CLINICAL GUIDELINE

Postpartum Haemorrhage (PPH), Management

A guideline is intended to assist healthcare professionals in the choice of disease-specific treatments.

Clinical judgement should be exercised on the applicability of any guideline, influenced by individual patient characteristics. Clinicians should be mindful of the potential for harmful polypharmacy and increased susceptibility to adverse drug reactions in patients with multiple morbidities or frailty.

If, after discussion with the patient or carer, there are good reasons for not following a guideline, it is good practice to record these and communicate them to others involved in the care of the patient.

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Important Note:

The Intranet version of this document is the only version that is maintained.
Any printed copies should therefore be viewed as 'Uncontrolled' and as such, may not necessarily contain the latest updates and amendments.

Management of Postpartum Haemorrhage (PPH)

Primary Postpartum Haemorrhage (PPH) is the most common form of major obstetric haemorrhage. The most recent Confidential enquiry reported 6% of all maternal deaths were as a result of bleeding. Obstetric haemorrhage is common but with prompt recognition and management maternal morbidity and mortality can be avoided. Recognition of risk factors, multi-disciplinary team working and good communication are all recognised factors which improve outcomes in cases of major obstetric haemorrhage. The following recommendations reduce morbidity and mortality;

- Identification of high risk groups and instituting measures to prevent/minimise post partum haemorrhage.
- Appropriate counselling about place of delivery of there are any risk factors identified for PPH
- Clear and timely communication between surgical, anaesthetic and haematology/blood transfusion services.
- Prompt resuscitation and supportive measures including replacing the blood loss.
- Investigating the cause for and arresting the haemorrhage.
- Instituting appropriate monitoring.

Definitions

Primary Postpartum Haemorrhage – blood loss from the vagina of over 500ml blood within 24 hours of delivery.

Major Postpartum Haemorrhage – Blood loss of over 1000ml and can be divided further into **moderate** (1000-2000ml) or **severe** (more than 2000ml)

A smaller blood loss associated with clinical signs of shock, hypotension (systolic BP drop of 30mmHg), tachycardia (pulse rate rise of more than 30bpm), tachypnoea (respiratory rate greater than 30breaths per minute) or oliguria can also be managed following this protocol.

Secondary Postpartum Haemorrhage – Abnormal or excessive bleeding from the vagina between 24 hours and 12 weeks postpartum.

Causes of Postpartum Haemorrhage

- **Tone** (70%) – most common cause
- **Tissue** (9%) – Retained placenta, placenta accreta.
- **Trauma** (20%) – Genital trauma i.e. vulva, vaginal, cervix, uterus or broad ligament.
- **Thrombin** (1%) – Disseminated intravascular coagulation (DIC), pre-existing bleeding disorders such a haemophilia or women taking therapeutic anticoagulants.

Blood loss can be easy to underestimate and difficult to accurately estimate. Cumulative blood loss should be recorded contemporaneously. Swabs and clots should be weighed to gain a more accurate estimate.

Small women have small blood volumes

Weight (kg)	Total Blood Vol (ml)	15% loss (ml)	30% loss (ml)	40% loss (ml)
50	5000	750	1500	2000
55	5500	825	1650	2200
60	6000	900	1800	2400
65	6500	975	1950	2600
70	7000	1050	2100	2800

*Based on 100mls/kg blood volume in pregnancy (RCOG 2011) but may overestimate blood volume in obese women

Prediction and Prevention of PPH

Identify risk factors in antenatal and intrapartum period and modify care plans accordingly including place of delivery.

Badgernet PPH Prevention Risk Assessment tool should be completed at the following appointments:

- Booking appointment
- 34/36 week appointment
- On admission in labour or for induction of labour
- During intrapartum care

The PPH Prevention Risk Assessment tool should be updated every 4 hours during intrapartum care and it should be reviewed in second stage to ensure an appropriate management plan for the prevention of PPH is followed.

Women who have a PPH score on Badgernet of ≥3 are at high risk of PPH and should have the following management to prevent PPH:

- IV access and FBC Group & Save (Cross Match if Hb <90g/L)
- Syntocinon 5 units IV and 1ml Syntometrine IM (unless contraindicated due to hypertension or maternal cardiac history) after delivery of anterior shoulder.

- If Syntometrine is contraindicated then Syntocinon 5units IV and Syntocinon 10 units IM with delivery of the anterior shoulder
- Consider prophylactic Syntocinon infusion (40 units of Syntocinon in 500ml Sodium Chloride 0.9% at 125 ml/hour).

