Obstetric Emergency Drills Training

REVIEW 2016

YORKSHIRE & HUMBER EMERGENCY OBSTETRIC TRAINING
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1.0 Introduction

The aim of the training in obstetric drills is to:

- Understand your own role in an emergency situation
- Appreciate what you do well
- Consider additional ways you may be able to contribute
- Recognise aspects for self improvement/ development
- Safe learning environment

CEMACH 2007, estimated that about half of all maternal deaths could be prevented with better care. A lack of multi-professional team working and communication failures was identified as contributing factors.

CEMACH 2007 and CESDI, both repeatedly recommend multi-professional obstetric emergency training, including team work, for all staff providing care for mothers and babies.
2.0 Team work & Communication

2.1 Definitions

**Team working**: The combined effective action of a group working towards a common goal. It requires individuals with different roles to communicate effectively and work together in a co-ordinated manner to achieve a successful outcome i.e. obstetric, midwifery and anaesthetist teams working to obtain best outcome for mother and baby

**Communication**: The transfer of information and the sharing of meaning. Communication is often impaired under stress. It is important to learn effective techniques that increase awareness and help overcome these limitations

2.2 Team Working

**By the end of this section you should:**

- Have an understanding of what is meant by ‘Team Working’
- Have an understanding of the basic elements of good team working
- Have an understanding of the different roles within a team
- Have an understanding of your own role within a team in an obstetric emergency

**Important Points of Team Working in Obstetric Emergencies**

Some of the basic elements of successful team working in an obstetric emergency are:

- Prompt recognition of the Obstetric Emergency and request for help
- Team members being up to date with current obstetric drills training
- Effective & Co-ordinated team working
- Assigning roles
- Documentation
- Support of the woman and her family
- Support of the clinical team
- Review of the care

**Assigning Roles**

In an emergency obstetric situation it is important to assign roles within the team to ensure efficiency, co-ordination and to avoid multiplication of tasks.

Some roles that should be identified are:
• **Leader** – this may be the assigned Midwife who has identified the emergency, but this may change. It is not necessary medical.
• **Scribe** – this person should be identified so that information can be given for documentation. Use proforma.
• **Runner** – ideally somebody with a good knowledge of stock locations
• **IV infusions** – someone up to date and competent in running Ivy’s
• **Drug preparation** - must be a qualified member of staff to safely prepare and administer drugs

**Role of the Team Leader**

The team leader is an important role; this is the person that the team members will look to for confidence and direction. Some of the important considerations of this role are:

- Assess the situation – are you still confident to continue / do you need someone else to take over?
- Understands and accepts own limitations
- Aware of the environment and the limitations of others
- Gives clear instructions
- Use eye contact / names
- Observer (if possible)
- Stand in a position where you can see the team
- Be receptive to the suggestions of the team
- Thinks clearly
- Assertive when necessary

**Role of the Team Member**

When the emergency buzzer goes it is normal that a number of individual members will attend the situation. Roles are quite quickly, and often without discussion, acquired. It is important to note that if you enter one of these situations, and you find yourself without a role, and after asking, you are not required, leave the room. If there are lots of people milling around without a job it creates a Health & Safety issue and we must remember to respect the privacy and dignity of the woman and her family.

Considerations for the role of team member are:

- Being a good communicator
- Confirms instructions and ensures that responses have been heard and understood
- Understands and accepts own limitations, including taking on inappropriate tasks or blindly following instructions.
- Aware of environment and limitations of others
• Be assertive
• Non confrontational but will challenge if necessary
• Be receptive to suggestions of others
• Thinks clearly
• Asks what to do rather than standing around without a role
• Questions inappropriate actions as mistakes can occur

2.3 Requirements for Effective Communication:

Formulated
• Give a clear message, succinct and not rambling.

Address specific individuals
• Use staff names, make eye contact, allocate appropriate tasks to an identified recipient.

Delivery
• The message should be sent clearly, concisely and calmly.

Heard
• Adequate volume and repeated back.

