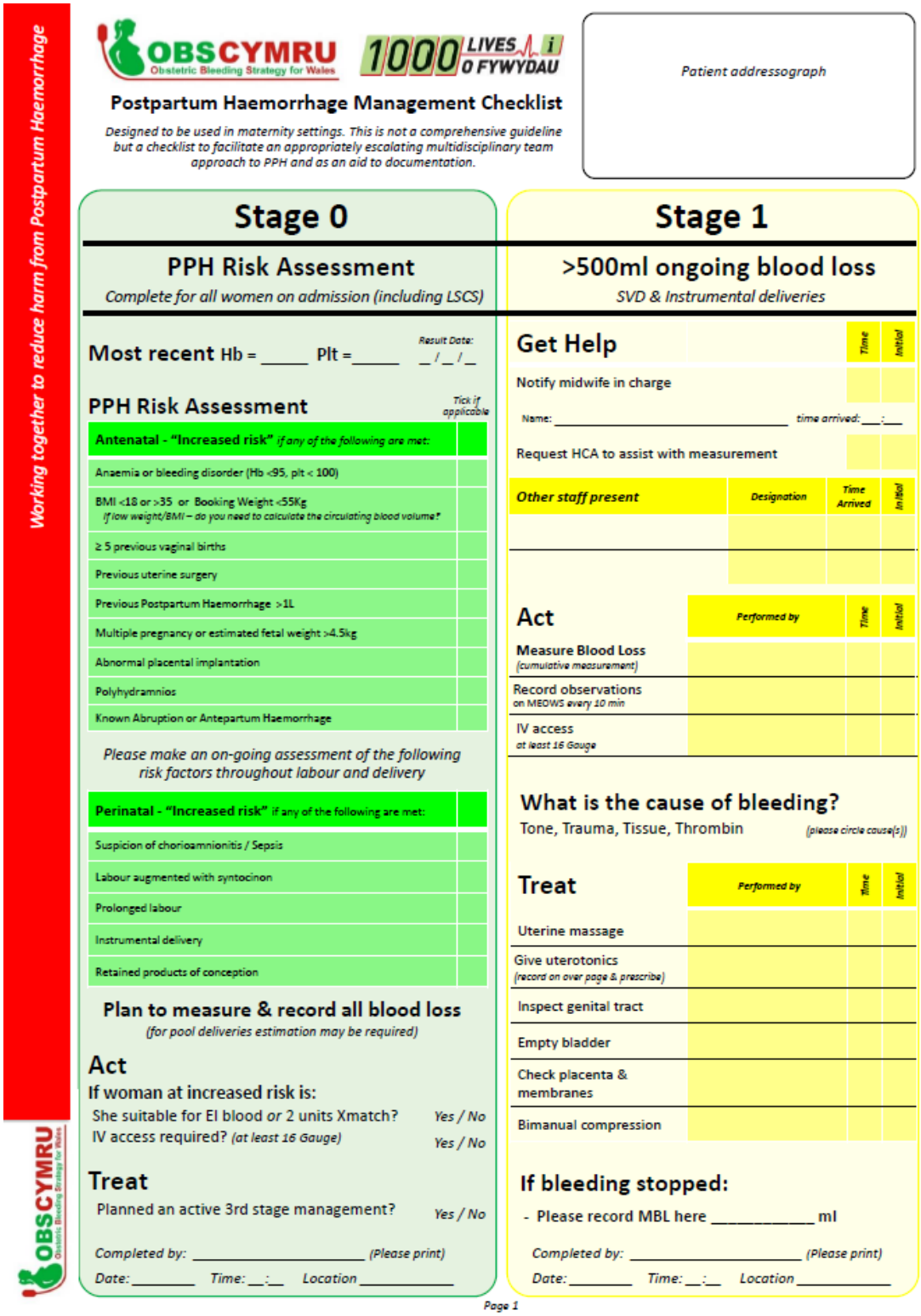
- When MBL reaches 500ml, Stage 1 PPH Management should be commenced and help should be summoned from the midwife in charge as a minimum.

- When MBL reaches 1000ml, Stage 2 PPH management should be commenced, and a multidisciplinary team should be summoned to attend (midwife co-ordinator (Band 7 midwife), obstetric anaesthetist, obstetric registrar, healthcare support worker).