Minimising risk – treat antenatal anaemia

https://obsgynhandbook.nhsggc.org.uk/nhsggc-obstetrics-gynaecology-guidelines/guidelines-library/antenatal-general/cg-management-of-iron-deficiency-during-pregnancy-and-the-puerperium/

Minimising risk – measure all blood loss at delivery.

Active management of third stage

Active management of third stage should be recommended as it shortens the third stage and reduces the risk of postpartum haemorrhage and blood transfusion. It involves the following components:

Uterotonics

Vaginal delivery: oxytocin 10 units IM with the birth of the anterior shoulder.

Caesarean section: oxytocin 5 units slow IV injection AFTER the cord has been clamped and cut. Tranexamic Acid 1g IV (over 10mins) should be considered if ongoing blood loss is ≥ 500mls

Delayed cord clamping

Delayed cord clamping is not thought to increase the risk of postpartum haemorrhage and should be recommended unless there are concerns over fetal wellbeing or the integrity of the cord. **It is safe to administer IM oxytocin with delivery of the anterior shoulder even with the recommendation of delayed cord clamping.** Do not clamp and cut the cord earlier than 1 min from birth unless there are concerns over fetal wellbeing (baby's heart rate is <60 beats/minute and not increasing) or the integrity of the cord or signs of placental abruption. Clamp and cut the cord before 5 minutes to allow controlled cord traction to be performed.

Controlled Cord Traction

Controlled Cord Traction after signs of separation of the placenta and after administration of uterotonic drugs.

Physiological Management of Third Stage

Physiological management of third stage involves the following components;

No routine use of uterotonic drugs

No clamping of the cord until pulsations have stopped

Delivery of the placenta by maternal effort

Women should be advised that physiological management of third stage is associated with an increased risk of primary postpartum haemorrhage and blood transfusion.

Advise that the women should change from physiological management of third stage to active management of third stage in the following situations;

- Haemorrhage
- Placenta not delivered within 1 hour of the birth of the baby

1st Line Management of PPH (Appendix 1)

Minor PPH blood loss 500 – 1000ml without clinical shock

Alert labour ward coordinator, middle grade obstetric and anaesthetic staff

Intravenous access one grey cannula

Urgent venepuncture: FBC, Group and Save, Coagulation screen including fibrinogen

Pulse, respiratory rate, blood pressure every 15 minutes

Commence warmed crystalloid infusion.

Major PPH blood loss more than 1000ml and ongoing bleeding or clinical shock **(Appendix 2)**

- ABC: assess airway and breathing; Oxygen 15L/min via facemask
- Evaluate circulation
- Position the patient flat
- Call for help – emergency buzzer – request Labour Ward Coordinator, Obstetric Registrar and Anaesthetist. Call 2222 for Obstetric emergency call to be put out – Alert Consultant Obstetrician and Consultant Anaesthetist.
- Assign a scribe to document events on Badgernet using the PPH management tool
- Give immediate clinical treatment:
    - Uterine massage/bimanual compression if required

o Empty bladder – leave catheter in place and commence fluid balance chart

o Uterotonic drugs – see below for options

o Ensure there are two Grey cannulas in place, take bloods for full blood count, coagulation screen, U&Es & LFTs as a baseline and cross match packed red cells (PRC) minimum of 2 units. **If blood loss is ongoing at 1500mls request Pack A which will contain 6 units PRC**

o Controlled cord traction if placenta has not yet been delivered – remove any clots or remaining tissue

o Continuously assess blood loss – weigh swabs and clots and keep a contemporaneous estimate of blood loss and ensure this is clearly communicated to the obstetric team managing the case

o Continuously assess the woman's condition – blood pressure, pulse, oxygen saturations, temperature every 15 minutes initially then as required by early warning score, hourly urine output minimum 0.5ml / Kg/ hour

o Identify the source of the bleeding – consider the 4 T's as above.

o Volume replacement: involves restoration of both blood volume and oxygen carrying capacity. As rapidly as possible give 2L of warmed Hartmann's solution.

o Institute the Major Obstetric Haemorrhage Call with the trigger phrase if bleeding is more than 1.5 L and ongoing.

