Postpartum Haemorrhage - Prevention and Management - Full Clinical Guideline - DERBY

Reference no.: OBST/03:18/H6

Contents

1. Introduction

Major Obstetric haemorrhage is life threatening and often unexpected. Blood loss may be torrential and is not always revealed. Obstetric Haemorrhage is the second leading cause of direct maternal deaths in the UK and Ireland. The recommendations from the national report focus on basic clinical skills, with prompt recognition of the severity of a haemorrhage and emphasise communication and teamwork in the management of these cases.

Two common denominators have been identified in the management of this condition: lack of recognition and lack of preparation. Although standard levels have improved, the degree of obstetric haemorrhage remains under-estimated due to the concealed nature of

haemorrhage in significant number of patients.

2. Purpose and Outcomes

Successful outcome depends on prompt recognition and action. Personnel and resources should be mobilised quickly and deployed in an organised manner.

3. Abbreviations

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

4. Definitions

Primary postpartum haemorrhage:

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

Minor PPH: 500 – 1000ml

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

Note however that blood loss is less tolerated by women with low haemoglobin concentrations, small body frames <60kg (low blood volume) and in women with pre-eclampsia.

Secondary postpartum haemorrhage:

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

5. Prediction and Prevention of PPH

5.1. Risk Factors

Risk factors for PPH may be present antenatally or intrapartum. Care plans must be modified as and when a risk factor arises.

Clinicians must be aware of risk factors for PPH and should take these into account when counselling a women about place of delivery.

Women with known risk factors for PPH antenatally should only be delivered on Labour ward. If a risk factor arises during labour a woman needs to be transferred to labour ward, if not already there, provided it is considered safe to do so and there is enough time.

Consider 4 T's – 'Tone, Trauma, Tissue and Thrombin'

- PPHs are mainly due to uterine atony but can also be caused by cervical tears and vaginal/perineal tears and lacerations, and retained placental tissue.
- A cervical tear may occur in normal vaginal births but is more common in instrumental deliveries.

Pre natal	Intrapartum
Pre-eclampsia Caesarean scar Previous PPH as there is a recurrence risk of 20-25% Uterine distension o multiple pregnancy o polyhydramnios o fetal macrosomia Anaemia Asian ethnicity Pre-existing abnormalities of coagulations: • Haemophilia A • Idiopathic thrombocytopenic	Uterine exhaustion o prolonged labour (especially with oxytocin infusion) o precipitate labour Uterine distortion o placenta praevia o placental abruption o uterine fibroids o uterine anomalies Uterine infection o prolonged ROM o chorioamnionitis Drugs o tocolytics o inhalational anaesthetic agents o heparin o magnesium o nifedipine

purpura • Von Willebrand's disease	Others o high parity o obstetric cholestasis o obesity (difficult access at operative deliveries) o Delivery by LSCS o Retained products of conception o Genital tract injury o Uterine rupture

5.2. Minimising Risk

5.2.1. Treating antenatal anaemia

Antenatal anaemia should be investigated and treated appropriately as this may reduce the morbidity associated with PPH

Research has indicated an association between women with antenatal anaemia (Hb less than 90g/l) and greater blood loss at delivery and postpartum.

5.2.2. Reducing blood loss at delivery

Uterine massage after birth and either before or after delivery of the placenta is of no benefit in the prophylaxis of PPH and should as such not be practised.

Prophylactic use of uterotonics should be routinely offered in the management of the third stage of labour in all women as they reduce the risk of PPH.

For women delivering vaginally:

- Prophylactic use of Syntometrine® 1 ml i.m. after delivery of the anterior shoulder or at the latest immediately after delivery of baby, is the agent of choice to be recommended unless contraindicated
- If Syntometrine® i.m. is contraindicated, oxytocin 5IU i.v. should be recommended
- If there is an increased risk of haemorrhage, physiological management of the 3rd stage or Syntocinon 10IU i.m. is not appropriate
- Informed consent needs to include:
    - first line agent of choice according to NICE/RCOG is currently Syntocinon 10IU i.m however, first line use of Syntocinon 10IU i.m. has been proven to increase the risk of PPH>1 litre within our Trust
    - possible side effects of syntometrine® (PIL on Trust website, Appendix A)

For women delivering by caesarean section, oxytocin 5IU by slow infusion should be used to encourage contraction of the uterus and to decrease blood loss. In women at increased risk of PPH the use of intravenous tranexamic acid (0.5-1.0g) in addition to oxytocin should be considered.