Understood and acted upon
• Meaning acknowledged and action performed and confirmed.
3.0 The Unwell Pregnant Woman

3.1 Basic Elements of Care

- One to one care
- Good teamwork
- Documentation
- Supportive care of woman and birth attendants
- Assess effectiveness of actions

3.2 Use of Early Warning Charts

It is recognised that pregnancy and labour are normal physiological events, however, there is a potential for any woman to be at risk of physiological deterioration and this cannot always be predicted. There is also evidence that there is poor recognition of deterioration in condition [CEMACH 2005] and the early detection of severe illness in mothers remains a challenge to all.

Regular recording and documentation of vital signs will aid recognition of any change in a woman’s condition. The use of Modified Obstetric Early Warning chart (MOEWs) is designed to prompt early referral to an appropriate practitioner who can undertake a full review, order appropriate investigations, resuscitate and treat as required.

Signs recorded are:

- respiratory rate
- temperature
- systolic blood pressure
- diastolic blood pressure
- pulse rate
- neuro scores

Whilst monitoring of oxygen saturation is not a routine part of the scoring, it should be commenced if the woman has a raised score or it is clinically indicated.

The chart must be modified for use in pregnancy as the upper and lower limit of triggers in pregnancy will be different compared to a general adult population. For example changes in physiological observations in pregnancy might include:

- Heart increase 15-20 bpm
- Respiratory Rate increase 2 breaths per minute
- BP decrease 10 mmhg
The frequency of observations is determined by:

- Risk Status
- Diagnosis
- Reason for admission
- Initial observations on admission

An individual plan of care should be made on admission which should specify the frequency of physiological observations and where they are documented. Women should retain the same MEOWS chart when moving from one clinical area to another so that physiological trends can be observed.

There needs to be a clearly specified response to any change in the MOEWs score which is often presented as an algorithm. This should set out the necessary actions if the woman patient triggers. In most Units this is generally taken as 1 observation in the Red or two observations in the Yellow or a numerical score above 2.

### 3.3 Response to Elevated MOEWs score

When the woman triggers she requires

- Referral to appropriate level Doctor & inform the delivery suite coordinator.
- Monitoring- increase observation frequency to ¼ hourly including oxygen saturations. Consider position of woman such as sitting upright or lowering bed head and if antenatal apply left lateral tilt 15-30 degrees.
- Review - bedside review in less than 10 minutes
- Investigations - ensure all recent results available
- Plan of care & explanation of plan of care to the woman and relatives
- Maintain contemporaneous record in notes detailing plan of care.
- Escalate more senior clinician if review does not occur in 10 minutes. This may be the Consultant Obstetrician or a senior/Consultant Anaesthetist

Recognition of deterioration in condition does not necessarily mean diagnosis but does mean investigation and appropriate level referral involving a multidisciplinary approach.

It is important to care for the woman in the most appropriate clinical area where appropriate monitoring and treatment can occur. This will usually mean transfer to delivery suite but may involve transfer to High Dependency care/intensive care within or outside the Unit. If there are delays in transfer, this should not delay immediate investigations such as ECG, arterial blood gases or ordering of a CXR. Full review of the woman continues with an emphasis on ABC and the observation of vital signs.
4.0 Generic Actions in an Emergency

Certain actions are common to all emergency situations whether or not the cause is known. A structured approach allows effective management in out of the ordinary or rare situations and if all key members use the same approach, team working will be improved.

- Anticipate
- Know how to instigate call for assistance and who to call
- Instigate emergency action (not definitive treatment): call for help, ABC then D
- Awareness of existence of protocols and where to find them
- Identify need for equipment
- Identify need for drugs

4.1 Immediate actions

- **Call for help**: How? Who?
  - **A**: Is airway patent? Recovery position, Mrs Tilt.
  - **B**: Facial oxygen, saturation monitor
  - **C**: IV access, take bloods, infusions
  - **D**: What drugs might be required? Where are they kept?
  - **M**: Monitor response to actions; maternal/fetal. Where is equipment?

