All Wales Guideline

Prevention and Management of Postpartum Haemorrhage

MATERNITY NETWORK WALES

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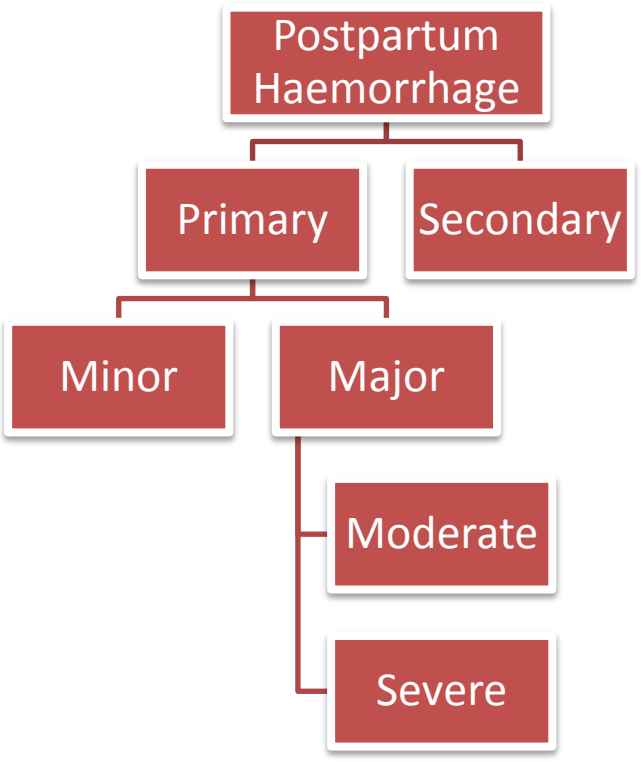
Introduction and Background

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 500 ml or more of blood from the genital tract within 24 hours of the birth of a baby. PPH can be minor (500–1000 ml) or major (more than 1000 ml). Major can be further subdivided into moderate (1001–2000 ml) and severe (more than 2000 ml). In women with lower body mass (e.g. less than 60 kg), a lower level of blood loss may be clinically significant. The recommendations in this guideline apply to women experiencing a primary PPH of 500 ml or more.



Secondary PPH is defined as abnormal or excessive 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.

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	Level of Shock
10% blood loss (700ml if 70kg)	• Mild tachycardia • Normal blood pressure	Compensated
15% blood loss (1050ml if 70kg)	• Tachycardia (>100bpm) • Hypotension (systolic blood pressure 90-80 mmHg) • Tachypnoea (RR> 20 breaths per minute) • Pallor, sweating • Weakness, faint, thirst	Mild

30% blood loss (2100ml if 70kg)	• Rapid, weak pulse >120bpm) • Moderate hypotension (systolic blood pressure 80-60mmHg) • Tachypnoea (RR> 20 breaths per minute) • Pallor, cold clammy skin • Poor urinary output (<0.5ml/kg/hr) • Restlessness, anxiety, confusion	Moderate
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	Severe

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**	
Overdistension of uterus	Polyhydramnios, multiple gestation, macrosomia
Intra-amniotic infection	Suspected infection, prolonged rupture of membranes
Functional/anatomic distortion of uterus	Rapid labour, prolonged labour, fibroids, placenta praevia, uterine anomalies
Uterine relaxants	Terbutaline, nifedipine, magnesium halogenated anaesthetic agents, glyceryl trinitrate
Bladder distension	May prevent uterine contraction
Tissue: retained products of conception	
Retained cotyledon or succenturiate lobe	
Abnormal implantation	
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
Uterine rupture	Previous uterine surgery
Uterine inversion	High parity with excessive cord traction
Thrombin: abnormalities of coagulation *Pre-existing states;* Including inherited clotting disorders (eg Haemophilia A, Von Willebrand's disease).	History of hereditary coagulopathies or liver disease, bruising and excessive bleeding history including previous PPH
Acquired in pregnancy; Gestational thrombocytopenia	Bruising
Pre-eclampsia with thrombocytopenia e.g. HELLP	Pre eclampsia with abnormal blood profile

Disseminated intravascular coagulation a) Gestational hypertensive disorder of pregnancy with adverse conditions	Coagulopathy
b) in utero fetal demise	Fetal demise, maternal sepsis
c) severe infection	Fever, neutrophilia/neutropenia
d) abruption	Antepartum haemorrhage, suspicion of concealed bleeding
e) amniotic fluid embolus	Sudden collapse
Therapeutic anticoagulation	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.