o Aim to maintain Hb > 80g/l, platelets > 50*109 /L, PT < 1.5 times normal, APTT < 1.5 times normal and fibrinogen > 2g/l

o Blood transfusion: the decision should depend on the clinical picture and haematological assessment. Blood transfusion should be part of multi-disciplinary management. MDT approach with haematology required especially in the presence of red cell autoantibodies

o 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. If prothrombin time/activated partial thromboplastin time is more than 1.5 times normal and haemorrhage is ongoing, volumes of FFP in excess of 15 ml/kg are likely to be needed to correct coagulopathy

o A plasma fibrinogen level of greater than 2 g/l should be maintained during ongoing PPH. Cryoprecipitate should be used for fibrinogen replacement

o During PPH, platelets should be transfused when the platelet count is less than 75×10^9/l based on laboratory monitoring

o Documentation of fluid balance, blood, blood products and procedures using the PPH Checklist on Badgernet

o "Stand Down" call to Blood Bank when clinical situation has resolved

o Consider physiological monitoring: arterial line/CVP

o Consider the most appropriate place to monitor patient following PPH, this may be HDU or ITU

o Documentation of parameters on a modified early obstetric warning score (MEOWS) chart acting and escalating promptly when abnormal scores from a MEOWS chart are observed

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

1st LINE UTEROTONIC DRUG TREATMENT

No particular uterotonic drug can be recommended over any, options include:

o Repeat bolus of:

- Oxytocin 5 units by slow IV injection (may have repeat dose)
- Ergometrine 500 micrograms (IM or slow IV) – do not give Ergometrine if woman is hypertensive or in cases of retained placenta

o Oxytocin infusion – 40 units oxytocin in 500ml 0.9% sodium chloride by IV infusion at 125ml/hour unless fluid restriction necessary

o Tranexamic acid 1g IV (over 10mins). This should be given promptly if haemorrhage is known to be mainly from trauma to the perineum or a vascular surgical procedure. This can be repeated after 30mins if bleeding ongoing. Contraindicated in severe renal impairment **THIS IS NOT A UTEROTONIC DRUG**

https://clinicalguidelines.nhsggc.org.uk/obstetrics/common-obstetric-problems-intrapartum-labour-ward/tranexamic-acid-for-use-in-post-partum-haemorrhage-619/

o Carboprost (IM) – 250micrograms every 15 minutes. Max 8 doses. (contraindicated if woman has severe cardiac/pulmonary/renal or hepatic disease)

o Misoprostol – 1000 micrograms per rectum or 800micrograms sublingually (this takes 1-2.5 hours to increase uterine tone)

If pharmacological measures fail to control haemorrhage, surgical intervention should be initiated.

Surgical Intervention

- **EUA Examination Under Anaesthetic**

Check for tears or retained placenta

- **Bakri Tamponade Balloon (Intra Uterine Catheter**)

This device is intended as a means of establishing haemostasis in cases indicating conservative management of postpartum uterine bleeding.

The balloon portion of the Tamponade is inserted through the internal os or abdominally at Caesarean Section (the incision is then closed normally).

An indwelling Foleys catheter should be in place whilst the Tamponade is in place and fluid balance closely observed with hourly volumes.

