Government of JERSEY

Health and Community Services

Massive Obstetric Haemorrhage

April 2020

DOCUMENT PROFILE

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Author	
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Description	Clinical Guideline
Linked Policies	Blood Transfusion Policy Catastrophic Blood Loss Emergency in Adults Home Birth Guideline Transfer (emergency) of mother or babies from community into hospital
Approval Route	Divisional Meeting
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Contact Details	

CONTENTS

1. INTRODUCTION

1.1 Background

Post partum haemorrhage (PPH) is blood loss from the genital tract exceeding 500 mls. Massive Obstetric Haemorrhage (MOH) occurs when the loss is 1500 ml or more. It remains a major cause of maternal mortality in both developed and developing countries. The Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK (MBRRACE-UK) Confidential Enquiries into Maternal Deaths found the mortality rate as a direct result of haemorrhage to be a 0.55 per 100,000 maternities in the United Kingdom from 2011-2013 (December 2015).Of particular note some of the maternal deaths were considered preventable with the standard of care classed as sub-optimal. MOH emerges also as a major cause of maternal morbidity in most 'near miss' audits (Penney and Brace 2007).

1.2 Scope

This guideline applies to all Maternity, Theatre Staff and Transfusion trained Biomedical Scientists.

1.3 Principles

This guideline relates to management of MOH but its principles will apply to all cases of obstetric haemorrhage (antepartum/postpartum).

Switchboard will contact the following team once 2222 call received

- Senior midwife on duty (Co-ordinator 773)
- Obstetric Middle Grade/Registrar *(104)*
- Obstetric SHO *(141)*
- Anaesthetic Middle Grade/Registrar *(117)*
- Consultant Obstetrician *(by mobile number)*
- Transfusion Laboratory/Out of Hours Scientist *(107)*
- Porters/runner for transport of specimens/blood
- Consultant Anaesthetist (by mobile number)
- Paediatric team
- Theatre team *(42500 / 45113)*
- *Site Manager daytime (123) & night time(659)*

2. GUIDELINE REGIME

Remember the four components of management

Simultaneously:

- communicate
- resuscitate
- monitor/investigate
- arrest the bleeding

2.1 Communicate

- pull emergency buzzer
- call Crash Team Number **2222** stating "Massive Obstetric Haemorrhage" and identify where team are required, ask switchboard to repeat message back to you
- identify a member of the team to act as the lead coordinator, they will be responsible for all communication with the Transfusion laboratory/Out of Hours Biomedical Scientist (107) to discuss blood product requirements. Contact should be made within 2 minutes of the 2222 call. The Biomedical Scientist should not attempt to make the initial contact with the Obstetric Team after the 2222 call. Labour Ward Coordinator carries bleep 773 but may not be involved in the incident but will inform the Biomedical Scientist if

the woman is transferred from one area of the hospital to another. However, the Biomedical Scientist can make follow up phone calls as required.
- identify member of team to record events, fluids, drugs and vital signs (the scribe)
- identify a member of the team to act as a runner usually a porter who is familiar with the hospital layout, the runner must stay available throughout the incident until told to stand down
- it is essential that the phrase **MASSIVE OBSTETRIC HAEMORRHAGE** is used in all communication so as to alert staff to the seriousness of the emergency
- at earliest opportunity and where appropriate, the patient and her birthing partner should be informed of what is happening

2.2 Resuscitate (remember ABC)

- assess Airway
- assess Breathing
- evaluate Circulation
- 100% Oxygen by high concentration mask at 15 litres/minute high flow
- IV access with at least size16 G (Grey) cannula x 2 in either arm
- send blood urgently for FBC, U&E, LFT's, Coagulation Screen, Crossmatch and requests for any other blood products required (**Appendix 1** - MOH pack, 1st step, 2nd step, 3rd step)
- nurse in a flat (or tilted) position
- keep the woman warm; consider 'bair hugger'
- identify a team member (usually a porter) to transport forms to Transfusion Laboratory and to liaise with Biomedical Scientist and retrieve blood products when ready
- until blood available infuse up to a maximum of 1.5 litres of warmed crystalloid Hartmann's solution/Normal Saline as rapidly as needed
- use warming device to warm all infused fluids
- transfuse blood as soon as available (See appendix 1)
- avoid special blood filters as they slow infusions

In the non-emergency situation, generally coagulation studies and the advice of the Haematologist will guide the transfusion of coagulation factors. However, in the face of massive haemorrhage do not wait for coagulation results. Follow the algorithm in appendix 2.

REMEMBER to stand down the Biomedical Scientist in Transfusion when bleeding under control.