Contraindications for use of Syntometrine®:

- hypersensitivity to the active substances or other ingredients
- hypertension, pre-eclampsia, eclampsia
- severe cardiac disorders
- severe hepatic or renal impairment
- occlusive vascular disease
- sepsis

5.3. Placenta Accreta or Percreta

All women with a previous scar must have their placental site determined by ultrasound scan. MRI may assist in determining the presence of placenta accreta or percreta. These both require Consultant-led, multi-disciplinary planning for delivery.

Interventional radiotherapy is not a routine service at RDH. Cases of suspected placenta accreta or percreta should be considered for prophylactic IR by prior arrangement with a Consultant Interventional Radiologist and anaesthetist. Consider doing these caesareans in gynae theatre. These are considered on individual cases according to availability of IR.

6. Management of Primary PPH

Resuscitation, monitoring, investigation and treatment should occur simultaneously.

6.1. Severity and Aetiology of the Haemorrhage

Clinicians 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 a PPH.

A visual estimation often underestimates blood loss, more accurate methods may be used such as weighing.

Aim to determine the cause of PPH while carrying out resuscitative measures. Palpate the uterus to exclude atony and perform a vaginal examination to exclude tears.

6.2. Staff to be Involved in Management

Early involvement of appropriate senior staff is fundamental to the management of PPH. Early alert of blood bank is fundamental for timely management of major PPH.

In case of minor PPH (500ml-1000ml) without clinical shock the following staff should be alerted:

- Midwife in charge
- St3 or higher
- Anaesthetic staff

In case of ongoing major obstetric haemorrhage: follow Trust Massive Haemorrhage Policy.

Call For help:

S enior Midwife

O bstetricians

A naesthetist

P aediatrician (if relevant)

S cribe

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

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

Portering and Collection Arrangements for Blood (See Trust Guideline: Massive Haemorrhage)

In this maternity unit it has been found to be more beneficial, dependant on the location, to use appropriately trained staff from the labour ward to collect blood in this situation.

A staff member who has undergone blood product training must collect blood required for transfusion and complete the paperwork

6.3. Resuscitation

6.3.1. Resuscitation measures for minor PPH (500-1000ml) without clinical shock

- Intravenous access 16G cannula
- Urgent venepuncture (20ml) for:
  - Group and screen
  - Full blood count
  - Coagulation screen, including fibrinogen
  - U&E
  - LFT's
- Pulse, respiratory rate and blood pressure recording on MEOWS every 15 minutes
- Commence warmed crystalloid infusion
- Keep patient warm

In the case of a home birth, arrange transfer with a paramedic ambulance to an obstetric unit as soon as possible (see care of women in labour and transfer guidelines).

6.3.2. Resuscitation measures for major PPH (>1000ml)

Full protocol for major PPH and continuing to bleed or clinical shock:

Additional to measures taken at an earlier stage (5.3.1):

- Additional second intravenous access 16G cannula

- A high concentration of oxygen (10-15 l/min) via a facemask should be administered, regardless of maternal oxygen concentration
- Cross match packed red cells (4 units)

The cornerstones of resuscitation during PPH are restoration of both blood volume and oxygen carrying capacity. Volume replacement must be undertaken on the basis that blood loss is often underestimated.

