

# **MAJOR OBSTETRIC HAEMORRHAGE (MOH)**

**(This includes both antepartum and postpartum  
haemorrhage)**

## **Maternity Guideline**

## Abbreviations

APH	Antepartum haemorrhage
BMS	Biomedical scientist
CMACE	Centre for Maternal and Child Enquiries
FFP	Fresh Frozen Plasma
ODP	Operating Department Practitioner
PPH	Postpartum haemorrhage

## Definitions:

<b>Antepartum Haemorrhage</b>	Bleeding from or into the genital tract, occurring from 24 weeks of pregnancy and prior to the birth of the baby Minor = <50ml, settled Major = 200 – 1000ml, with no signs of clinical shock Massive = >1000ml and/or signs of clinical shock
<b>Major Obstetric Haemorrhage</b>	Blood loss of more than 1000ml
<b>MOH Protocol</b>	Measures commenced when blood loss more than 1500 ml AND continuing to bleed OR with hypovolaemic shock, including an alert bleep which is sent out to relevant members of the obstetric, anaesthetic, paediatric, theatre and haematology staff.
<b>Post-partum Haemorrhage</b>	Blood loss more than 500ml following birth. This may be primary (within 24 hours of delivery) or secondary (more than 24 hours from delivery)

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# MAJOR OBSTETRIC HAEMORRHAGE PROTOCOL

Actual or anticipated loss of >20% blood volume (approx 1500mls in average pregnant woman)  
within 3 hours or 150ml/min

Call 2222. State "Major Haemorrhage". Give Hospital and Location

Call the Blood Transfusion Laboratory for your hospital

## CHARING CROSS

Monday-Friday 9am-5pm

Ext. 17112

Out of hours

Bleep 8160

## HAMMERSMITH

Monday-Friday 9am-5pm

Ext. 34772

Out of hours

Bleep 9122

## ST MARY'S

Monday-Friday 9am-5pm

Ext. 22043 / Ext. 21157

Out of hours

Bleep 1611

### Information needed by the Blood Transfusion Laboratory

- Major haemorrhage protocol being activated
- Patient identification – Hospital/A&E Number, name & date of birth (unknown if in A&E)
- Patient location
- Name and contact details of person activating protocol for on-going communication
- Cause of bleeding
- How urgently (in minutes) until blood is needed at the bedside
- Group & screen, full blood count & coagulation screen samples being sent

### The Blood Transfusion Laboratory will issue -

#### Immediately:

- **Emergency O negative blood 2 units maximum (if required)**
- OR 6 units of group specific blood (*begin with O negative if no blood group known*)
- OR 6 units crossmatched blood - *if currently valid sample available*
- 4 units of FFP aiming to administer **1.5 RBC :1 FFP**

#### Once these components are collected from the laboratory

- A further 6 units of blood and 4 units of FFP will automatically be prepared and made available for issue