4.2 Assign Roles

- **Leader**: Assigned midwife. May change, may not always be medical.
- **Scribe**: Use proformas
- **Runner**
- **IV infusions**
- **Drug preparation**

4.3 Do’s and Don’ts

**Don’t:**
- Stand round not knowing what to do.
- Undertake an inappropriate task.
- Give drugs you are unfamiliar with.
- Blindly do as instructed
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Do:

- Avoid duplication
- Ask what you can do to help.
- State when a task is inappropriate or not understood.
- Question inappropriate actions. Mistakes can occur!

4.4 Outcome

- Debrief woman and family
- Debrief and support staff members of all disciplines
- Incident reporting/feedback

5.0 Severe Hypertension in Pregnancy

5.1 Introduction

The aim of the training is to become more confident in the care of women with severe hypertension in pregnancy within a safe environment. It includes the recognition of the complications that may occur, the management of the ill pregnant woman and of eclampsia. The written information should be read before attending the Obstetric Emergency Drills Training.

At the end of both sessions you will be expected to:

- Understand your own role in an emergency situation
- Be able to apply basic principles of resuscitation in a fitting or unconscious patient
- Be able to instigate appropriate monitoring in an unwell patient
- Be familiar with the magnesium sulphate regime
- Recognise how effective team working relies on good communication skills

5.2 Background

Eclampsia and severe pre-eclampsia are relatively rare but serious complications of pregnancy with approximately 5/10,000 maternities in the UK suffering eclampsia and 5/1000 maternities with severe pre-eclampsia.

Pre-eclampsia/ eclampsia continues to cause maternal and perinatal morbidity and mortality and in the National Confidential enquiry, substandard care has been consistently reported and attributed to poor outcomes in these women.

The recommendations include the use of standardised local and regional guidelines for management to help improve outcomes and the participation in emergency drills to promote good communication and team working.
It is also an important standard in the NHSLA Maternity standards and hence is assessed for CNST at all levels.

Clinical features

Pre-eclampsia: New hypertension presenting after 20 weeks gestation with significant proteinuria

Eclampsia: Convulsive condition associated with pre-eclampsia

Severe Pre-eclampsia: Pre-eclampsia with severe hypertension and/or with symptoms, and/or altered blood picture (see section 4.3)

Significant proteinuria: Diagnosed if:

Urinary protein: creatinine ratio above 30 mg/mmol OR

24-hour urine collection above 300mg protein (approximately equivalent to 1+ proteinuria on urine dipstick.)

The severity of the condition can be classified according to the following levels of EITHER systolic OR diastolic blood pressure

Table 1: Definitions of hypertension in pregnancy

<table>
<thead>
<tr>
<th></th>
<th>Systolic blood pressure (mmHg)</th>
<th>Diastolic blood pressure (mmHg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>140-149</td>
<td>90-99</td>
</tr>
<tr>
<td>Moderate</td>
<td>150-160</td>
<td>100-110</td>
</tr>
<tr>
<td>Severe</td>
<td>Above 160</td>
<td>Above 110</td>
</tr>
</tbody>
</table>

HELLP Syndrome

A variant of hypertension in pregnancy with altered blood parameters which will normally include at least 2 of:

Haemolysis

Elevated Liver enzymes

Low Platelets

It is a multisystem disorder with widespread endothelial damage originating in the placenta and relieved by delivery and the clinical features are set out in table 2. Serious maternal and fetal morbidity is more likely with significant proteinuria (PET). It is more common in primips, those under 18 years, twins or those with underlying medical conditions e.g. diabetes, SLE
Table 2: Clinical features of severe hypertension in pregnancy

<table>
<thead>
<tr>
<th>Hypertension</th>
<th>Raised urate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proteinuria</td>
<td>Reduced platelet count</td>
</tr>
<tr>
<td>IUGR</td>
<td>Elevated liver enzymes</td>
</tr>
<tr>
<td><strong>Eclamptic fit</strong></td>
<td>Raised urea and creatinine</td>
</tr>
<tr>
<td></td>
<td>Abnormal clotting</td>
</tr>
</tbody>
</table>

All patients with severe disease should be managed in the appropriate clinical setting. The following table should be used as a reference guide to determine which level of care the woman should receive.