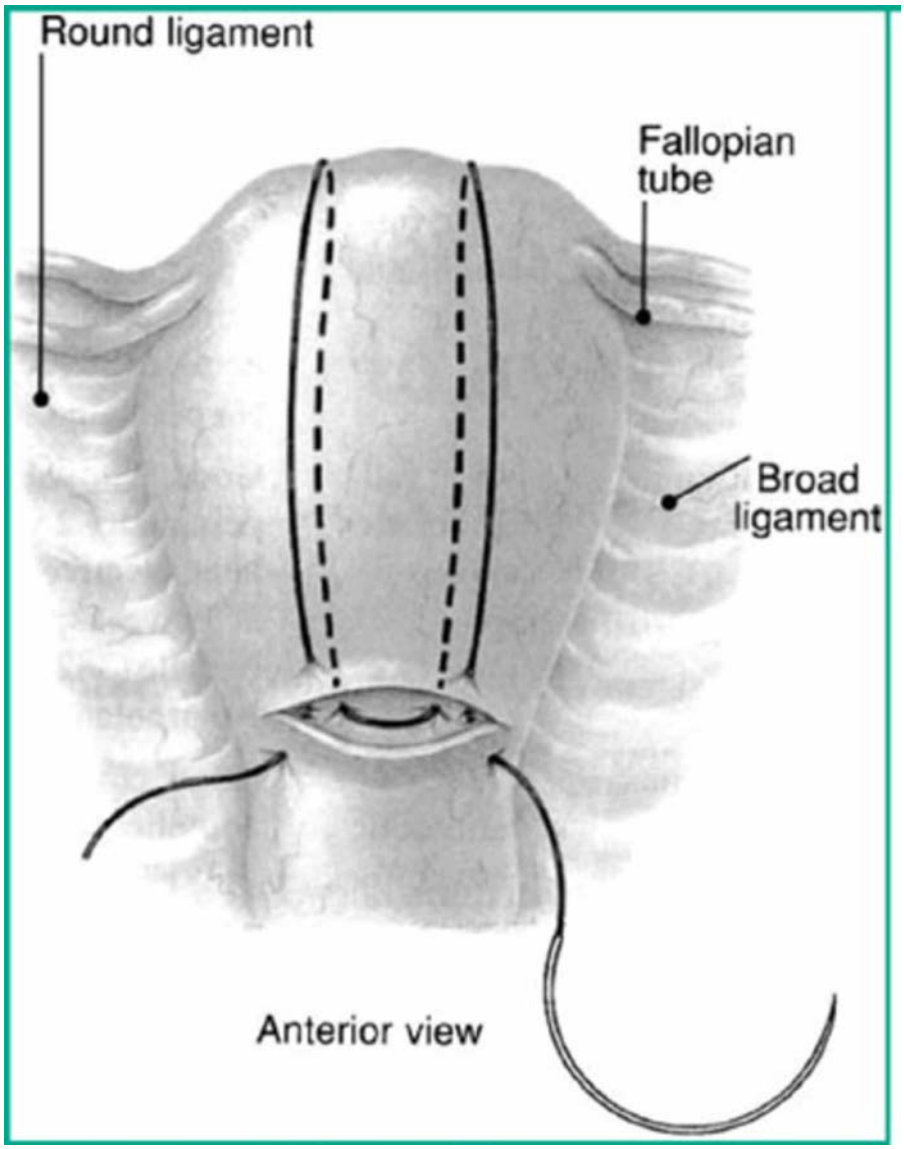
The balloon of the Tamponade is inflated with sterile water up to about 350mls. Record the amount of sterile water used on Badgernet.

Patient's observations should be monitored for signs of increased bleeding and uterine cramping.

The balloon can be left in for up to 24 hours.

Tamponade balloon removal: Consultant to be involved in timing of this.

- **The B-Lynch Suture**



- **Uterine Artery Ligation**
- **Interventional radiology if available- contacted via Switchboard**

Resort to hysterectomy sooner rather than later especially in the cases of ongoing haemorrhage and placenta accreta or uterine rupture

A second Consultant should be involved in the decision for hysterectomy

CELL SALVAGE https://obsgynhandbook.nhsggc.org.uk/nhsggc-obstetrics-gynaecology-guidelines/guidelines-library/common-obstetric-problems-intrapartum-labour-ward/cg-intraoperative-blood-cell-salvage-obstetrics/

At present the cell saver is not used for emergency haemorrhage but consideration should be given to its use intraoperatively in elective surgery where major blood loss is anticipated

WOMEN WITH KNOWN BLOOD DISORDERS

These patients should have a documented birth plan including additional measures to be taken in the event of bleeding made by Haematology and documented in Badgernet.

In the event of a post partum haemorrhage occurring in a woman with a known bleeding disorder, contact the consultant haematologist on call immediately.

WOMEN PRESCRIBED LOW MOLECULAR WEIGHT HEPARIN

Reversal of LMWH is unlikely to be required if > 12 hours since last prophylactic dose, or > 24 hrs since last treatment dose (unless significant renal impairment, i.e. CrCL<30ml/min). Otherwise, contact the Consultant Haematologist On-Call to discuss the use of Protamine or FFP for reversal.

Anti-factor Xa activity is incompletely neutralised (maximum about 60%) by Protamine

- Protamine is administered by Intravenous injection (rate not exceeding 5 mg/minute maximum dose 50mg) or by continuous intravenous infusion.
- Protamine (50mg max dose) diluted up to 50ml with normal saline.
- Required dose infused over 10-20 minutes
- 1 mg of Protamine neutralises approx. 100IULMWH e.g. Dalteparin on Tinzaparin or 1mg Enoxaparin (consult product literature of low molecular weight heparin for details)

Consider repeat dose 0.5mg/100IU LMWH after 2-4 hours if continued bleeding

Too rapid an injection or too large a dose of protamine may cause hypotension or anaphylactoid-like reactions. Facilities to treat shock should be readily available. Patients who have previously received protamine (eg diabetic patients taking Neutral Protamine Hagedorn NPH insulin which contains Protamine) have a 1% risk of anaphylaxis

WOMEN WHO REFUSE BLOOD PRODUCTS https://obsgynhandbook.nhsggc.org.uk/nhsggc-obstetrics-gynaecology-guidelines/guidelines-library/antenatal-general/cg-women-who-refuse-blood-products-guideline-for-management/

SEVERE SECONDARY PPH

Causes are numerous and include endometritis, RPOC and subinvolution of the placental implantation site.