#### At this stage consider requesting

- 1 pool platelets
- 2 pooled units of cryoprecipitate

**THE LABORATORY WILL CONTINUE TO ISSUE 6 BLOOD & 4 FFP AT A TIME WHILST THE PATIENT IS BLEEDING**

**ENSURE THE PORTER IS SENT TO COLLECT BLOOD AND BLOOD COMPONENTS**

### Availability of Blood For Collection

Emergency O negative blood  
**Immediate**

Group specific blood  
**10 minutes**

Crossmatched blood  
**45 minutes**

Fresh Frozen Plasma  
**30 minutes to thaw**

Cryoprecipitate  
**30 minutes to thaw**

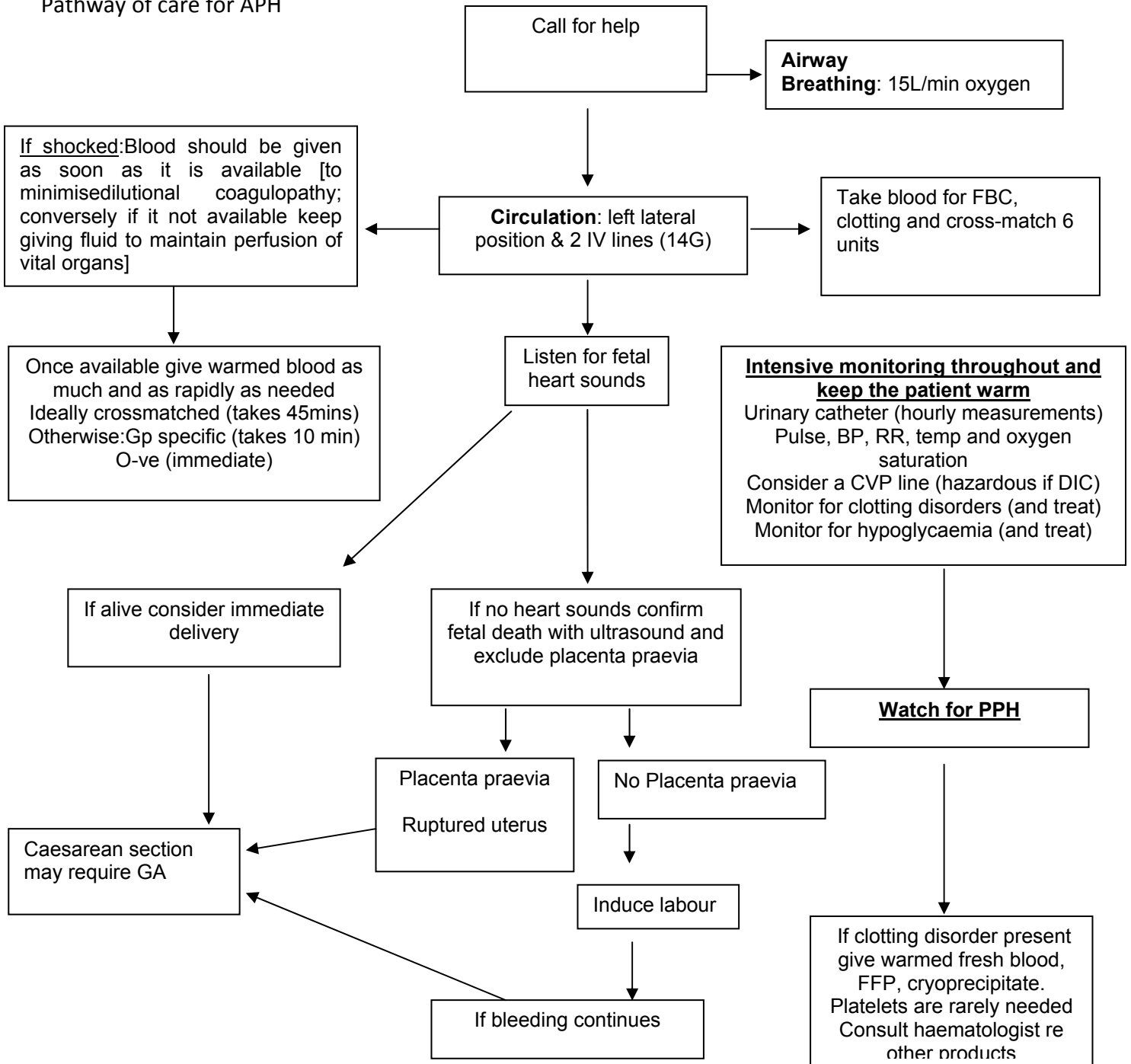
Platelets  
**Immediate if on site**  
but replacement delivery up to  
2 hours

### The clinical area will

- Nominate a Blood Coordinator to ensure blood & blood components are managed effectively
- Send full blood count & coagulation screen samples as a baseline and hourly thereafter
- Send repeat group & save sample if requested
- Ensure ISS informed of need for emergency Porter (if Porter not arrived following 2222 call)
- Ensure the patient's Consultant has been informed (if not already aware)
- Discuss on-going management with the Haematology SpR (contact through switchboard if contact details not known)
- Inform the Blood Transfusion Laboratory of the patient outcome, destination if moved and when to stand down