- *Reducing blood loss at birth*
  - Uterine massage should be considered 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 (RCOG 2016).

    - For women without risk factors for PPH having a spontaneous vaginal birth, oxytocin (10 iu by intramuscular injection) should be given in the third stage of labour.

    - For women giving birth by caesarean section, oxytocin (5 iu by slow intravenous injection) should be used to encourage contraction of the uterus and to decrease blood loss.

- Ergometrine–oxytocin (Syntometrine 500mcg/5IU) may be used in the absence of hypertension in women at increased risk of haemorrhage as it reduces the risk of minor PPH.

- Clinicians should consider the use of intravenous tranexamic acid (1g), in addition to oxytocin, in the event of any PPH, and this should be given as soon as possible after the onset of bleeding.

Anyone at very high risk of bleeding, such as a known placenta accreta should ideally have birth planned in a unit where interventional radiology and vascular surgery is available. Currently, this is not widely available in Wales.

Management of PPH

Identifying the severity of haemorrhage

Health professionals should be aware that the visual estimation of peripartum blood loss is inaccurate and that clinical signs and symptoms should be included in the assessment of PPH. **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 for measuring blood loss pro forma). This calculation must be used in conjunction with the patient's clinical signs and symptoms as part of a holistic assessment of PPH.

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.

Communication and Multidisciplinary Care

- *Communication with the woman*

Communication with the woman and her birthing partner is important, and clear information of what is happening should be given from the outset. PPH often occurs unexpectedly and can be very stressful for the woman and her partner(s); it is crucial that, where feasible, they are kept

informed and, if appropriate, of the clinical situation and proposed management.

- *Who to Inform*

Relevant staff with an appropriate level of expertise should be alerted of PPH. The midwife in charge and the first-line obstetric and anaesthetic staff should be alerted when a minor PPH (blood loss 500–1000 ml) without clinical shock is identified.

As per Stage 2 management, a multidisciplinary team involving senior members of staff should be summoned to attend to women with major PPH (blood loss of more than 1000 ml) and ongoing bleeding or clinical shock. Early involvement of appropriate senior staff (including the anaesthetic team and laboratory specialists) is fundamental to the management of PPH. In this situation, the following members of staff should be called and summoned to attend:

- ✓ The midwife in charge
- ✓ Obstetric anaesthetist on call
- ✓ ODP
- ✓ Senior obstetric registrar on call
- ✓ A healthcare support worker
- ✓ The on call haematologist should also be notified.

In addition, the consultant obstetrician and consultant anaesthetist should be alerted, and the blood transfusion laboratory should be informed. One member of the team should be assigned the task of recording events, fluids, drugs, blood and components transfused, and vital signs (scribe).

The RCOG (2016) recommends that the consultant obstetrician should attend in person when there is a PPH of more than 1500 ml where the haemorrhage is continuing. The use of the term 'controlled major obstetric haemorrhage' or 'ongoing major obstetric haemorrhage' should be used to communicate the urgency. The Major Obstetric Haemorrhage Protocol should also be initiated.

Outside of the hospital setting, immediate transfer to the nearest obstetric unit via emergency ambulance should be arranged. Staff at the obstetric unit should be informed of the transfer. Resuscitation should be undertaken as time and equipment allows.

Initial Measures for the Treatment of PPH

- Call for help.
- Palpate the uterine fundus and consider massaging it to stimulate uterine contraction.
- Ensure that the bladder is empty (consider leaving in dwelling catheter in place).
- Inspect the placenta and membranes for completeness.
- If appropriate, breastfeeding may be initiated to stimulate oxytocin production.
- Inspect perineum and repair any tears as soon as possible.
- Consider appropriate pharmacological, mechanical and surgical measures (see page 14), including bimanual compression.

Resuscitation

Measures for minor PPH (blood loss 500–999 ml) without clinical shock:

- ✓ intravenous access (one large bore cannula, ideally 14 gauge)
- ✓ urgent venepuncture (10 ml) for:
  - group and screen
  - full blood count
- ✓ pulse, respiratory rate and blood pressure recording every 15 minutes
- ✓ commence crystalloid infusion.