Inadequate treatment of systolic hypertension resulting in intracranial haemorrhage, was the single major failing in the critical care of women dying as a result of eclampsia or pre-eclampsia. A systolic pressure of 160mmHg or more, requires urgent, effective anti-hypertensive treatment (CEMACH 2007)

Criteria for referral to Critical care

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**Level 1 Care**
- Pre-eclampsia with mild to moderate hypertension
- Ongoing conservative antenatal management of severe preterm hypertension.
- Step-down treatment after birth

**Level 2 Care**
- Step-down from level 3 or severe pre-eclampsia with any of:
  - eclampsia
  - HELLP syndrome
  - Initial stabilisation of severe hypertension
  - Intravenous antihypertensive treatment
  - Haemorrhage
  - Hyperkalemia
  - Severe oliguria
  - Coagulation support
  - Abnormal neurology

**Level 3 Care**
- Severe preeclampsia and needing ventilation.
5.3 Eclampsia

Definition

- A grand mal convulsion in a patient with PIH
- Does NOT occur as complication of chronic or essential hypertension unless woman has added proteinuria

Incidence

- Complicates approx. 2.61/10 000 deliveries in UK; mortality rate 0.85 per 100 000 maternities
- 41% have no preceding history
- seizures may be antenatal (38%), intrapartum (18%) or postnatal (44%)- usually within the first 48 hours but can occur up to day 5
- recurrence rate 5-20% even with treatment and morbidity increases with number of seizures

Preceding symptoms and signs

- Unreliable
- Not clearly related to level of BP or amount of proteinuria
- Often complain of headache or abdominal pain

Maternal outcome

- 1.8% mortality
- 35% major complications e.g. CVA, liver or renal failure, DVT, pulmonary oedema

Fetal complications

- IUGR
- Problems of prematurity

5.3.1 Emergency Management of Eclampsia

In hospital:

Call for HELP

- Senior midwife
- Obstetric SpR and SHO
- Anaesthetist
- Anaesthetic nurse/ODA
- HCA/student midwife/junior midwife

After calling for help
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- Position woman in the recovery position and ensure away from damaging objects
- Clear and secure Airway
- Commence high flow $O_2$ via non breath mask
- Cannulate – 2 grey venflons
- Give MgSO$_4$ as per protocol
- Emergency equipment including monitoring devices such as dinamap and pulse oximeter should be brought
- Inform on call consultants (obstetrics & anesthetics)

After initial emergency management

- Transfer to high dependency care area
- Begin maintenance dose of Mg SO$_4$
- Monitor Pulse/BP/SaO$_2$ every 15 mins
- Take blood for FBC, G&S, clotting, U&E’s LFT’s, urate
- Catheterize
- Control blood pressure
- If undelivered and viable – CTG and plan delivery

At home:

Dial 999 and request paramedic ambulance

When ambulance arrives insist woman taken to delivery suite (not A & E)

Ring delivery suite to alert staff and receive support via telephone

After calling for help

- Position woman in the recovery position and ensure away from damaging objects
- Clear and secure Airway
- Constantly reassess conscious level
- Monitor Pulse/BP and respiratory rate every 5 mins
5.4 Magnesium Sulphate Protocol

Magnesium sulphate is given as a loading dose of 4 g given intravenously over 5 minutes, followed by an infusion of 1 g/hour maintained for a minimum of 24 hours (or for at least 24 hours after delivery)

Recurrent seizures should be treated with a further dose of 2–4 g given over 5 minutes

*Each Unit will have local protocols in place for administration of magnesium sulphate with which you should be familiar. However, as the majority of Units within Yorkshire and the Humber use 20% solution of magnesium sulphate, a suggested regime is:*