- When MBL reaches 1000ml, tranexamic acid 1g IV should be given. If bleeding continues, a further 1g should be administered after 30 minutes and within 3 hours.

- When there is a PPH of more than 1500 ml (major obstetric haemorrhage) and the bleeding is continuing, Stage 3 should be commenced. The Major Obstetric Haemorrhage Protocol should be activated, and appropriate staff requested to attend.

Appendix One:
Postpartum Haemorrhage Management Checklist



Working together to reduce harm from Postpartum Haemorrhage

OBSCYMRU Obstetric Bleeding Strategy for Wales

1000 LIVES i O 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 PPH 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* _____

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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* _____

Working together to reduce harm from Postpartum Haemorrhage

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)*

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* _____

Appendix Two: Measured Blood Loss (MBL)

(To be completed for **ALL** births wherever possible)

Type of birth: SVD LSCS – Emergency/ Elective Instrumental- Vent / Forceps **Time of birth**:……

Time	Type (small swabs, suction, inco etc)	Gross Weight (g)	Dry Weight (g)	Blood Weight (ml)	Cumulative Loss (ml)
TOTAL					

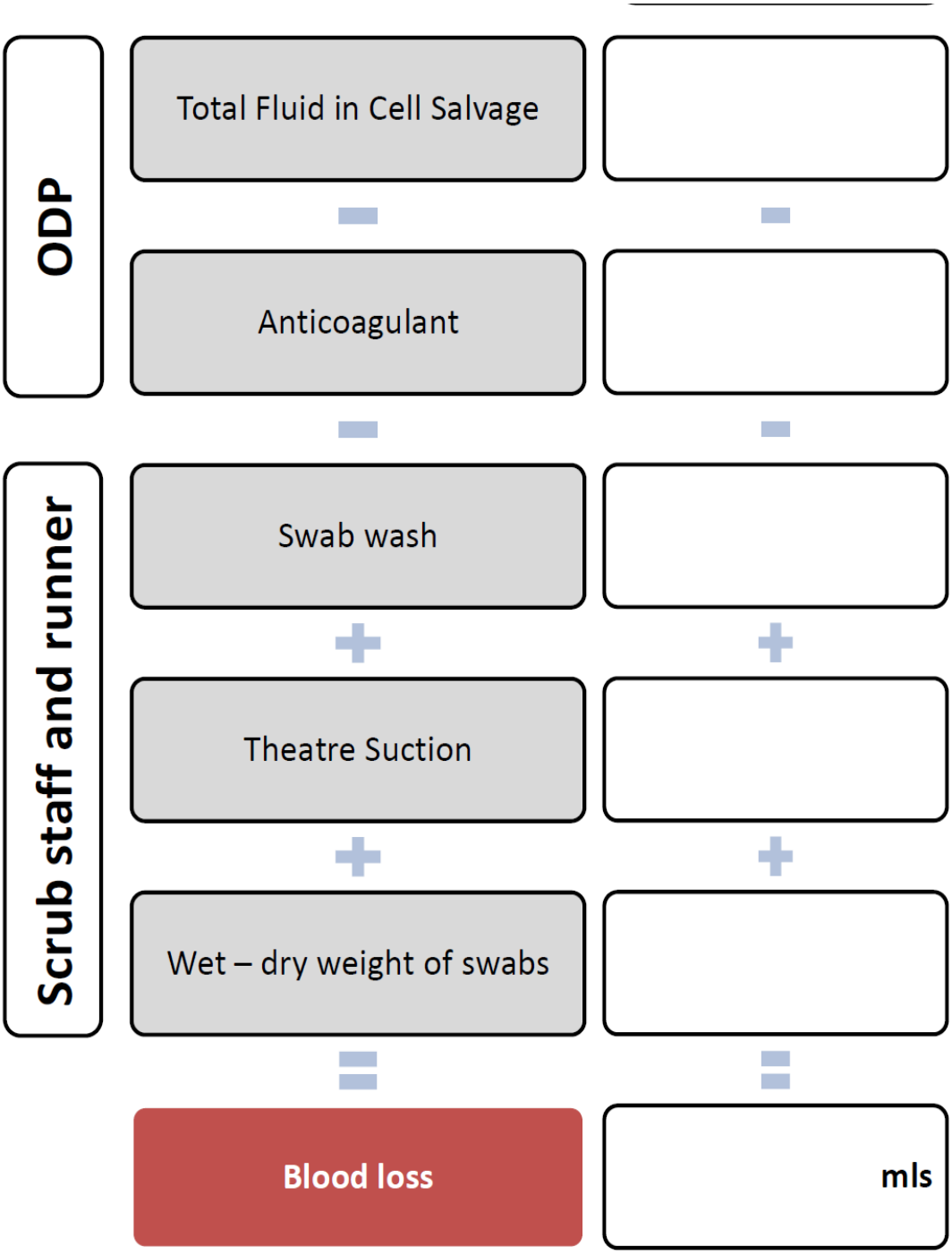
5 small swabs =___g 5 chest swabs =___g 5 abdo swabs =___g Inco sheet =___g Towel =___g Sanitary pad =___g (**1g of weighed blood = 1ml**)