Full protocol for major PPH (blood loss 1000 ml or greater) and continuing to bleed or clinical shock;

- **A and B** – assess airway and breathing. A high concentration of oxygen (10–15 l/min) via a facemask should be administered, regardless of maternal oxygen concentration.
- **C** – evaluate circulation
- position the woman flat
- Establish two, large bore (ideally 14-gauge) intravenous lines; a 20 ml blood sample should be taken for;
    - Point of Care Testing
        - ROTEM
        - Hb and Lactate
    - Laboratory Testing
        - full blood count
        - coagulation screen
        - urea and electrolytes
        - cross-match packed red cells (4 units)
- maintain normathermia
- monitor temperature every 15 minutes
- continuous pulse, blood pressure recording, oxygen saturation and respiratory rate (using oximeter, electrocardiogram and automated blood pressure recording). Record on a modified early obstetric warning score (MEOWS), or anaesthetic chart
- Give 1g tranexamic acid, if not already given
- Foley catheter to monitor urine output
- Transfuse blood if clinically indicated and guided by point of care testing as soon as possible.
- If clinically required, infuse warmed clear fluids to maintain CVS stability, up to 2l of warmed isotonic crystalloid
- the best equipment available should be used to achieve rapid warmed infusion of fluids. Special blood filters should not be used, as they slow infusions.
- consider arterial line monitoring (once appropriately experienced staff available for insertion)

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 Hb is less than 60 g/l and rarely required when the Hb is more than 100 g/l. Patients with acute haemorrhage can have normal Hb. Clinical evaluation and regular point of care testing (POCT) in this situation is, therefore, extremely 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.

Intraoperative cell salvage should be considered for emergency use in PPH associated with caesarean section *and* with vaginal birth (see Appendix four for calculation of cell salvage blood loss).

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.

Blood Components

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, such as rotational thromboelastometry (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.

Fibrinogen

During bleeding coagulation factors concentrations should be maintained within normal ranges. Clinicians should aim for normal PT/aPTT/EXTEM CT.

Point of care testing of coagulation will inform decision making regarding the administration of blood components (see Appendix Five for ROTEM protocol).

Transfusion of fresh frozen plasma (FFP)

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.

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.

Clinicians should be aware that these blood components must be ordered as soon as a need for them is anticipated, as there will always be a short delay in supply because of the need for thawing.

Transfusion of platelets

During PPH, platelets should be transfused when the platelet count is less than $75x10^9$/L based on laboratory monitoring.

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- Third Stage Drugs

- Oxytocin 5 iu by slow intravenous injection (may repeat dose)

- Ergometrine 0.5 mg by slow intravenous or intramuscular injection (contraindicated in women with hypertension)

- Oxytocin infusion (40 iu in 500 ml isotonic crystalloids at 125 ml/hour). Consider increased concentration and administration via syringe pump if fluid restriction is necessary

- Carboprost 0.25 mg by intramuscular injection repeated at intervals of not less than 15 minutes to a maximum of eight doses (use with caution in women with asthma).

- Misoprostol 800 micrograms PR

- Tranexamic acid 1g IV should be administered as early as possible during a PPH with ongoing 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. 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. 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

In women presenting with secondary PPH, 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.

A pelvic ultrasound may help to exclude the presence of retained products of conception, although the diagnosis of retained products is unreliable. Surgical evacuation of retained placental tissue should be undertaken or supervised by an experienced clinician.

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 level 2 (HDU) or level 3 (ICU) care.

Anyone with a blood loss of $\geq$ 1000ml should receive a minimum of 6 hours HDU care by appropriately trained staff, and have a full blood count taken at 6 hours post birth, unless clinically indicated sooner.

Thromboprophylaxis should be considered when the bleeding has settled due to a tendency towards being pro coagulant following major transfusion or extended surgery (see post event checklist in Appendix one).

Documentation

Accurate documentation of a birth complicated by PPH is essential. An agreed pro forma should be completed for all women whose blood loss exceeds 1000ml.

A Datix incident report should be complete for cases as per locally agreed trigger points.