2.3 Other Causes of Collapse to Consider

- haemorrhage leading to shock (may not be revealed)
- amniotic fluid embolism
- pulmonary embolism
- septic shock
- Vaso-Vagal shock (inverted uterus)
- cardiogenic

- convulsion (eclamptic or epileptic)
- cerebro-vascular accident
- anaesthetic complication
- anaphylaxis

2.4 Monitoring

- continuous pulse/BP/ECG/oximeter monitoring every 5 minutes initially
- foley catheter to monitor urine hourly
- consider central venous pressure/arterial line monitoring
- consider transfer to ITU once bleeding controlled
- commence High Dependency Chart
- documentation of fluid balance, blood, blood products and procedures
- documentation of on-going blood loss (weigh swabs)

3. POSTPARTUM HAEMORRHAGE

Uterine atony is responsible for most cases of Obstetric Haemorrhage. However examine the patient to rule out other causes including:

- retained products (placenta and membranes)
- vaginal/cervical tears
- vulvo-vaginal haematomas
- ruptured uterus
- broad ligament haematoma
- extrapelvic bleed (subcapsular liver rupture, rupture splenic aneurysm)
- uterine inversion

These causes should be dealt with appropriately. Where uterine atony is suspected to be responsible for the bleeding the following drug regimes and mechanical measures may be resorted to:

- empty bladder
- uterine compression (bimanual)
- Syntometrine 1 amp given IM please avoid if hypertensive and give Syntocinon 5 units slow IV injection
- Carboprost (Haemabate) 0.25mg IM may be repeated at intervals no less than15 minutes to a maximum of 8 doses. Avoid if history of asthma. Though not licensed for intra-myometrial injection, this route may be considered with the responsibility of the Consultant Obstetrician and especially if the uterus is exposed i.e. at caesarean section or laparotomy (RCOG 2016)
- misoprostol 1000 micrograms rectally (RCOG 2016)
- Syntocinon infusion (40 units in 500 ml normal saline solution (0.9%)) at 125ml/hr unless fluid restriction indicated – this can be commenced simultaneously with the syntocinon IV bolus

Surgical measures should be considered sooner rather than later. Obstetric Consultant to communicate with Interventional Radiologist when surgical measures are being considered. They include:

1. Balloon tamponade – first line
2. Haemostatic brace suturing (B-Lynch or other variants)
3. Consider uterine artery embolisation (discuss with interventional radiologist - Dr or Dr (contact via switchboard)
4. Bilateral ligation of uterine/internal iliac arteries
5. Abdominal hysterectomy. Subtotal hysterectomy is the operation of choice unless there is trauma to the lower segment or cervix.

Surgical interventions 2-5 may be attempted dependent on clinical circumstances and available expertise. If a hysterectomy is to be undertaken it is good practice to have a second consultant obstetrician present.

Recombinant Factor 7a

The use of Recombinant Factor 7a must be approved by the Consultant covering Intensive Care or the on–call Consultant Anaesthetist or the Consultant Obstetrician. There needs to be adequate circulating concentration of fibrinogen (>1g/l) and platelets (<20 x 109/l), give 90 micrograms/kg; repeat within 15-30 min if poor clinical response. Adequate coagulation factor and platelet replacement is essential. Consultant Anaesthetist or an O&G Consultant are to specifically request Recombinant Factor 7a from Blood Transfusion (as a 3rd MOH step) without the need of contacting the Consultant Haematologist. If Recombinant Factor 7a is administered then the woman should be partially anticoagulated with Clexane 40mg 12hrly, starting 24 hours post Recombinant Factor 7a as there is a 5-10% reported risk of developing a DVT/PE.

Consultant Haematologist advice is available from Bournemouth Hospital in the absence of a local Consultant Haematologist.

Acidosis and hypothermia should be corrected as far as possible.

Administer Tranexamic acid 1g IV, in all circumstances where Recombinant Factor 7a is being considered.

4. ANTEPARTUM HAEMORRHAGE (APH)

Most patients with APH will have had a small amount of PV bleeding +/- some lower abdominal pain (back pain if placenta posterior). It is advisable to rule out Placenta Praevia prior to performing a vaginal examination.

Beware of large concealed abruptions where the amount of revealed vaginal bleeding is minimal. Remember, an engaged vertex almost always rules out a major Placenta Praevia and hard tender uterus is highly suggestive of placental abruption.

As with all cases of heavy bleeding, speed of thought is essential in the management of severe ante partum haemorrhage (APH). In essence resuscitate aggressively and request help urgently.