## I) Guideline Summary

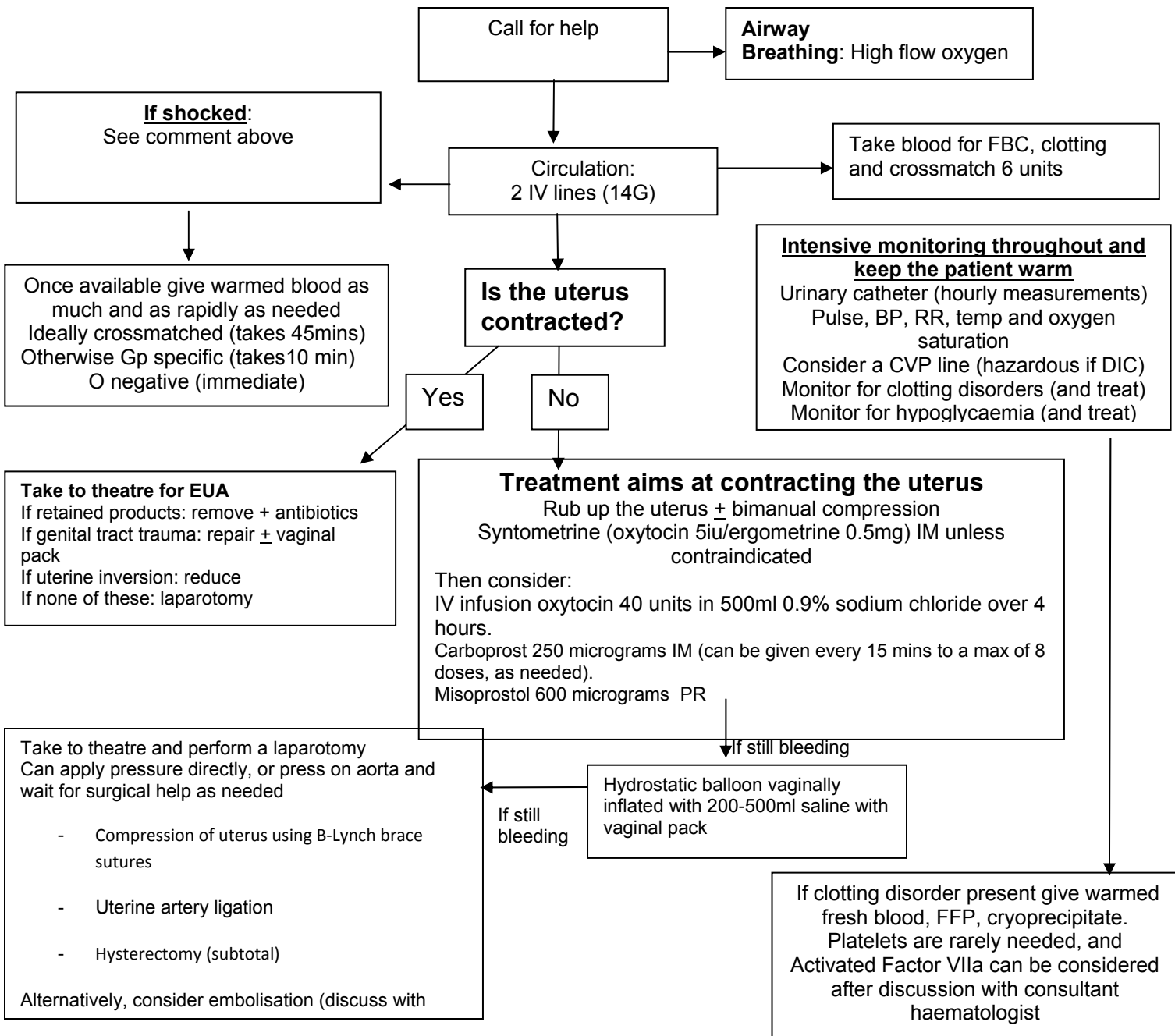
### Pathway of care for APH



**It is the APH that weakens and then the PPH that kills.**

**Attention should constantly focus on resuscitation to maintain the circulation.**

# Pathway of care for PPH



## **II) INTRODUCTION AND AIMS**

Major obstetric haemorrhage (whether it be antepartum haemorrhage or postpartum haemorrhage) occurs in 3.7/1000 births in the UK. 50% of maternal deaths worldwide are attributable to its effects, and it is the sixth most common direct cause of maternal mortality in the UK. In the last CEMACE report, covering 2006-2008, there were 9 deaths from haemorrhage. 5 of these were postpartum, and 4 antepartum. The report revealed substandard care in 6 out of 9 of these cases

The learning points from this report include:

### **Antenatally:**

Ensuring diagnosis and treatment of anaemia

The importance of determining placental site in women with previous Caesarean section

### **Intra and post-partum:**

The importance of routine observations using a MEOWS chart

Avoidance of excessive traction of the placenta

### **In management of an MOH:**

Early senior MDT involvement

This guideline aims to optimise the management of MOH and minimise the maternal and perinatal mortality and morbidity from it. The MOH protocol should be instituted as soon as there is any concern about a patient with blood loss **more than 1500 ml AND continuing to bleed OR with hypovolaemic shock.**

**Signs of shock include: tachycardia, hypotension, tachypnoea, oliguria or delayed capillary filling. A heart rate (in bpm) overtaking the systolic blood pressure (in mmHg) is an ominous sign.**

**Please note, 1500ml is an arbitrary cut-off as the proportion of blood loss it represents, and therefore the degree of shock, will depend on the size of the patient. The blood volume can be estimated as 70ml/kg. Thus a 1500ml blood loss represents 43% of a 50kg women's blood volume, compared to 30% of a 70kg women's. The degree of shock will also depend on the woman's original haemoglobin.**

## **III) THE MOH CALL**

### **A. DETAILS OF THE MAJOR OBSTETRIC HAEMORRHAGE ALERT**

Call **2222** and state "**Major Obstetric Haemorrhage**" giving **location** (remember to state hospital site (QCCH or SMH) as well as specific location within the unit).

**Switchboard** will then generate a call out to the following:

Obstetric Consultant\* (by telephone)

2 Obstetric Registrars (junior and senior)\*

Obstetric SHO\*



Anaesthetic Consultant\* (by telephone)  
Anaesthetic Registrar\*  
ODA  
Senior midwife (labour ward coordinator)\*  
Haematology BMS  
Porter  
Paediatric SHO  
Haematology Registrar

\*Expected to attend immediately

## **B. ROLES OF THE ALERTED TEAM**

### **Consultant obstetrician and anaesthetist**

Out of hours the consultant obstetrician and consultant anaesthetist will be informed by telephone. They will communicate directly with the senior midwife (labour ward coordinator) to establish whether they need to come in.

### **Team leader**

The most senior obstetrician or anaesthetist on site will be the team leader, although this leadership may change (from obstetrician to anaesthetist or anaesthetist to obstetrician), depending on the diagnosis, degree and source of bleeding and labour ward workload. On-going communication between the obstetric, midwifery and anaesthetic teams is crucial.

They should appoint a scribe and a blood coordinator (see below)

### **Scribe**

The scribe should be in charge of keeping contemporaneous records, to include:

- Estimated blood loss at regular time intervals
- Timings of transfer to/from theatre, and administration of anaesthetic
- Clinicians present
- Treatment given

See MOH proforma (Appendix 1)

### **Blood coordinator**

This individual is to be allocated by the team leader at the time of a MOH. Ideally the blood coordinator will be a clinician and will be responsible for:

1. Initial communication with the blood transfusion laboratory:

*State at the outset that a Major Obstetric Haemorrhage is being declared and ask the haematology BMS to acknowledge this.*

The following details are required:

Patient identification (hospital number, name and date of birth)

Patient location

Cause and amount of bleeding – confirm what blood and components are needed and when.

Details of blood samples already sent: when and how

Name and contact details of the nominated member of staff for on-going communication.

### **At QCCH**

a) Use the red phone situated in theatre 1 of LW (communicates directly with the transfusion lab) This phone should be used AFTER the 2222 MOH call has been activated

b) Elsewhere in QCCH contact directly on ext. 34772.