- **A**irway - assess
- **B**reathing - assess
- **C**irculation – evaluate
- Position the woman flat
- Keep the woman warm using appropriate available measures
- Transfuse blood as soon as possible if clinically required (see Trust Guideline)
- Until blood products are available, infuse up to 3.5 litres of warmed clear fluids, initially 2 litres of warmed isotonic crystalloid. Further fluid resuscitation can continue with additional isotonic crystalloid or colloid (succinylated gelatin). Hydroxyethyl starch should not be used.
- 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

All women with prolonged or major haemorrhage require ***careful, accurate and regular monitoring of respirations, pulse rate, blood pressure, CVP, acid base status and urinary output*** as well as continuing care by the midwifery and medical staff.

Commence a Modified Early Warning Score (MOEWS) chart, including fluid balance monitoring. If the patient is in theatre, the anaesthetist will document observations in an anaesthetic chart and the MOEWS chart will be started when the woman is in recovery or HDU.

During resuscitation, a designated person should note and contemporaneously document every 5 mins pulse and BP as well as actions taken. Estimate and record blood loss. The woman and her partner/family should be kept informed.

6.4. Treatment

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.

6.4.1. Tone

The most common cause of primary PPH is uterine atony. The initial management of PPH should, therefore, involve measures to stimulate myometrial contractions. The following mechanical and pharmacological measures should be instituted/administered in turn.

- Palpate the uterine fundus and rub it to stimulate contractions
- Ensure that the bladder is empty (foley catheter, leave in place)
- Maintain uterine tone with syntocinon 5 units IV or IM and follow with infusion of 40 units Syntocinon in 500ml normal saline at 125mls/hr. [For pre-eclamptics on fluid restriction, consider 40 units syntocinon in 40mls 0.9% saline at 10ml/hr.]
- IM Syntocinon 10 units and/or plain Ergometrine (500micrograms IM) may also be used. *Ergometrine may cause profound hypertension and wheezing, and should be avoided in patients with hypertension, cardiac disease or asthma.*
- Maintain fluid balance chart as bleeding may continue and large volumes of fluid may be infused.
- Check placenta and membranes for completeness. If incomplete, uterine exploration may be necessary.

6.4.2. Pharmaceutical interventions for persistent atonic uterus

Carboprost (Hemabate) *(Carboprost is a 15 Methyl analogue of prostaglandin F_2 alpha*) may be used for uterine bleeding not responding to uterine massage and Syntocinon.

Carboprost 250 micrograms should be given IM and may be repeated at minimum interval of 15 minutes, up to a maximum of 2mg (8 doses). IM injection is as effective as, and safer than, intramyometrial (IMM) injection. IMM injection is more likely to cause bronchospasm.

Avoid Carboprost in patients with asthma, and other pulmonary, cardiovascular, renal or hepatic disorders.

Misoprostol 800 micrograms sublingual - may be given before or after carboprost, it has a longer action and is particularly useful if coagulopathy is suspected, when IM injection should ideally be avoided. It is also less likely for carboprost to cause bronchospasm in asthmatics. NB this is not a licensed used of misoprostol

6.4.3. Surgical interventions

If pharmaceutical measures fail to control the haemorrhage, surgical interventions should be initiated sooner rather than later.

Intrauterine balloon tamponade (Appendix C) is an appropriate first-line ‘surgical’ intervention for most women where uterine atony is the only or main cause of haemorrhage.

Conservative surgical interventions may be attempted as second line, depending on clinical circumstances and available expertise. These may include uterine packing, ligation, balloon occlusion, embolization of uterine or internal iliac arteries.

The brace (B-Lynch) suture technique, especially for PPH at Caesarean section is described in Appendix D. A laminated version can be found in theatre.

Resort to total or subtotal 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.

6.4.4. Trauma

Consider Cervical/vaginal tears if haemorrhage ongoing and uterus well contracted

- Examine for cervical or vaginal tears/lacerations

- Repair genital tract lacerations promptly, with good light/exposure and appropriate analgesia.

6.4.5. Tissue

Retained Placenta - active 3rd stage, 40 iu syntocinon infusion, prompt transfer to theatre

6.4.6. Thrombin

Check clotting, platelets (and fibrinogen if severe or persistent haemorrhage). Remember coagulopathy may be the primary cause of a PPH, or secondary to a PPH caused by one of the other reasons above.