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

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, *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 high risk women should have a risk assessment completed on admission in labour
- For low risk women having a vaginal birth, Oxytocin 10iu IM should be given routinely in the 3rd stage
- For high risk women having a vaginal birth (without hypertension or cardiac disease), Syntometrine IM should be given
- For women undergoing caesarean section, Oxytocin 5iu should be given IV
- Measuring blood loss is more accurate than visual estimation, therefore **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.
- When MBL reaches 500ml (minor PPH), Stage 1 PPH Management should be commenced and help should be summoned from midwife in charge and first line obstetric and anaesthetic staff
- When MBL reaches 1000ml (major PPH), Stage 2 PPH management should be commenced, and a multidisciplinary team should be summoned to attend (midwife in charge, obstetric anaesthetist, ODP, senior obstetric registrar, healthcare support worker).
- When there is a PPH of more than 1500 ml where the haemorrhage is continuing, Stage 3 should be commenced, the Massive Haemorrhage Protocol protocol should be activated, and the consultant obstetrician should be asked to attend

Appendix One
Postpartum Haemorrhage Management Checklist

OBSCYMRU Obstetric Bleeding Strategy for Wales

1000 LIVES i O FYWYDAU

Postpartum Haemorrhage Management Checklist

Designed to be used in consultant led obstetric units. 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

All Women on Admission

All modes of delivery 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	
≥ 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	
Pharmacologically augmented labour	
Prolonged Labour	
Instrumental delivery	
Retained products of conception	

Act

Plan to measure & record all blood loss ☐
(for pool deliveries estimation may be required)

If woman at Increased risk:

Check patient is EI / XMatch 2 units *(delete as appropriate)* ☐
Consider early IV access *(ideally at least 16 Gauge)* ☐
Consider cell salvage if operative delivery ☐

Treat

If woman at Increased risk:

Plan active 3rd stage management ☐

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

Stage 1

>500mL blood loss

SVD & Instrumental deliveries

Mobilise Help *Tick when completed*

Notify midwife in charge *(Record below)* ☐
*Name:*_____ *time:*___:___
Request MCA to assist ☐

Act

Measure & record blood loss *every 15min* ☐
Monitor patient on MEOWS *every 10 min* ☐
IV access *at least 16 Gauge* ☐
Consider giving ranitidine ☐

Think of other possible causes

Tone, Trauma, Tissue, Thrombin *(please circle causes)*

Treat

Uterine massage ☐

Uterotonics *(record below and prescribe on medication chart)*

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

Consider:
- Empty bladder ☐
- Inspect genital tract ☐
- Placenta - check delivered & complete ☐
- Bimanual compression ☐

Once bleeding stopped ensure:

PPH post-event checklist completed *(on back page)* ☐

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

Working together to reduce harm from Postpartum Haemorrhage

Stage 2

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

>1000mL blood loss *OR* clinical concern (eg. Abruption or concealed bleeding)
***OR* abnormal vital signs** RR > 30, HR ≥120, BP ≤90/40mmHg, O2 sat <95%

Mobilise Help

Time arrived:

Midwife in charge	*Name:*_____	*time:*___:___
Obstetrician	*Name:*_____	*time:*___:___
Anaesthetist	*Name:*_____	*time:*___:___
MCA	*Name:*_____	*time:*___:___

Act

Tick when completed

Measure & record blood loss *at least every 15min* — *time noted >1000ml* ___:___ ☐
Monitor patient on MEOWS *every 10min* ☐
Consider 2nd IV access (*at least 16 Gauge*) & fluid bolus ☐

Take bloods (Point of care tests - ROTEM, venous lactate, venous Hb) *time taken:* ___:___
(Lab test - FBC, Coag, XMatch, U&E) *time taken:* ___:___

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

Review causes *(circle all identified)*

Tone Trauma Tissue Thrombin

Treat *(Leave times blank if N/A. If further documentation required please use notes section under stage 3)*

- Further uterotonics *(record below)*
- Bimanual compression *time:*___:___
- Empty bladder *(consider foley)* *time:*___:___
- Inspect genital tract *time:*___:___
- Repair genital tract *time:*___:___
- EUA uterus *time:*___:___
- Consider surgical interventions *time:*___:___
- Ensure placenta checked & complete *time:*___:___
- Give tranexamic acid *(1g IV, if no CI's)* *time:*___:___