To calculate blood loss; Gross weight- Dry weight

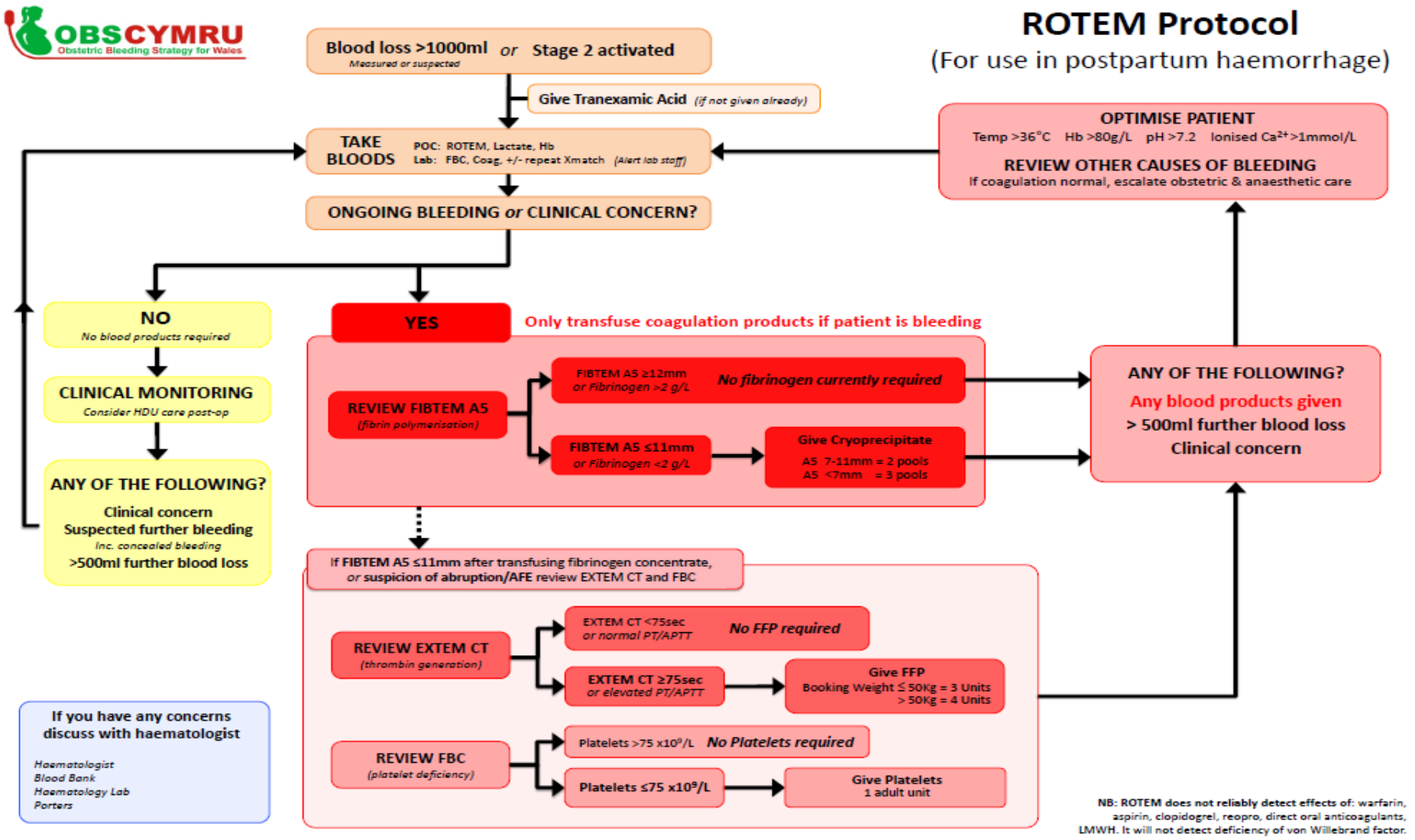
TOTAL MEASURED BLOOD LOSS =……ml

- MBL ≥ 500ml, call for help and commence Stage 1 of the PPH Management Checklist