6.5. Care Post Primary PPH

After discussion with the Consultant Obstetrician and Anaesthetist, women who have suffered a major obstetric bleed should be transferred to the obstetric HDU or ICU.

- The woman should not be transferred until the bleeding has been controlled and the cardiovascular parameters are stable.
- Oxygen saturation, ECG and blood pressure should be monitored during transfer. Resuscitation drugs and fluids should be carried. (See Recovery of obstetric patients following anaesthesia guideline and HDU guideline).

Complete DATIX form if blood loss exceeds 1000ml.

7. Use of Cell Saver in Obstetrics

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

The cell saver is able to collect the patient's own blood as it is lost, during a Caesarean section or postpartum haemorrhage. If the amount lost is large, rather than discarding them, the red cells can be spun, washed and filtered, before being returned to the patient. This could be achieved before bank blood becomes available, or, in the case of a very rapid haemorrhage, bank blood and saved cells may be given simultaneously.

7.1. Using the Cell Saver

- Confirm that the woman has read and understood the patient information leaflet if she is an elective patient. **In an emergency, it may be appropriate to use the cell saver with little or no discussion**, depending on the circumstances.
- The cell saver is kept in gynae theatres, along with supplies of disposables.
- A stock of the leucocyte-depleting filters, and the suction reservoirs are kept in labour ward theatre, for immediate use while the cell saver is fetched from general theatres.
- The cell saver is run by an extra ODP. If possible, give notice to the ODP in advance. For elective cases the cell saver is booked via the theatre coordinator in general theatres. See list of appropriate cases held in ANC.
- Can be given within 6 hours of collection
- Not to be stored in the fridge

7.2. Sickle Cell and the Cell Saver

The cell saver should not be used in a patient with homozygous sickle cell disease. Sickle cell trait may induce sickling of salvaged blood, but may be justifiable under extreme circumstances e.g. in a Jehovah's Witness with catastrophic haemorrhage. Blood should be

processed soon as possible before it becomes severely deoxygenated, and kept as close to body temperature as possible by the use of warmed saline washing solution.

7.3. Jehova's Witness

- We cannot guarantee to provide this service in an emergency, as there are at present only a few members of staff who have been trained to run the machine.
- Establish that use of the cell saver is acceptable to *this* patient – check on her Advance Directive.
- Prime the cell saver as usual, but connect the return limb and filter to the patient before any blood is collected.
- Other options, such as tranexamic acid, aprotinin and recombinant factor VIIa may also be required as a dilutional coagulopathy may develop, and also consider postoperative intramuscular iron.
- Salvaged blood may be kept (still attached in continuity with the woman's circulation) for up to 6 hours before being returned to her. This may be useful in case of a postpartum haemorrhage.

7.4. Postoperative Care

A Rhesus negative woman should have a Kleihauer test one hour after the infusion is complete, to estimate the amount of fetal red cells which have entered the circulation. Give 500 iu Anti-D immunoglobulin to prevent maternal immunisation from a 4ml fetal red cell contamination, and a further 125 iu of Anti-D per 1.0ml of fetal red cells in excess of 4ml.

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

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

7.5. Limitations of the Cell Saver

- Can only be used if trained personnel available.
- Cannot distinguish between fetal and maternal cells
- No plasma, platelets or clotting factors are returned to the patient.
- Cannot process clotted blood.
- A patient who has already lost huge amounts of blood and had large volumes of crystalloid / colloid will be anaemic, therefore salvaged blood may not contain many red cells.

7.6. Safety Aspects

The safety of the cell saver has been well established in many types of operation, including, increasingly, obstetric surgery. There are theoretical concerns about amniotic fluid embolism (AFE). However, the cell saver has now been used in thousands of women during childbirth. In vitro and in vivo, there do not *appear* to be any problems with amniotic fluid contamination. This only applies if the suction and swabs are used according to this guideline, and as long as a special leucocyte-depleting filter is used. However this does not completely rule out the possibility of amniotic fluid embolism.