Avoid the trap of large concealed abruptions where the outward show of blood is minimal. Remember as an aide memoir:

- a 'woody hard' uterus is highly suggestive of placental abruption
- engagement of the presenting part invariably rules out major placenta praevia

Patients with known placenta praevia are crossmatched every 7 days until delivery. 4x red cell units are available in Theatre Fridge for these patients in case of major APH. Transfusion compatibility paperwork held on Labour Ward (red blood transfusion folder).

4.1 Minor-moderate APH

Blood loss <250ml and no evidence of shock (normal pulse and BP with a normal fetal heart rate (FHR) tracing)

- there should be minimal pain/tenderness
- take blood for FBC, Group & Save, and Kleihauer if Rh negative
- establish IV access
- electronic fetal heart tracing
- ultrasound scan to assess placental site
- speculum examination to assess for local causes
- anti-D injection where appropriate i.e. if rhesus –ve

4.2 Major APH

Blood loss > 250ml, severe abdominal pain/tenderness, or signs of shock (fast pulse, low BP with FHR abnormalities)

- management as per MOH protocol preceding – Communicate, Resuscitate and Monitor/Investigate
- if FHR normal, bleeding settled and patient stable – discuss further management with Consultant
- if FHR abnormal or patient continues to bleed expedite delivery

If suspected antepartum haemorrhage has resulted in fetal demise a blood loss of 2000mls should be anticipated and full MOH guideline may need to be initiated.

5. DISSEMINATED INTRAVASCULAR COAGULATION

5.1 Definition

Disseminated intravascular coagulation (DIC) is a condition characterised by unchecked thrombin generation, driving intravascular deposition of fibrin, together with platelet activation and widespread formation of micro-emboli.
Widespread plugging of small vessels creates hypo-perfusion, tissue injury and end organ damage. Typically in maternity cases DIC is acute in presentation and characterised by rapid-onset of defibrination with little compensation, near complete

exhaustion of fibrinogen and factors II, V, VII, VIII & X. Exhaustion of coagulation inhibitors – Anti-thrombin 3 (AT 3) & Protein C and variable thrombocytopenia.

There are multiple causes, but most involve exposure of excess tissue factor (TF).

5.2 Causes

The commonest trigger for DIC is the pathological exposure of large quantities of TF. Sources of which are brain, spinal cord, placenta and amniotic fluid. TF binds specifically to Factor VII and at high concentration the coagulation system is "over-driven". "Overdrive" rapidly exhausts available coagulation factors, setting the scene for paradoxical bleeding in what is primarily a "thrombotic" disorder.

5.3 At risk groups

Women with:

- sepsis
- amniotic fluid embolism
- placental abruption
- pre-eclampsia
- retained IUFD

5.4 Clinical Presentation

The affected person is often acutely ill and shocked with widespread hemorrhage (common bleeding sites are mouth, nose and venipuncture sites), extensive bruising, renal failure and gangrene.The onset of DIC can be fulminant, as in endotoxic shock or amniotic fluid embolism.

5.5 Clinical Investigations

Abnormal coagulation tests:

- low plasma fibrinogen, raised Fibrin Degradation Products (FDP's)
- prolonged PT
- prolonged APTT
- Thrombocytopenia
- Microangiopathic red cell fragmentation (peripheral blood film with evidence of red cell fragmentation)

5.6 Management

- if no local Consultant Haematologist available seek advice from the on call Bournemouth Consultant Haematologist via switchboard or ring Transfusion Department in Jersey in order to obtain the mobile phone number for the Consultant Haematologist working out of hours in Bournemouth
- a plasma Fibrinogen level of greater than 2g/l should be maintained during ongoing PPH (RCOG 2016)

- address depletion of Factors II, VIII and X
- avoid creating a “dilutional” coagulopathy with excess FFP given in place of Cryoprecipitate
- avoid early heparin use
- avoid use of fibrinolytic inhibitors
- use concentrated sources of coagulation factors – Cryoprecipitate and Prothrombin Complex

If woman is moved from one area to another location then to inform the Biomedical Scientist.

5.7 Cryoprecipitate

As part of first line management consider early use of cryoprecipitate – as part of the MOH pack. The MOH pack will be made available by Transfusion BUT consider frozen plasma products take 30 minutes to thaw. The maternity staff are to request a porter to collect blood first then return to Transfusion for FFP and/or Cryoprecipitate 30 minutes after declaring Massive Obstetric Haemorrhage. Initial dose of two units of Cryoprecipitate is advisable. Further doses may need to be administered, e.g. doubling the initial dose.