- MBL ≥ 1000ml commence Stage 2 of the PPH Management Checklist
- MBL ≥ 1500ml commence Stage 3 of the PPH Management Checklist and activate massive haemorrhage protocol

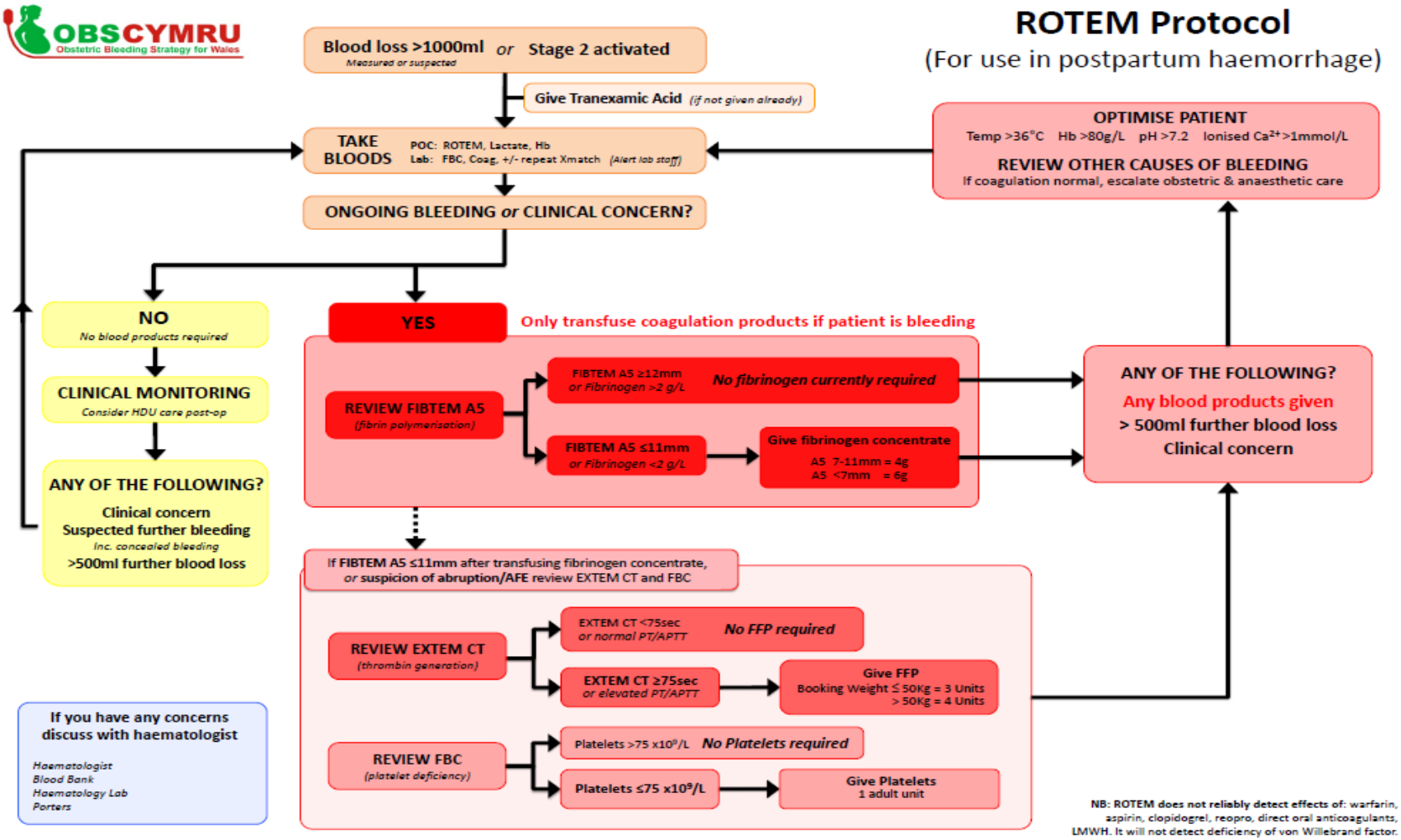
Appendix Three: Cell Salvage Blood Loss Calculation