Management should include assessment of haemodynamic status, assessment of blood loss and an evaluation of the woman's concerns

- Base line observations – Temp, Pulse, Respirations and Blood Pressure.
- IV access. Site 2 Grey venflons and obtain FBC, Cross-Match 4 Units, Coagulation Screen, Cultures, U&E, CRP and lactate if Pyrexial – https://obsgynhandbook.nhsggc.org.uk/nhsggc-obstetrics-gynaecology-guidelines/guidelines-library/infections/cg-maternal-sepsis/
- IV antibiotics

  https://obsgynhandbook.nhsggc.org.uk/ggc-obstetrics-gynaecology-handbook/guidelines-library/infections/cg-antibiotic-prophylaxis-in-obstetric-procedures/

  https://obsgynhandbook.nhsggc.org.uk/nhsggc-obstetrics-gynaecology-guidelines/guidelines-library/infections/cg-antibiotic-policy-obstetric-patients/
- Adequately resuscitate and give Ergometrine 500micrograms (unless hypertensive or maternal cardiac history) and Oxytocin infusion as above.
- Consultant Obstetrician to be informed.
- High vaginal and endocervical swab.
- A pelvic ultrasound may help to exclude the presence of retained products of conception, although the diagnosis of retained products is unreliable
- Senior Obstetrician should be present to undertake or supervise surgical evacuation of retained products of conception. Risks include uterine perforation and Asherman's Syndrome

Datix DEBRIEFING AND FOLLOW UP

An opportunity to discuss the events surrounding the obstetric haemorrhage should be offered to the woman possibly with her birthing partner at a mutually convenient time. Address future pregnancy/ risk of recurrence. A follow up appointment should be offered to the woman postnatally when necessary consideration of the use of psychology services where necessary

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REFERENCES

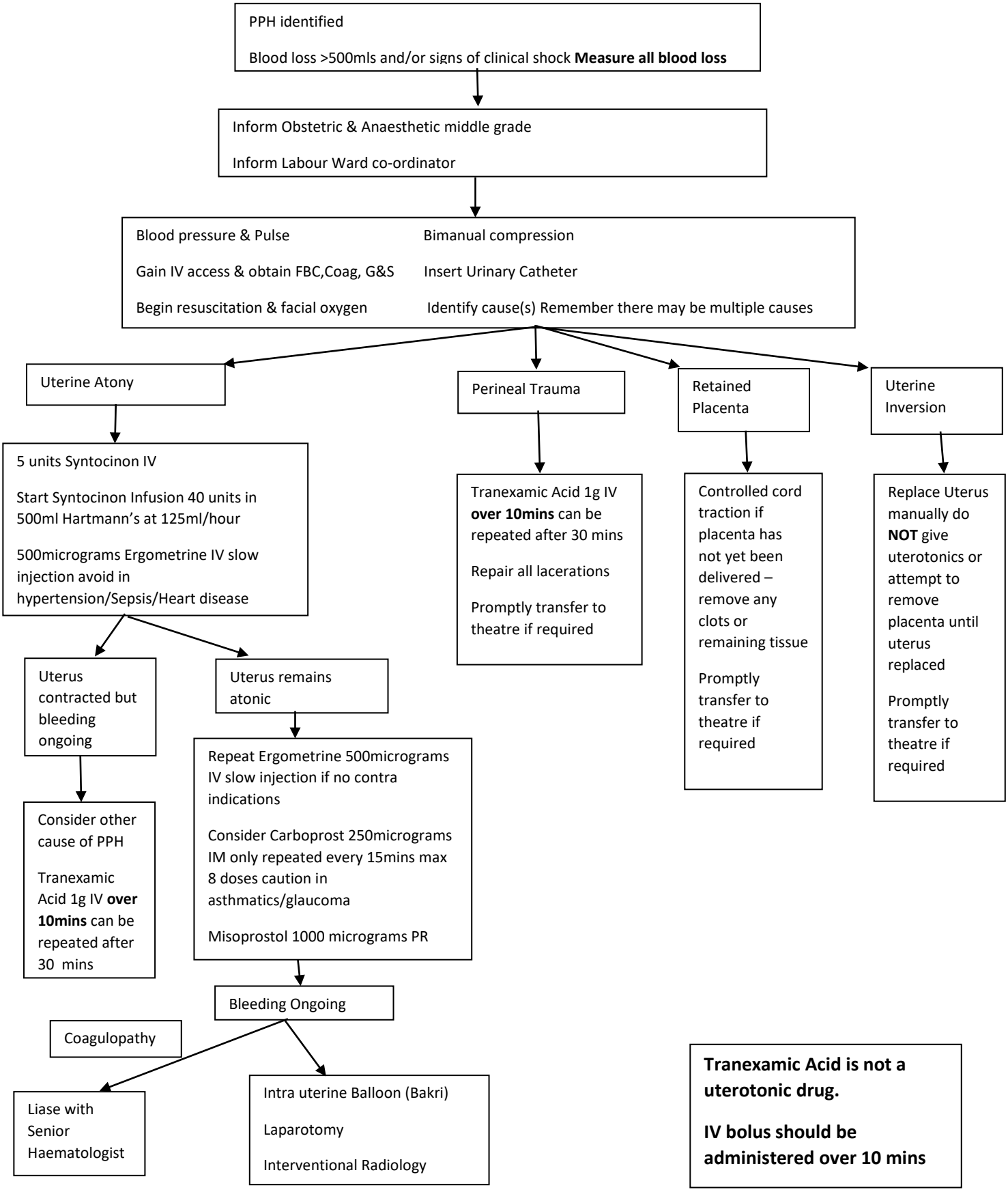
Prevention and Management of Postpartum Haemorrhage. Green-top Guideline No. 52: 16 December 2016