SUCCESSFUL MANAGEMENT OF DIC IS DEPENDENT UPON SWIFT ACTION AS THE ONLY EFFECTIVE TREATMENT IS THE REVERSAL OF THE UNDERLYING CAUSE AND PROMPT MANAGEMENT OF THE HAEMATOLOGICAL DISORDER.

6. REPORTING PROCESS

All cases of Massive Obstetric Haemorrhage should have the Obstetric Haemorrhage Checklist (Appendix 3) completed contemporaneously and a Datix incident form completed as soon as possible after the event.

7. WOMEN DECLINING BLOOD PRODUCTS

Refer to Hospital Transfusion Policy

http://hssnet/Policies/Policies/General%20Policies/HSS-PP-CG-0121-05%20Hospital%20Transfusion%20Policy.pdf

8. STAFF TRAINING

All clinical staff receive annual training on obstetric haemorrhage within the mandatory PROMPT programme

9. CONSULTATION AND DEVELOPMENT

9.1 Consultation Schedule

Name and Title of Individual	Date Consulted
Guideline Development Group	
	17.05.2018
	17.05.2018
	17.05.2018
	17.07.2018
	29.06.2018
	17.05.2018
	17.05.2018

Name of Committee/Group	Date of Committee/Group meeting
Case Review Meeting	
Divisional Meeting	

10. REFERENCES

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Stainsby D, MacLennan S, Thomas D, Isaac J, Hamilton PJ (2006). Guidelines on the management of massive blood loss. *Br J Haematol*; 135: 634-41

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11. IMPLEMENTATION PLAN

Action	Responsible Officer	Timeframe
Communicate guideline existence through team email and in appropriate forums	/ / Band 6 Labour Ward Coordinators	
Training – inclusion in PROMPT		Ongoing
Upload onto HSSnet	Information Governance	Upon receipt of record of ratification
Upload onto Maternity Intranet Site		Once live on HSSnet

Appendix 1 – Available blood products as part of an MOH pack

Available Blood Products

Can be requested individually or as part of an MOH pack.

MOH Pack First Step

- Blood 6 units – request depending on urgency of requirement
  - Emergency O negative available (4 units) in blood fridge located next to theatre (Immediately)
  - Group specific blood – unmatched blood (20 mins)
  - Cross matched blood (40 mins)
    If a patient has known red cell antibodies d/w Consultant Haematologist
- Fresh Frozen Plasma 2 Units (30 mins)
- Cryoprecipitate 2 Units (30 mins)