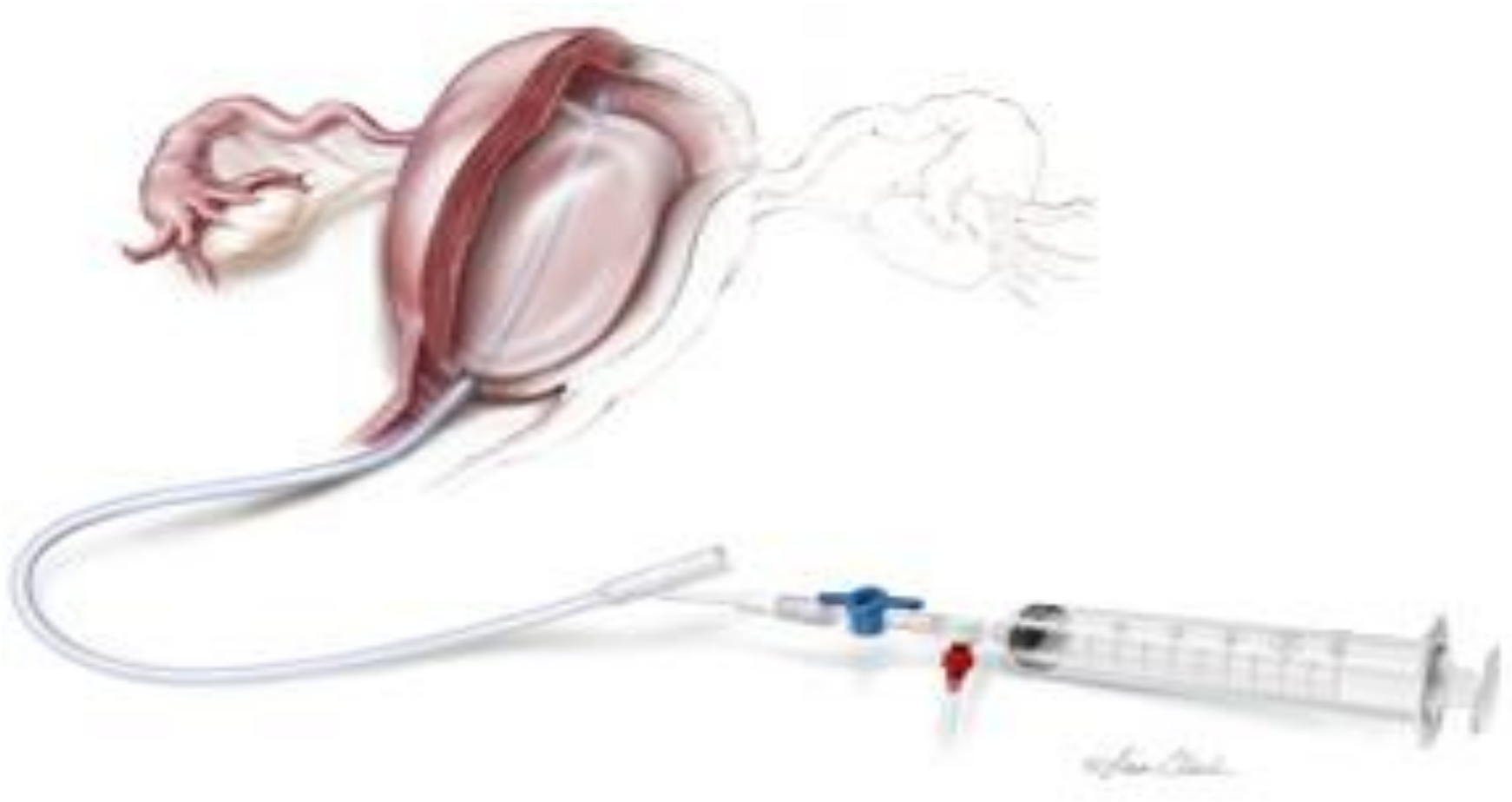
Appendix Four: ROTEM with Cryoprecipitate



Appendix Five: ROTEM with Fibrinogen



Appendix Six: Bakri Balloon



Appendix Seven: Brace Suture