**At SMH** all calls should be directed to the lab on extension 22034/ 21157 (working hours) OR bleep 1611 (out of hours only).

2. Ensuring appropriately and accurately labelled blood samples (and associated request forms) are sent to the transfusion laboratory.
3. Monitoring the blood and blood components requests, with on-going communication with the transfusion laboratory
4. Documentation of transfusion (products and timings)

### **Porter**

The porter will go to the blood transfusion laboratory to collect the group compatible blood. If the chute is not working, the porter may also be needed to collect blood samples from labour ward first.

2 units of O RhD negative blood are kept on delivery suite in the blood fridge and can be used until the porter is able to bring the group compatible blood. In exceptional circumstances, if the patient's blood group is unknown, the porter may be asked to bring further units of O RhD negative blood from the Transfusion Laboratory. The porter will then return to the Transfusion Laboratory to deliver blood samples and collect the FFP (which should have thawed by then) and further blood.

### **Haematology BMS**

The haematology BMS, once informed of the patient's details, will be on standby for the receipt of the patient's blood samples. They will issue **6 units of group specific red cells, thaw 4 units of FFP and ensure platelets are available according to the agreed major haemorrhage protocol.** If not already available on site, platelets will be obtained urgently from the National Blood Service.

This will happen automatically once a MOH has been declared and will NOT require approval of haematology SpR or consultant, in the first instance.

Once the first lot of blood and FFP have been collected, a further 6 red cells and 4 FFP will be prepared ready for issue, This cycle will continue until the Transfusion Laboratory is instructed to stand-down.

### **Haematology SpR**

A senior haematologist (SpR who can contact the haematology consultant for further support) will be available via switchboard at all hours for advice if bleeding is on-going despite initial resuscitation and component therapy, and/or especially in the presence of DIC. The haematologist can be asked to help with the management of the situation including the coordination of additional blood components as well as the use of coagulation factors and/or recombinant factor VIIa.

## **IV)MANAGEMENT**

### **A. INITIAL RESUSCITATION: ABC**

**AIRWAY:** Assess and manage airway

**BREATHING:** Administer high flow oxygen by facemask at 10–15 litres/minute.

#### **CIRCULATION:**

Gain intravenous access (2 x 14-gauge cannula (orange)

Catheterise, with an hourly urine output bag attached

Lie patient down

(in left lateral position or heavily tilted with a wedge under her right hip if undelivered)

Keep patient warm

IV infusion of fluids, blood and blood products (see following section)

### **B. INITIAL MONITORING AND INVESTIAGTION**

Measure HR, BP and RR, and ensure continuous cardiac monitoring

Take bloods for crossmatch, FBC and clotting and mark as urgent

Blood transfusion bottles must be labelled by hand

The haematology lab should be contacted to warn them to expect receipt and process asap

Bedside testing of haemoglobin (HaemoCue) should be used to give an indication of the urgency of the situation.

0.5 mls of blood in a syringe for the anaesthetist to check TEG (at QCCH)

Baseline renal and liver function tests

### **C. ONGOING MONITORING**

- Continuous visual observations of pulse, oxygen saturations, respiratory rate, and blood pressure recordings (using the pulse oximeter, electrocardiogram and automated blood pressure machines)
- 15 minutely temperature
- Hourly urine output

Record all parameters on the anaesthetic chart if in theatre and then/otherwise on the modified early obstetric warning system section of the HDU chart every 15 minutes

- This should include an accurate fluid balance, which includes all transfused products

Invasive monitoring:

- Consider arterial line monitoring (once appropriately experienced staff available for insertion)
- Consider CVP line monitoring (if not coagulopathic); both as a means of monitoring CVP and as a route for rapid fluid replacement

#### **D. FLUID THERAPY AND BLOOD PRODUCT TRANSFUSION:**

General principles include:

- Fluid and blood should be warmed (fluid warmers should be set up as soon as possible)
- Restoration of volume is the first priority
- Blood should be given as soon as it is available to minimise dilutional coagulopathy
- However, if blood is not available, fluid should continue to be given to maintain the perfusion of vital organs
- On-going communication with the transfusion laboratory is necessary to direct the supply of clotting factors, and to avoid wastage once it is clear that the situation is under control

##### **1. Fluids:**

Up to 2L of Plasmalyte as rapidly as possible

Followed by up to a further 1.5L of colloid if blood is still not available.

In patients with PET, consider using a starch (e.g. Voluven) as they have greater plasma expanding effects and better IV retention compared to gelatines.

3.5L of clear fluid is ideally the maximum volume of fluid that should be infused while awaiting compatible blood.

##### **2. Red Cells/Clotting factors:**

When MOH is declared, products will be issued by the laboratory according to the following formula: 6 RBC: 4 FFP: 1 platelets. Once 6 units of blood and 4 units of FFP are collected from the laboratory, another 6 units of blood and 4 units of FFP will automatically be prepared until instructed otherwise. Platelets and cryoprecipitate will be issued on request by the blood coordinator.

6 units of group specific blood can be made available by the lab within 10 minutes

If this is not available quickly enough, O RhNeg blood can be given

2 units of O RhNeg blood are kept on LW

If this is used, the transfusion lab must be informed so that they can replenish the supply

If atypical red cell antibodies are known to be present and fully cross-matched blood is required, this will be available in 45 minutes (if there are atypical antibodies – it can take hours). Serologically incompatible blood may be given if there is catastrophic bleeding. NEVER give ABO incompatible blood.