Some fetal red cells may be infused as the cell saver cannot distinguish between fetal and maternal red cells. A typical amount would be between 4-19ml, median 7ml. A Rhesus negative woman may require a slightly larger dose of Anti-D if the cell saver is used.

During processing, debris, alpha-fetoprotein, fetal squames, phospholipid lamellar bodies fibrin, plasma, platelets, leucocytes, microaggregates, complement, free haemoglobin, tissue factor, circulating pro-coagulants and most of the heparin is removed. Salvaged red cells are superior, or at least equal to banked homologous blood in terms of red cell survival, morphological changes, pH, 2,3DPG and potassium levels.

The cell saver does not reinfuse plasma, platelets, or clotting factors. Therefore a woman may develop a dilutional coagulopathy, and require treatment.

8. Tranexamic Acid

May be helpful to inhibit fibrinolysis – try up to 2g IV (undiluted) at 1ml/min, **before** considering use of recombinant factor VIIa. Tranexamic acid carries a lower risk of thrombosis, and is approx **500 times** less expensive.

Stocks held in Obstetric theatre 1 and Gynaecology theatre 2 & 4

9. Recombinant factor VIIa

In the case of severe non-surgical haemorrhage, unresponsive to correction of pH, temperature, platelet levels, infusion of FFP, cryoprecipitate and tranexamic acid, consider Recombinant Factor VIIa. **Details**

- Also known as 'Eptacog alpha (activated)', (trade name 'NovoSeven®').
- May be acceptable to some Jehovah's Witnesses – check Advance Directive.
- Not licensed for obstetric use. Has been approved for obstetric indications by D&T and the DMT.

Indications

- Life threatening haemorrhage that has failed to respond to conventional therapy:-
- all surgical measures
- all medical/surgical measures for atonic PPH – see section on management of PPH
- adequate blood product replacement including platelets, FFP and cryoprecipitate

Use must be sanctioned jointly by the Obstetric and Anaesthetic Consultants in consultation with the Consultant Haematologist.

How to get it:

Contact the Consultant Haematologist

- It is stored in the blood transfusion laboratory
- Must be stored in the fridge.
- If >2hours at room temperature it becomes useless.
- Cost is approx £3,500 per dose, so do not leave it out of the fridge!
- Please return any unused rFIIVa to blood transfusion laboratory

Administration

Must be at room temperature before use and all criteria for use must be met – see over

IV bolus, prepared from ampoules, mixed with supplied diluent. No special equipment needed, e.g. filter. Inject diluent slowly down the side of the ampoule, not directly into the powder, to reduce foaming.

Dose 90mcg/kg. For example, a woman weighing 80kg would need 7.2mg (360kIU), which is 6x 1.2mg ampoules.

May be repeated within 15-30 minutes if no clinical response.

Recombinant factor VIIa will not work if Fibrinogen levels are very reduced or there is significant thrombocytopaenia

(See flow chart and prescription sheet, Appendix E)

10. Management of Secondary PPH

Admit the woman to ward 314 (bleeding after six weeks post partum, unless it has been continuous from delivery, should be admitted to the gynaecology ward)Clerking on admission by SHO

Vaginal examination is essential. Bimanual examination should be performed to assess uterine size and whether the cervical os is open or closed. Note and document the quality and quantity of bleeding. Speculum examination may be useful, particularly if products are felt in os. These can be removed with sponge forceps. HVS should be taken. If the SHO is inexperienced, examination should be by or under the guidance of a registrar.

If the cervical os is open after five days postpartum, it is likely that the uterus contains products of conception and ERPC may be needed. This should be performed by SpR or above and the duty consultant should be notified. Ultrasound scan is usually unhelpful and should only be requested in consultation with middle grade or senior staff, when a clinical decision cannot be made.

Consider the need for IV access depending on haemodynamic status, continuing bleeding and need for IV antibiotics.