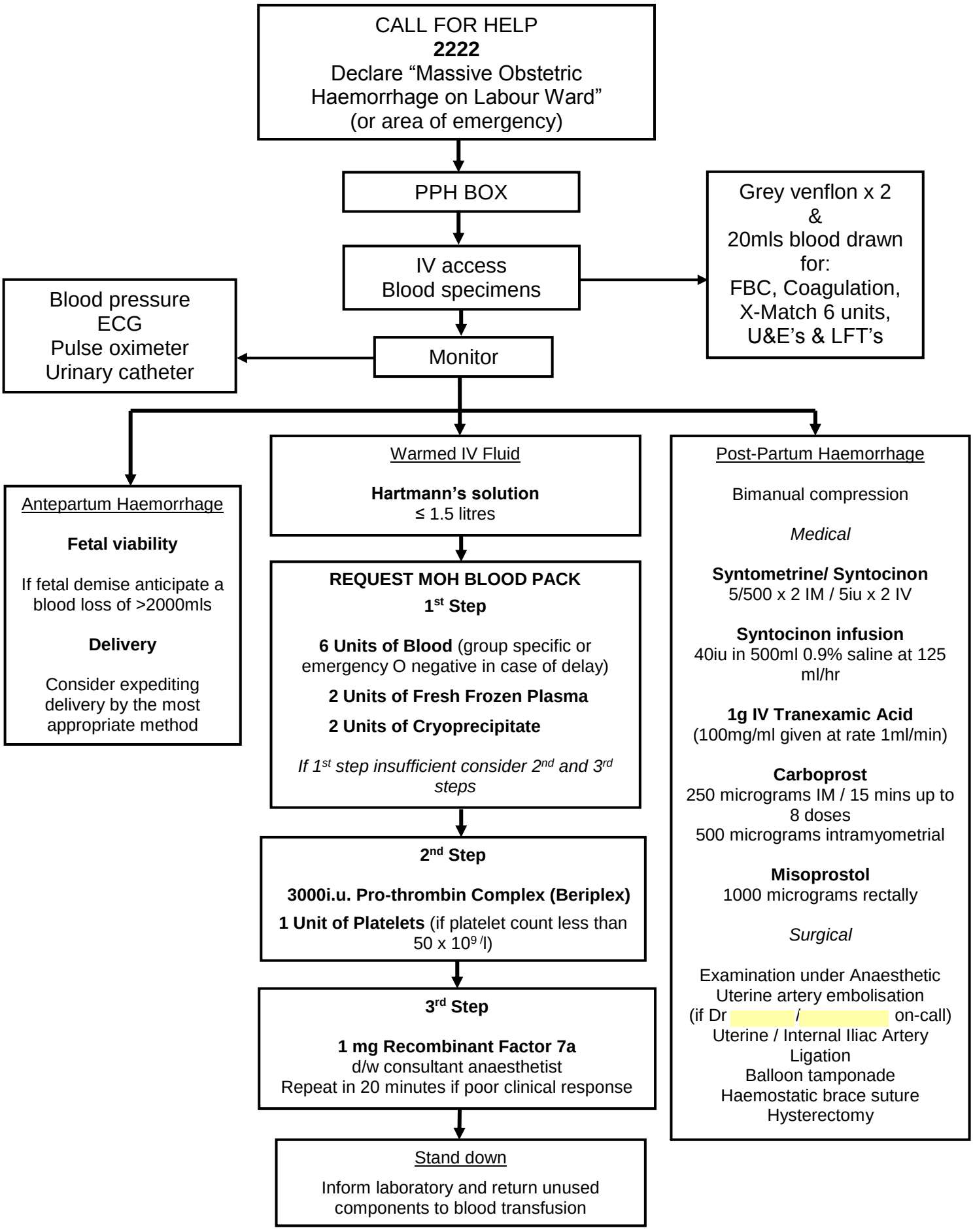
MOH Pack Second Step

- Prothrombin Complex 3000i.u. Beriplex
- Platelets 1 Unit (if platelet count less than 50 x 10^9/L)

MOH Pack Third Step

- Recombinant Factor 7a 1mg (d/w consultant anaesthetist)

Appendix 2 : Massive Obstetric Haemorrhage Algorithm



Appendix 3: Obstetric Haemorrhage Checklist
(Available separately to download)

Time of delivery of baby:	**Time of delivery of placenta:**

Estimated blood loss: (volume and times)

Times of informing and arrival of staff:

	Informed	Arrived
Labour Ward Co-ordinator		
Obstetric SHO		
Obstetric Staff Grade		
Obstetric Consultant		
Anaesthetic Staff Grade		
Biomedical Scientist		
Paediatric Staff Grade		
Theatre team		
Anaesthetic Consultant		
Porters		
Site Manager		

Times of cannulation/ blood taking:

Grey Venflon x 2		
FBC/ Clotting/ G&S/ X-Match		

Times of drugs given:

***Either* Syntometrine 5/500iu x 2** ***Or* Syntocinon 5iu IV x 2**	1. 1.		2. 2.	
Syntocinon infusion 40iu IV				
Carboprost 250mcg IM x 8	1. 5.	2. 6.	3. 7.	4. 8.
Misoprostol 1000mcg PR				
Tranexamic Acid 1g IV May repeat after 30 mins if haemorrhage continues	1.		2.	

Times of fluids and prothrombotic agents given:

Hartmann's Solution 1 litre	1.	2.	3.	4.
Blood: O negative	1.	2.	3.	4.
Group specific	1.	2.	3.	4.
X-Matched	1.	2.	3.	4.
	5.	6.	7.	8.
	9.	10.	11.	12.
	13.	14.	15.	16.
Fresh Frozen Plasma	1.	2.	3.	4.
	5.	6.	7.	8.
	9.	10.	11.	12.
	13.	14.	15.	16.
Cryoprecipitate	1.	2.	3.	4.
	5.	6.	7.	8.
Platelet concentrate	1.			
Beriplex (prothrombin complex 3000IU)	1.			
Recombinant Factor 7a	1.	2.		

Other information:

APPENDIX 4: Auditable Standards

- the proportion of women who are screened for antenatal anaemia (100%)
- the proportion of women who are offered uterotonics for the third stage of labour (100%)
- the proportion of women undergoing an assessment of risk factors for PPH when they present in labour (100%)
- appropriate documentation of management, especially with the timing of events for women who have had PPH (100%)
- notification to the risk management team of women with PPH involving a blood loss greater than 1500 ml (100%)
- proportion of the multidisciplinary team who have undergone skills drills training in PPH (100%)

Royal College of Obstetricians and Gynaecologists (2016). *Postpartum Haemorrhage, Prevention and Management.*