If bleeding *on going* transfer patient to theatre

Once bleeding stopped ensure:

- PPH post-event checklist completed *(on back page)* ☐
- Management plan written in notes ☐

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

Record of further uterotonics used

If uterotonics given in stage 1 write "stage 1" in time box (not time)
Prescribe all uterotonics given on medication chart

Drug	Dose *(please circle route)*	Time	Drug	Dose	Time
Syntocinon	10 units IM *or* 5 units IV		Carboprost *(caution in asthma)*	250microg IM *(repeat up to every 15min)*	
Ergometrine *(caution in HTN/PET)*	500 microg IV or IM		Carboprost	250microg IM	
Syntometrine *(caution in HTN/PET)*	500 microg/5 units IM or IV		Carboprost	250microg IM	
Syntocinon INF	40 units over 4hr IV		Carboprost	250microg IM	
Other			Carboprost	250microg IM	
Misoprostol			Carboprost	250microg IM	
Misoprostol			Carboprost	250microg IM	
Other			*Other*		

Stage 3
> 1500mL blood loss *OR* on going clinical concern

Mobilise Help - Ensure required team present — **Time arrived:**

Midwife in charge	*Name:*_____	*time:* __:__
Obstetrician	*Name:*_____	*time:* __:__
Theatre Nurse	*Name:*_____	*time:* __:__
MCA	*Name:*_____	*time:* __:__
Anaesthetist	*Name:*_____	*time:* __:__
ODP	*Name:*_____	*time:* __:__

		Tick when completed
Transfer to theatre	*time arrived* __:__	☐
Activate MOH protocol	*time activated* __:__	☐
Inform Obstetric consultant		☐
Inform Anaesthetic consultant		☐
Consider interventional radiology		☐

Act

Review measured blood loss and continue to measure	*time noted >1500ml* __:__	☐
Monitor patient including temperature - *continuous monitoring by anaesthetist*		☐
Consider Cell Salvage		☐
Order blood and coagulation products as per MOH and ROTEM protocol		☐
Repeat blood tests 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 as per MOH protocol

Review on-going resuscitation and consider need for patient warming	☐
Review uterotonics - *record any further doses in stage 2*	☐
Give tranexamic acid *(1g IV, if no CI's) - if not done already*	☐
Consider advanced surgical techniques – *document below*	☐

Once bleeding stopped transfer to HDU/ICU and ensure:

- PPH post-event checklist completed *(on back page)* ☐
- Management plan written in notes ☐

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

Time	Documentation of concerns, deviations & other information	Blood Loss

Total Measured Blood Loss = _____ml

Record of further blood test results *(Please don't duplicate records of blood results recorded in stage 2)*

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

Summary of blood products transfused

Red blood cells (units)	Fibrinogen Concentrate (g)	Cryoprecipitate (pools)	FFP (units)	Platelets (units)	Factor VII (microg)	Cell Salvage Blood (ml returned)

PPH Post-event Checklist

WHO sign-out completed? *Yes / No / NA (patient didn't require care in theatre)*

Have all drugs been prescribed and signed for? *Yes / No / NA*

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*

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 _____

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*

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

Version L7.2 TK MJ Feb 17 *For more information please contact obs.cymru@wales.nhs.uk*

Appendix Two
Postpartum Haemorrhage Management Checklist for Community

OBSCYMRU Obstetric Bleeding Strategy for Wales

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Patient addressograph

PPH Management Checklist for Community

This checklist is not designed to be comprehensive but to facilitate an appropriately escalating multidisciplinary team approach to PPH

Date _____ *Time* ___:___ *Ward/location* _____

Stage 0

PPH risk assessment for all women
(as per initial assessment from All Wales Clinical Pathway for Normal Labour)

Stage 1 >500mL blood loss

	Time	*Signature*
Mobilise Help		
2nd Midwife alerted		
Consider transfer to consultant led unit		
Notify midwife in charge of consultant led unit *Name:* _____		
Act		
Measure & record blood loss		
Monitor patient		
IV access		
Take bloods (FBC, U&E, Coag and Cross Match) *if not done earlier*		
Give ranitidine		
Think of possible causes		
Tone, Trauma, Tissue, Thrombin *(please circle causes)*		
Treat		
Uterine massage		
Empty bladder		
Put baby to breast (if appropriate)		
Inspect genital tract		
Placenta - check delivered & complete		
Bimanual compression (if placenta delivered)		