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

The commonest cause of secondary PPH is low-grade infection (endometritis). Antibiotic therapy is very effective and should be initiated unless PPH excluded after admission. If no contraindication, use Co-Amoxiclav; clindamycin if allergic to Penicillin (see guideline: antibiotics in obstetrics). Route of administration depends on amount of bleeding and the degree of infection. Note that antibiotics penetrate the necrotic and infected tissues poorly. If ERPC is indicated, unless bleeding is profuse, it is better to delay ERPC until IV antibiotics have been given for 12 – 24 hours. Gentamycin may be indicated.

- FBC, group and save serum/cross match depending on the degree of blood loss, and /or haemoglobin.
- High and low vaginal swabs.
- Blood cultures if pyrexial

- FBC/CRP
- Consider pelvic USS if late presentations.

11. Training

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

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

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

12. Monitoring Compliance and Effectiveness

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

13. References (including any links to NICE Guidance etc.)

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

MBRRACE 2016

J Mervyn Thomas (Letter) The treatment of obstetric haemorrhage in women who refuse blood transfusion BJOG 105, p127-128

B Lynch et-al: B-lynch Surgical suture for control of massive PPH: an alternative to hysterectomy. Br J Obs & Gynae 1999, 104: 372-375

Syntometrine®

Patient information

University Hospitals of Derby and Burton NHS Foundation Trust

What is Syntometrine and what is it used for?

Syntometrine belongs to a group of medicines called oxytocics. This means it makes the muscles of the uterus (womb) contract.

It is used to help the delivery of the placenta and to prevent or control bleeding after delivery of your baby.

What do I need to know before I receive Syntometrine?

Like all medicines, this medicine can cause side effects, although not everyone gets them.

Side effects of Syntometrine include: headache, dizziness, high blood pressure and feeling or being sick. If you had side effects last time you were given Syntometrine, or you experience them this time, please talk to your midwife or doctor.

You must not receive Syntometrine:

- If you are allergic to oxytocin, ergometrine or any of the other ingredients of this medicine
- If you suffer from severe liver, kidney, heart or circulation problems
- If you have a (very) high blood pressure
- If you are suffering from eclampsia or pre-eclampsia
- If you have a serious infection

If any of the above applies to you, your doctor or midwife will talk to you about alternatives.

How is Syntometrine given to me?

To help the delivery of the placenta, 1ml is injected into your leg muscle, once your baby's shoulder can be seen or immediately after delivery of your baby. The midwife or doctor will then pull gently on the umbilical cord to help deliver the placenta. It may also be used to prevent or control bleeding after the placenta is delivered or when bleeding occurs.

Syntometrine or Syntocinon?

In Derby we recommend Syntometrine, a combination of Oxytocin and Ergometrine, unless there are medical reasons for you not to receive it. Although this may increase your risk of side effects compared to using Syntocinon (only contains Oxytocin), we have seen an increase in the number of women losing more blood after having their baby.

Appendix B

Flowchart

It is essential to use every member of the team, in order to accomplish several things at once

Major Obstetric Haemorrhage

↓

Call for help

Senior midwife/Obs & Anaes Registrars

↓

Team leader (coordinating midwife) responsible for alerting blood transfusion laboratory (ext 88532; pager 3090) & Haematologist if ongoing haemorrhage or clinical shock using trigger phrase:

MASSIVE OBSTETRIC HAEMORRHAGE

↓

Resuscitation and Treatment

Airway **B**reathing **C**irculation

Oxygen mask (15 l/min)

Keep patient warm, L tilt if APH

16G cannulae x2

Fluid (2L Hartmann's, 1.5L colloid)

Blood transfusion (Group specific blood preferred)

↔

Monitoring and investigations

FBC, coagulation, U&E's, LFT's

Urgent blood group and antibody screen if not already done

ECG, pulse oximeter, NIBP – check and record every 5 mins

Foley catheter with hourly urimeter

Hb bedside testing (Hemocue)

↓

Document, Debrief

& Evaluate

1. **Complete Risk 'Trigger' form**
2. **MOH summary proforma**
3. **Datix reporting form**

Appendix C

Balloon Tamponade – Rush Balloon Catheter

You will need:

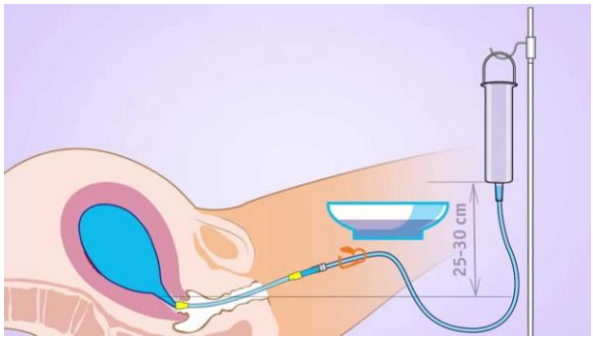
- Rusch catheter
- 50ml ***bladder syringe***
- sterile receiver or jug for saline
- 2x sponge holders (Rampley's)
- 500ml bag of saline, preferably warm for catheter's balloon
- Syntocinon infusion, 40units in 500ml saline

Procedure:

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

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

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

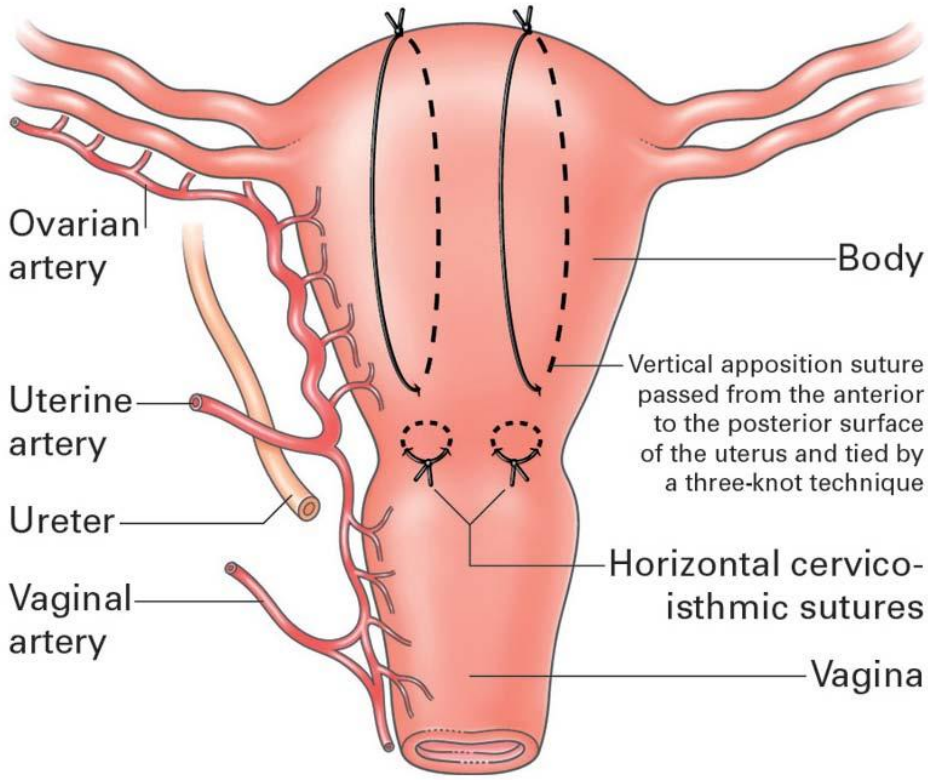


Appendix D

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

Procedure:

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



Appendix E

Recombinant factor VIIa

Indication

Life threatening bleeding that has failed to respond to conventional therapy- all surgical and non surgical measures e.g. for atonic PPH and adequate blood product replacement therapy for clotting disorders- Note. This is an unlicensed indication.