The Transfusion Laboratory will also issue clotting factors:

- 6 units of thawed FFP can be available in 30 minutes
- 1 pool of platelets available immediately if in stock, otherwise it can take up to 2 hours to obtain from transfusion centre
- 2 units of thawed pooled cryoprecipitate can be available in 20 minutes

The therapeutic goals of transfusion are as follows:

Hb >80g/L

Plt >75 x 10<sup>9</sup>/L

PT <1.5 x mean control

APTT <1.5 x mean control

Fibrinogen >1.0g/L

If a coagulopathy is inevitable due to the volume of blood lost/amount of replacement fluids given, or when it is suspected clinically (in the case of relentless bleeding), up to 4 units of FFP and 10 units of cryoprecipitate may be given while awaiting the results of the coagulation studies.

## **E. ARRESTING THE BLEEDING**

This will depend on whether MOH is antenatal or postnatal.

### **1. MASSIVE ANTEPARTUM HAEMORRHAGE (including placental abruption):**

*Remember that antepartum haemorrhages may often be partially or totally concealed and so the blood seen is likely to represent much less than the amount lost.*

*Also remember that DIC can occur in up to 10% cases due to the release of tissue thromboplastin from the site of placental injury.*

Key elements of management specific to APH:

- It is good practice to avoid vaginal and rectal examinations in women with placenta praevia
- Tilt patient
- Establish the viability and condition (CTG) of the fetus early, and consider steroids for fetal lung maturity

- Delivery will be expedited after initial maternal resuscitation if bleeding continues and/or the mother is unstable regardless of fetal viability.
- The mode of delivery will depend on fetal viability and maternal condition. There must be senior obstetric input, involving the consultant when time allows. Delivery is often by caesarean section under GA, but expediting vaginal delivery if labour is advanced may be appropriate.
- Remember all women who have had an antenatal haemorrhage are at increased risk of postpartum haemorrhage
- Rhesus negative women require a Kleihauer test and 500iu anti-D for each episode of antepartum haemorrhage
- Communication with neonatal unit, neonatologists, and preparation for neonatal resuscitation with senior support

## 2. MAJOR POST PARTUM HAEMORRHAGE

Primary PPH: Bleeding from the birth canal in the first 24 hours after delivery,

Secondary PPH: Bleeding from the birth canal between 24 hours and 12 weeks post-natally

There may be risk factors from the antenatal or intra-partum period. However, in 2/3<sup>rd</sup> cases, PPH occurs without any risk factors.

Antenatal: Previous PPH, anemia <8.5g/dL, BMI>35, grand multiparity, APH, fibroids, overdistension of the uterus (polyhydramnios, twins)

Intrapartum: Prolonged labour, Precipitate labour, Operative delivery

Consider the following causes (the “4 Ts”):

**tone** – The most common cause of primary PPH is uterine atony (70% cases)

Consider also uterine inversion (degree of shock out of proportion to degree of bleeding)

**TISSUE** – retained products (placenta, membranes, clots)

**TRAUMA** – vaginal and cervical lacerations, haematoma (including broad ligament), extra-genital (subcapsular liver rupture, splenic artery aneurysm rupture)

**THROMBIN** – deranged coagulation (secondary to sepsis, abruption, PET, HELLP)

### Non-surgical management of uterine atony:

- Bimanual uterine compression (rubbing up the fundus) to stimulate contractions
- Empty bladder (leave foley catheter in place)
- Ask for the placenta to be checked to see if it appears complete
- Uterotonics:
  - Oxytocin 5 units by slow intravenous injection (may have repeat dose)
  - OR Syntometrine® (Ergometrine 500 micrograms and Oxytocin 5 units/im) once only

- Ergometrine 500 micrograms by intramuscular injection or slowly intravenously if the patient has not already had Syntometrine.

*NB ergometrine/syntometrine® is contraindicated in women with hypertension and on certain antiretrovirals. These include atazanavir, cobicistat (with atazanavir or darunavir), darunavir, fosamprenavir, indinavir, lopinavir, nelfinavir, ritonavir, saquinavir, tipranavir, delavirdine, efavirenz, etravirine, nevirapine and elvitegravir/cobicistat. These should not be co-administered with ergometrine/syntometrine.*

- Oxytocin infusion (40 units in 500 ml Hartmann's solution at 125 ml/hour unless fluid restriction is necessary)
- Carboprost (contraindicated in women with asthma) 250 microgram by intramuscular injection repeated at intervals of not less than 15 minutes to a maximum of 8 doses (2 mg).
- Carboprost 0.5 mg is not licensed for direct intra-myometrial injection and responsibility of using it in this way lies with the administering clinician
- Misoprostol 600 micrograms rectally

#### Surgical management of uterine atony:

*Initiate surgical haemostasis sooner rather than later*

Conservative surgical interventions:

1) The aorta can be manually compressed to allow time for resuscitation or for senior support to arrive

2) Balloon tamponade: Rusch balloon

- Inflated with 200-400 ml 0.9% sodium chloride
- Tamponade test should be performed = assessing if the bleeding has stopped with incremental inflation of the balloon.
- A pack is likely to be needed to keep in place
- It should be left at least 6-12 hours
- Directions for removal (which may include deflation in stages) should be written by the clinician at insertion

3) Haemostatic brace suturing (procedures described by B-Lynch or modified compression sutures)

4) Bilateral ligation of internal iliac or uterine arteries

Selective arterial embolisation if the patient is stable (see interventional radiology section below)

Hysterectomy:

This can be a life-saving procedure and, whilst reasonable efforts will be made to avoid this, the patient should not be in extremis before it is considered.