Uterotonics:	*Drug*	*Dose*	*Time*	*Signature*

	Time ___:___	*Time* ___:___	*Time* ___:___	*Time* ___:___	*Time* ___:___	*Time* ___:___
Pulse						
BP						
Measured Blood Loss						
Respirations						

Stage 2

>1000mL blood loss or **clinical concern** (eg. abruption or concealed bleeding) or **abnormal vital signs** (RR > 30, HR ≥120, BP ≤90/40mmHg, O2 sat <95%). Immediate emergency transfer to obstetric unit.

Stage 3

> 1500mL blood loss *or* on-going clinical concern

Addressograph

Appendix Three: 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

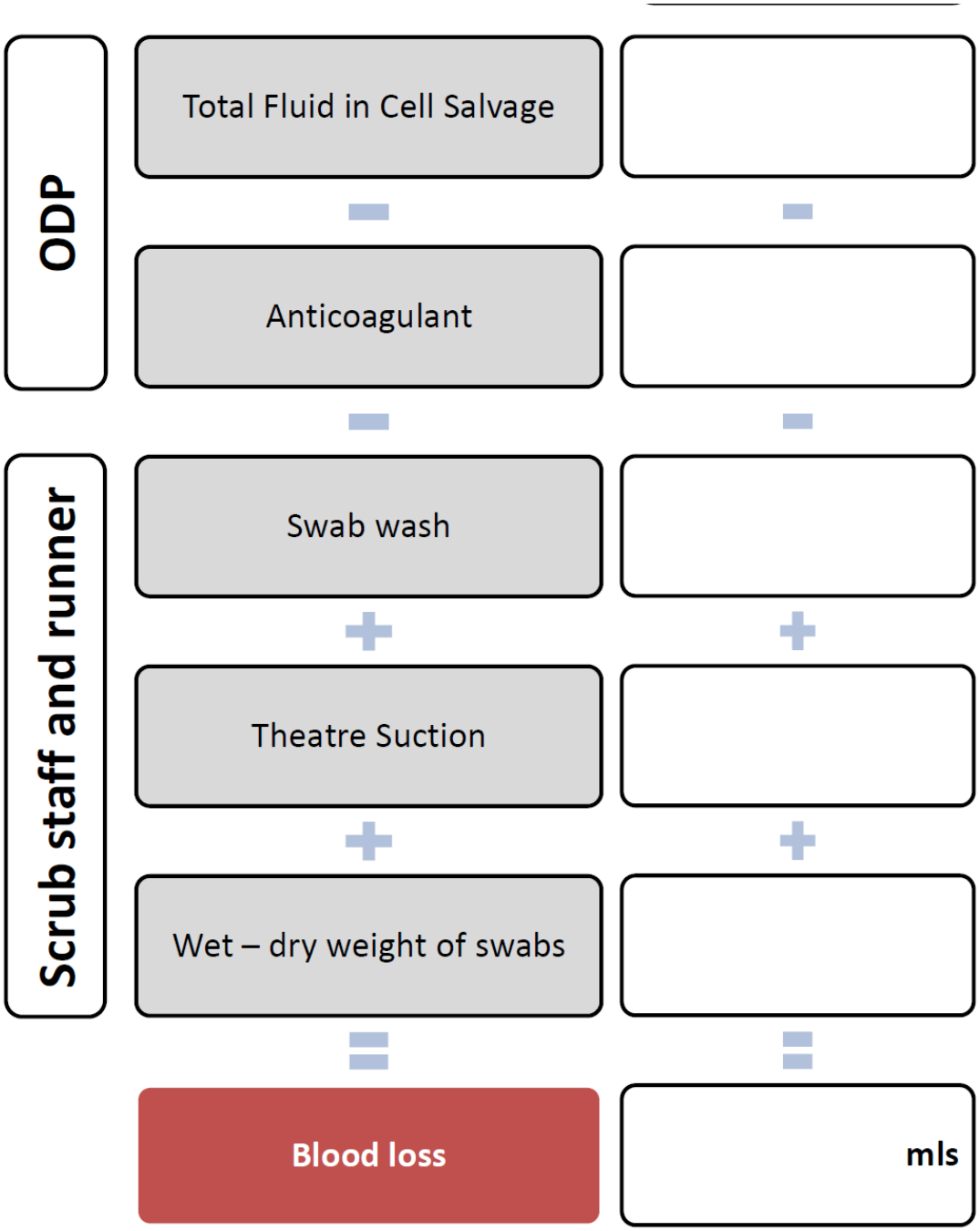
TOTAL MEASURED BLOOD LOSS =……ml

- 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

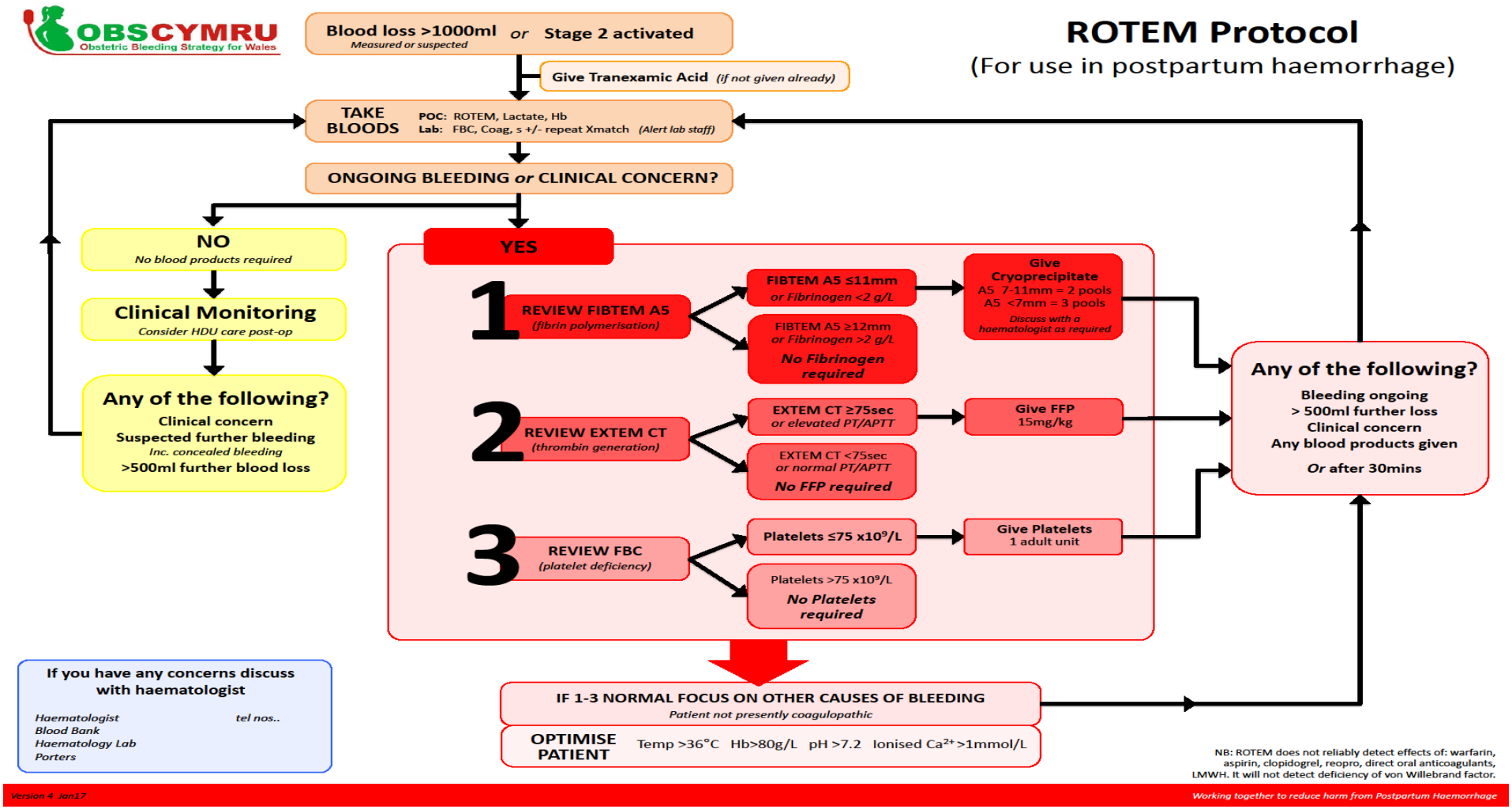
Appendix Four

Addressograph

Cell salvage Blood Loss Calculation



Appendix Five



Appendix Six; PPH Management Following Vaginal Birth
Measured blood loss 500–999 ml without clinical shock (Stage 1)