Care in third stage of labour. Nice: April 2021

Intrapartum care for healthy women and babies. NICE Clinical guideline CG190

MBRRACE-UK: Saving Lives, Improving Mothers' Care 2020: Lessons to inform maternity care from the UK and Ireland Confidential Enquiries in Maternal Death and Morbidity 2016-18

Appendix 1 Post Partum Haemorrhage Management



Appendix 2 Postpartum Haemorrhage Resuscitation

Measure all blood loss at every delivery

Attach suction to under buttock drape in instrumental deliveries at increased risk of PPH, recording measured liquor at time of delivery

Minor PPH
500ml-1000ml
No signs of clinical shock

Inform;
LW Co-ordinator
Obstetric Middle Grade Doctor
Anaesthetic Middle Grade Doctor

- Site 16G IV Cannula
- FBC, COAG, G&S
- Hartmann's Solution up to 2L commenced (Watch Fluid Balance if Pre-eclampsia/Maternal Cardiac Hx)
- Maternal Observations every 15 mins
- Review Antenatal Hb
- Identify cause and manage as per protocol
- Inform Senior Obstetric/Anaesthetic Staff if bleeding ongoing
- Document in Badgernet PPH tool

AIM TO MAINTAIN;
Hb> 80g/l
Platelets > 50*109 /L
PT < 1.5 times normal,
APTT < 1.5 times normal
Fibrinogen > 2g/l

Major PPH
≥1000mls +/or
Signs of clinical shock

Call Obstetric & Anaesthetic Middle Grade & Senior Obstetrician/Anaesthetist- On Site

- Assign a scribe
- Oxygen 15L/min
- Site 2x 16G Cannulae
- FBC,COAG,UEs,LFTs,Crossmatch minimum 2 units PRC
- Consider bedside testing for Hb/coag
- Urinary Catheter
- Hartmann's solution via warmer up to 2 L
- Identify cause and manage as per protocol
- Maternal Observations every 15 mins or as per MEWS
- Measure blood loss continuously and communicate clearly to obstetric/anaesthetic team
- Consider CVP/arterial line
- Transfuse O Neg blood if bleeding life threatening
- Transfuse if measured blood loss >2.5L and ongoing
- After 4 Units of PRC infuse FFP
- Document in Badgernet PPH tool

Measured Blood Loss >1500mls With Ongoing Bleeding

CALL 2222
State "Major Haemorrhage" giving hospital, ward, location and staff required

Request consultant Obstetrician and Anaesthetist to attend

Inform senior haematologist

When haemorrhage controlled consider transfer to HDU/ITU

Step down the major obstetric haemorrhage call

Document in Badgernet PPH tool