It should be considered sooner in women who refuse blood products and in cases of placenta accreta or uterine rupture.

A second consultant clinician will be involved in the decision for hysterectomy whenever possible. The gynaecology on-call consultant, where applicable, will be called to attend for these cases.

#### Treatments for other causes of PPH

- If retained products: EUA, removal + antibiotics
- If genital tract trauma: repair + vaginal pack may be needed (If so, prescribe antibiotics and leave urinary catheter in place until pack is removed)
- If deranged coagulation: replace blood products, discuss with haematology team
- If uterine inversion: reduce – refer to uterine inversion guideline

#### Management of secondary PPH:

- Secondary PPH is often associated with endometritis and antibiotics are clinically indicated:
  - Cefuroxime 1.5g IV TDS and metronidazole 500mg IV TDS switching to oral, when able, to co-amoxiclav 625mg PO TDS
  - **If penicillin allergic use:** clindamycin 900mg IV TDS and gentamicin 5mg /kg stat IV (maximum dose 450mg)\*; oral switch, when able, to clindamycin 300mg PO QDS and trimethoprim 200mg PO BD
  - If PID is suspected, refer to gynaecology emergency guidelines).
- In cases of endomyometritis (tender uterus) or overt sepsis, then the addition of gentamicin 5mg/kg OD IV\* (maximum dose is 450mg) is recommended – see also [severe sepsis guideline](#).

\*Use Dose Determining Weight (DDW) for anyone who is >120% Ideal Body Weight (IBW) to take account of excess body fat and water. See Trust Adult Treatment of Infection Policy.

- Surgical measures will be undertaken if there is excessive or continuing bleeding despite antibiotic treatment, or if there are obvious retained products.
- A senior obstetrician will be involved in decisions and performance of any evacuation of retained products of conception as these women have a high risk of uterine perforation.

#### **D. A NOTE ON ANAESTHESIA**

Cardiovascular instability is a relative contraindication to regional anaesthetic. General anaesthesia may be more appropriate. Such decisions should be made with the support of the consultant anaesthetist.

#### **V) ADDITIONAL MEASURES**



## **A. RECOMBINANT FACTOR VIIA**

This can be given after discussion with haematology as an adjuvant to standard pharmaceutical or surgical treatment. It is given at a dose of 90mcg/kg, which can be repeated after 15-30 minutes.

This will not be effective if there is insufficient fibrinogen or reduced platelets, so a target for fibrinogen >1g/L and platelets >20x10<sup>9</sup>/L should be achieved before giving

## **B. CELL SALVAGE**

The cell saver is kept:

**At QCCH-** in Theatre One of the Labour Ward.

**At SMH** – in Main Theatres

It is set up in anticipation in case where:

- Bleeding is expected to be excessive (e.g. anticipated placenta accreta, large fibroids, some cases of placenta praevia)
- The woman refused blood products (in these cases it will be mentioned preoperatively and included in the consent process)

It can also be set up during an emergency if bleeding is on-going (providing appropriately experienced staff and anaesthetists are available).

**NB. Cell salvage cannot be used in patients with Sickle Cell disease.**

Training and use is in keeping with NICE guidelines.

Normal suction is used until the baby and placenta are delivered and all liquor has been removed from the operative site. The suction from the cell saver can be used for the rest of the procedure. In a rhesus negative patient, a Kleihauer will be done postoperatively if the salvaged blood has been re-transfused, to confirm the dose of anti-D Ig required (see NICE guideline (2005) and Catling & Joels (2005)).

## **C. INTERVENTIONAL RADIOLOGY**

These techniques can be life-saving, and can be especially useful when the bleeding is surgically inaccessible or treacherous (for example high vaginal fornix trauma). It can also be useful with morbidly adherent placentae.

It is performed by interventional radiologists. On both sites this occurs in the Interventional Radiology Department. The patient must be stable for transfer to the department.

Some high risk cases can be pre-catheterised in the department before transfer to theatre for their procedure. Such arrangements will be made at consultant level (see also guidelines on placenta accreta).

In other high risk cases it may be appropriate to inform the IR department in advance of surgery even if pre-catheterisation is not planned.

Contact details as follows:

QCCH - Hammersmith IR department: clinical lead Dr J Jackson

SMH - Department of interventional radiology: clinical lead Dr Mohamad Hamadi

## **VI) DOCUMENTATION**

Documentation should be clear and contemporaneous. There should be a scribe assigned.

The proforma in Appendix 1 can be used.

## **VII) STEP-DOWN: ONCE BLEEDING IS CONTROLLED**

### **A. ESTABLISH ESTIMATED BLOOD LOSS AND COUNT SWABS**

MOHs are high risk situations for retained swabs and packs, often due to transfer from the room to theatre and due to the urgency of the situation. Ensure the scrub-nurse, lead surgeon, and midwife are happy with the count, including any swabs used outside theatre.

The blood loss should be estimated by establishing the volume in suction devices, and the weight of any swabs used. It should be noted that visual estimation often underestimates blood loss.

### **B. STEP-DOWN OF THE MOH ALERT**

The transfusion lab should be informed. Any unused blood products should be returned to the lab.