Mobilise Help

Summon;

Midwife in charge/ senior midwife

Maternity care assistant to assist if needed

Alert;

First line obstetrician

First line anaesthetist

Act

Measure and record all blood loss every 15 minutes.

Inspect the placenta and membranes for completeness.

Inspect perineum- repair any tears as soon as possible.

Record pulse, respiratory rate and blood pressure on MEOWS every 10 minutes.

Intravenous access (one large bore cannula, ideally 14 gauge)

Urgent venepuncture (20 ml) for:

- group and screen
- full blood count

Treat

Perform uterine massage

Uterotonics;

- Syntocinon 10iu IM or 5iu IV
- Syntocinon 10iu IM or 5iu IV
- Ergometrine (caution with hypertension)
- Syntometrine IM or IV (caution with hypertension)
- Syntocinon 40iu IV over 4 hours

Consider

Cause of bleeding

Give Ranitidine

Empty bladder and leave in dwelling catheter in place

1g tranexamic acid

If bleeding continues >1000ml move to Stage 2

If bleeding stopped, continue to PPH post event checklist

Stage 2; Major PPH (moderate- blood loss ≥1000 ml) and continuing to bleed *or* clinical shock for all modes of Birth

Mobilise Help

Summon;

Midwife in charge/ senior midwife

First line obstetrician

First line anaesthetist

Maternity care assistant

Act

Position woman flat

Measure and record all blood loss at least every 15 minutes

Record pulse, respiratory rate and blood pressure on MEOWS every 10 minutes

Ensure placenta & membranes checked and complete

Intravenous access (one large bore cannula, ideally 16 gauge)

Urgent POCT blood tests:

- ROTEM
- Venous lactate
- Venous Hb

Lab tests

- Cross match
- full blood count
- Coagulation screen
- U&Es

Treat

Perform uterine massage

Empty bladder and leave in dwelling catheter in place

Further Uterotonics;

- Syntocinon 10iu IM or 5iu IV
- Syntocinon 10iu IM or 5iu IV
- Ergometrine
- Syntometrine (caution with hypertension)
- Syntocinon 40iu IV
- Misoprostol 800mcg PR
- Carboprost (up to 8 doses repeated every 15 minutes)

Give 1g Tranexamic acid

Inspect and repair genital tract

Consider

2nd large bore IV cannula

Bimanual compression

Give Ranitidine

Surgical interventions

If bleeding continues >1500ml move to Stage 3

If bleeding stopped, continue to PPH post event checklist

Stage 3; Major PPH (severe- blood loss 1500 ml or greater) *or* clinical shock . <u>In addition</u> to Stage 2 Measures

Mobilise Help

Summon;

ODP

Alert;
On call haematologist

Obstetric consultant

Anaesthetic consultant

Act

Transfer to theatre

Activate Massive Obstetric Haemorrhage Protocol

Continue to measure and record all blood loss every 15 minutes

Continuous maternal observations (by anaesthetist)

Repeat blood tests as per MHP and ROTEM protocol

Review possible causes;

Tone, Tissue,

Trauma, Thrombin

Treat

Review ongoing resuscitation and need for warming

Review Uterotonics;

- Syntocinon 10iu IM or 5iu IV
- Syntocinon 10iu IM or 5iu IV
- Ergometrine (caution with hypertension)
- Syntometrine (caution with hypertension)
- Syntocinon 40iu IV
- Misoprostol 800mcg PR
- Carboprost (up to 8 doses repeated every 15 minutes)

Continue to document uterotonics on Stage 2

Give 1g Tranexamic acid (if not done already)

Consider

Mechanical/ Surgical interventions;

- Brace suture
- Hysterectomy
- Interventional radiology
- Cell salvage

Once bleeding stopped, continue to PPH post event checklist

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