Cautions

- Patients with known thrombotic tendency
- Prosthetic valves or patients on warfarin
- Recent angioplasty, stent insertion, MI, thrombotic CVA, PE or severe PVD
- DIC or Sepsis

Action

- Request rFVIIa from consultant haematologist
- Send urgent bloods for FBC & PT, INR, KCCT & Fibrinogen

Patient preparation & Pre-requisites prior to rFVIIa

- Correct PT to < 1.5x control with FFP 15ml/kg
- Aim for Fibrinogen levels of>1g/L–correct with cryoprecipitate 10 units
- Aim for Platelet levels of ≥ 50 x 10^9/L. If less than 40 give 2 units
- Correct base deficit to +/- 2 use the formula (Weight/3x (negative base excess/2) = mls of 8.4 sodium bicarbonate)

Repeat coagulation Tests

Continue to transfuse blood products as required but do not give rFVIIa

Still bleeding?

Yes

Requirements met?

No

No

Dosage and administration

- Initial dose of 90mcg/kg (latest recorded body weight) . Round the dose off to the nearest 1.2mg vial, warm to room temperature before use
- Give by IV bolus over 2-5 minutes
- Monitor rate of blood loss: eg blood collected in drains and cell saver, and note transfusion requirement.
- If no response, repeat dose after 20 minutes.
- No more than 2 doses should be given
- Return any unused rFVIIa to pharmacy immediately.

Monitoring

Send FBC & clotting samples 30 minutes after each dose and at one hour.

IF life-threatening bleeding with cardiovascular instability is continuing despite aggressive clotting factor support and waiting for the blood results will put the patient at serious risk

GIVE rFVIIa

James Low, April 2006. Amended by R Broadbent 2009 Approved by D&T April 2006 Review date: April 2011.Version 4: Review date Nov 2015

PRESCRIPTION FOR THE USE OF RECOMBINANT FACTOR rVIIa IN UNCONTROLLED BLEEDING

FACTOR rVIIa CAN ONLY BE PRESCRIBED BY A CONSULTANT OBSTETRICIAN & ANAESTHETIST JOINTLY

Indication

Life threatening bleeding that has failed to respond to conventional therapy- all surgical measures and adequate blood product replacement therapy-

THE FOLLOWING CRITERIA MUST BE MET FOR THE PATIENT TO BE GIVEN rVIIa

Has your patient:

1. Lost the equivalent to > one whole blood volume transfusion (= 15 units for a 70 kg patient)?	YES	NO
2. PT & APTT less than 1.5x control (correct with FFP 15ml/kg?)	YES	NO
3. Fibrinogen levels corrected to >1g/L– with cryoprecipitate 10 units if needed?	YES	NO
4. Platelet levels of > 50 x 10^{9}/L? If less than 40 give 2 units	YES	NO
5. The base deficit corrected to +/- 2 using the formula? i. (Weight/3x (negative base excess/2) = mls of 8.4 sodium bicarbonate)	YES	NO
6. A core body temperature greater than 34.5 C?	YES	NO
7. Tranexamic acid already tried?	YES	NO

If NO to any of the questions then do not prescribe rVIIa until this is corrected

If YES to all questions proceed to follow the algorithm to prescribe rVIIa

Documentation Control

Reference Number: Obst/03:18/H6	**Version: 1**		**Status: FINAL**	
Version Amendment	Version	Date	Author	Reason
	1	Nov 2017	Maternity Guideline Group	Previously part of the 'Obstetric Haemorrhage and Transfusion' guideline
	1.1	October 2018	Mat Guideline group	Revert back to syntometrine as first line prophylaxis
Intended Recipients: All staff with responsibility for caring for women in the case of possible /actual obstetric haemorrhage				
Training and Dissemination: Cascaded through lead midwives/doctors, Published on Intranet, NHS mail circulation list. Article in BU newsletter.				
To be read in conjunction with:				
Development / review of Guideline:	Maternity Guideline Group			
Consultation with:	Midwifery, Obstetric Staff			
Approved By:	21/08/18 Maternity Guidelines Group: Miss S Rajendran – Chair 13/09/18 Maternity Development & Governance Committee/ACD: Dr Janet Ashworth Director of Midwifery: Mrs. J Haslam 21/02/18 Divisional Governance: Dr B Pearson - Chair			
Implementation date:	01/10/18			
Review Date:	March 2021			
Key Contact:	Cindy Meijer			