### **C. ONGOING MONITORING**

This should consist of:

- Continuous HR monitoring
- 15 minute BP, RR and oxygen saturations
- Hourly temperature
- Hourly urine output and accurate fluid balance

This should be entered on the MEOWS chart

Time intervals can be increased as appropriate

Bloods (FBC, clotting at a minimum) should usually be sent on arrival in recovery, and again after 4-6 hours (depending on the clinical situation and any on-going transfusion).

### **D. LOCATION OF MONITORING**

It may be appropriate to:

- continue care in the high dependency unit on labour ward
- transfer to Intensive care

This decision will be taken by the consultant obstetrician and anaesthetist

## **E. THROMBOPROPHYLAXIS**

Once the bleeding is arrested and the coagulopathy corrected, thromboprophylaxis is essential due to the high risk of thrombosis. Please consult the trust maternity thromboprophylaxis guidelines.

The timing of thromboprophylaxis administration should be considered in conjunction with the anaesthetic team, with consideration of the timing of removal of an epidural. Thrombocytopenia ( $<50 \times 10^9/L$ ) is a contraindication to thromboprophylaxis.

Pneumatic compression devices should be used in addition in the HDU/ITU setting, especially where thromboprophylaxis is contraindicated.

## **F. DEBRIEFING**

This is recommended to be performed by a senior member of the team who was involved at the time of events at the earliest opportunity.

Women should routinely be offered a 6 week follow-up appointment to discuss the events in more detail, and to discuss any implications for future pregnancies

## **G. DATIX**

A datix needs to be completed for all MOHs

## **VIII) PREVENTION OF MOH AND ITS CONSEQUENCES**

**The following measures should all be part of routine obstetric practice, and minimise the risk of MOH. Delayed cord clamping of 1-5 mins will not increase the chance of MOH and may have significant benefit to the baby.**

1) Identify and treat anaemia in the antenatal period

2) Active management of the third stage

This involves

A uterotonic

1) 10 units oxytocin im

Or Im Syntometrine® (Ergometrine 500 micrograms and Oxytocin 5 units/ml)

Contraindicated if there is maternal hypertension or if on certain antiretroviral (see p15)

2) Controlled cord traction

This lowers maternal blood loss and reduces the risk of PPH by 60%.

Women should be appropriately counselled regarding the implications of a choice of a physiological third stage.

3) In women with multiple risk factors for PPH recommend delivery on labour ward, and consider the additional use of 40 units syntocinon in 500ml 0.9% sodium chloride.

4) For women delivering by caesarean section, oxytocin (5 units by slow intravenous injection) will be used to encourage contraction of the uterus and to facilitate placental separation. Very occasionally a bolus dose of oxytocin may be inappropriate e.g. women with major cardiovascular disorders, when a low-dose infusion might be preferred.

5) In the antenatal period all women who have had a previous caesarean section must have their placental site determined by ultrasound. See Placenta Accreta guideline.

6) Pre-emptive or early consideration of additional measures (see above - cell salvage or interventional radiology)

## **IX) SPECIAL CIRCUMSTANCES**

### **A. MANAGEMENT OF WOMEN WHO DECLINE BLOOD AND BLOOD PRODUCTS**

Women who refuse blood transfusion have a three to four-fold increase in the risk of death from MOH. Please refer to guideline on "Women who may refuse blood transfusion in a life-threatening situation (e.g. Jehovah's Witnesses)"

### **B. ABNORMAL PLACENTATION**

In cases of known abnormal placentation, there should be consultant led MDT planning for delivery.

At delivery, there should be consultant presence, access to ITU and availability of blood products. Interventional radiology should be informed, and may consider prophylactic catheter insertion as explained above.

Please see Placenta Accreta Guideline

## **X) STAFF TRAINING**

Maternity staff training is described in detail in the 'Training needs analysis and strategy', and includes mandatory training for all in MOH. Ad hoc scenarios and live skills drills are also run on labour ward when workload and staffing allow.

## **REFERENCES AND FURTHER READING**

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## AUDIT and MONITORING

The audit and monitoring process is set out in the annual maternity services audit plan

## AUDITABLE STANDARDS

MOH guideline will be audited continuously:

- Appropriate management of women with previous PPH.
- Documentation of management, especially with the timing of events for women who had MOH.
- Appropriate management of labour and outcome in women with MOH.
- Notification to the risk management team for women with MOH.
- Activation of MOH call
- Communication with the haematology BMS and receiving the blood and blood components including portering arrangements
- Documentation of clear lines of communication between the consultant obstetrician, consultant anaesthetist, haematologist, blood transfusion personnel and labour ward coordinator
- Documentation of observations
- Documentation of fluid balance
- Intra operative cell salvage
- Interventional radiology
- Appropriate training of the obstetric team (midwifery and medical staff).

## EQUALITY IMPACT OF GUIDELINE

Is this guideline anticipated to have any significant equality-related impact on patients, carers or staff?

**NO**

## IMPLEMENTATION

Training required for staff	<b>Update clinicians</b>
If yes, who will provide training	<b>Lead Obstetricians for labour wards</b> <b>Practice Development Midwives</b>
When will training be provided?	<b>Professional training days</b> <b>Weekly Labour Ward Case Reviews</b>
Date for implementation of guideline	<b>December 2014</b>

## MONITORING / AUDIT

When will this guideline be audited?	<b>This guideline is subject to continuous audit</b>
Who will be responsible for auditing this guideline?	<b>Obstetricians Midwives</b>
Are there any other specific recommendations for audit?	<b>See auditable standards</b>

## REVIEW

Who will review this guideline?	<b>Multidisciplinary Guidelines Group</b>
Please indicate frequency of review: As a guide: <ul style="list-style-type: none"><li>• Drug related guidance should be reviewed every 2 years</li><li>• Therapy related guidance should be reviewed every 5 years</li><li>• Clinical treatment guidance should be reviewed every 3 – 5 years</li></ul>	<b>2 yearly or sooner if new recommendations produced by RCOG, NICE, CEMACH</b>
Date of next review	<b>December 2016</b>

## REFERENCES

References are listed in Harvard style at the end of the guideline

## GUIDELINE DETAIL

Start Date: (date of final approval by CPG)	<b>December 2014</b>	
Dates approved by:	<b>Maternity Guidelines Group (if applicable) Chairs Action</b>	<b>December 2014 v3 June 2015 V4</b>
	<b>CPG Quality and Safety Committee</b>	
	<b>Antibiotic Review Group</b>	<b>April 2015 v4</b>



<p>Have all relevant stakeholders (Trust sites, CPGs and departments) been included in the development of this guideline?</p>	<p><b>Obstetric Consultants</b>  <b>Obstetric Registrars</b>  <b>Midwives</b>  <b>Neonatologists</b>  <b>Obstetric Anaesthetists</b>  <b>Anaesthetic nurses and ODPs</b>  <b>Pharmacists</b>  <b>Blood Transfusion Team</b>  <b>Blood Transfusion Committee</b></p>
<p>Who will you be notifying of the existence of this guidance?</p>	<p><b>Midwives</b>  <b>Obstetric Consultants</b>  <b>Obstetric Registrars</b>  <b>SHOs</b>  <b>Lindo Wing &amp; Stanley Clayton Private Maternity Departments</b>  <b>A &amp; E at SMH &amp; QCCH</b>  <b>Physiotherapists</b></p>
<p>Related documents:</p>	<p><b>Women who may refuse blood transfusion in a life-threatening situation (e.g. Jehovah's Witnesses)</b></p>
<p>Author/further information:</p>	<p><b>Mr Karl Murphy (Consultant Obstetrician)</b>  <b>Miss Serap Akmal (Consultant obstetrician)</b>  <b>Ms Sobia Mahmood (Pharmacist)</b></p> <p><b>Miss Karen Joash Lead for Maternity Guidelines</b>  <b>CPG 5</b>  <b>Clinical Governance Office</b>  <b>4th Floor Hammersmith House</b>  <b>020 3313 6109 (QCCH)</b>  <b>020 3312 1358 (SMH)</b></p>
<p>Document review history:</p>	<p><b>Version 3 December 2014</b>  <b>Version 4 (amendment May 2015 - antibiotics)</b></p>

Next review due	<b>December 2016</b>
THIS GUIDELINE REPLACES:	Version 3

## **INTRANET HOUSEKEEPING**

Key words	<b>Haemorrhage</b> <b>Antepartum haemorrhage (APH)</b> <b>Intrapartum haemorrhage</b> <b>Postpartum haemorrhage (PPH)</b> <b>Major Obstetric Haemorrhage</b> <b>MOH</b> <b>Massive Obstetric Haemorrhage</b> <b>Intra operative cell salvage</b> <b>Interventional radiology</b> <b>Syntometrine</b> <b>Ergometrine</b> <b>Carboprost</b> <b>Cryoprecipitate</b> <b>Fresh frozen plasma</b> <b>FFP</b> <b>Platelets</b> <b>Plasmalyte</b> <b>Voluven</b> <b>Cefuroxime</b> <b>Metronidazole</b> <b>Clindamycin</b> <b>Trimethoprim</b> <b>Gentamicin</b> <b>Misoprostol</b>
Which CPG does this belong to?	<b>CPG5</b>
Which subdivision of the guidelines spine should this belong to?	Maternity <b>IMPERIAL</b>

**Appendix 1 – MoH Proforma**

Time of call-out \_\_\_\_\_ Call out by: \_\_\_\_\_ Date: \_\_\_\_\_

Baby delivered at call-out: Yes/No      Placenta delivered at call-out: Yes/No

*Please document next to name if the individual was assigned team leader, blood coordinator or scribe*

Team member	Name	Time of arrival
On-call obstetric consultant		
On-call obstetric senior registrar		
On-call obstetric junior registrar		
On-call obstetric SHO		
On-call anaesthetic consultant		
On-call anaesthetic registrar		
ODP		
Midwife		
Midwife		
Paediatrician		
Porter		

**Initial management (and times):**

Oxygen given		Cannula 2	Site:
Head of bed down		Catheterisation	
Cannula1	Site:	Transfer to theatre	

**Drugs (post-partum only):**

Drug	Dose	Time	Given by
Syntometrine	1 amp/ 1ml IM		
Oxytocin	5 units IM		
Ergometrine	500mcg/1 amp IM/IV		
Oxytocin	40units in 500ml over 4 hours		
Carboprost	250mcg/1amp IM		
Carboprost	250mcg/1amp IM		
Carboprost	250mcg/1amp IM		
Carboprost	250mcg/1amp IM		
Carboprost	250mcg/1amp IM		
Carboprost	250mcg/1amp IM		
Carboprost	250mcg/1amp IM		
Carboprost	250mcg/1amp IM		
Misoprostol	600mcg PR		

**Fluids & blood products:**

Type	Volume	Warmed?Y/N	Time