**Loading dose:** 20ml magnesium sulphate (20%) infused intravenously over 5 minutes at a rate of 240mls/hour

**Maintenance dose:** 1g/hour (5mls/hour)

**Management of recurrent fits**
Repeat a loading dose over 5 minutes but with a reduced dose of 2g

**Loading dose for recurrent seizures:** 10ml magnesium sulphate (20%) infused intravenously over 5 minutes at a rate of 120mls/hour (equivalent to 2g)

**Once the repeat loading dose has been given, reduce the infusion rate back to the maintenance rate of 5mls/hour**

There is no need to measure magnesium levels on this regime, however, if magnesium toxicity is suspected,
Give: 10ml 10% calcium gluconate by slow intravenous injection as an antidote.

**Side effects** Respiratory depression, sedation and aspiration

**Antidote is 10ml 10% calcium gluconate intravenously given slowly**

**Control of blood pressure**
Maintain **diastolic BP below 105 mmHg** (systolic below 170mmHg)
- Labetalol 50mg IV over 1 min
- No effect, repeat after 15 minutes (max dose 200mg IV)
- Maintenance infusion neat labetalol at 4ml/hr given via infusion pump

**Fluid balance** **Fluid restrict to 80ml/hr total - whether IV or oral, until delivered**
- Aim for 80ml urine in 4 hour period
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- If output low review fluid balance
- If input greater than output give frusemide 20mg IV
- If output equal to or less than input give 250ml fluid challenge over 20mins
- Check U&E’s six hourly

5.5 Further management

The woman should be managed in a quiet, well-lit room in a high-dependency care type situation. Ideally there should be one-on-one midwifery care. The MOEWs chart should be used to document all physiological monitoring. The Consultant Obstetrician and the Consultant Anaesthetist should be informed in order that they can be involved at an early stage in management. When oral drug treatment is possible it should be regarded as the route of choice. An intravenous cannula should always be inserted, but not necessarily used for infusing drugs or fluid. If intravenous fluid is given, it should be controlled by a volumetric pump.

5.6 Documentation

The following factors should be recorded by a nominated scribe as early as possible in the emergency:

- Time of arrival of key personnel including senior midwife, obstetrician, anesthetist
- Timing and duration of any seizures
- Maternal position
- Vital signs every 15 minutes including pulse, blood pressure, respiratory rate, oxygen saturations and conscious level
- Time airway cleared
- Time oxygen administered
- Time of all drugs administered
- Time and nature of all blood tests requested
- All blood results received
- Fetal heart rate, if appropriate
- Any decisions regarding delivery

5.7 Postnatal

Postnatal debriefing should be offered to every woman and her family following severe hypertension or eclampsia. After severe maternal illness, women might be psychologically affected with postnatal depression, post-traumatic stress disorder or fear of further childbirth. Debriefing is an important part of maternity care and should be offered by a senior professional with counseling skills. In addition, follow up should be arranged to monitor blood pressure, proteinuria and any biochemical abnormalities. A small number of women will have an underlying cause for their condition requiring further investigation of long term treatment.
6.0 Obstetric Haemorrhage

By the end of this session you should:

- Be aware of the risk factors for PPH/APH
- Be able to apply basic principles to resuscitation
- Understand the drugs available
- Be able to use the 4T’s to help diagnose cause
- Be able to do bimanual compression of the uterus
- Have improved team working

6.1 Antepartum Haemorrhage

6.1.1 Background & Theory

Definition

Antepartum Haemorrhage (APH) is defined as bleeding from the genital tract at any time after the 24th week of pregnancy until the baby is born.

Some of the more common causes of APH are:

- Placenta Praevia
- Placental Abruption
- Vasa Praevia
- Cervical Erosion / Polyp

A massive obstetric haemorrhage is defined by the Lead Professional but is usually when the blood loss exceeds 1500mls. Each unit should have an agreed trigger phrase for major haemorrhage which initiates emergency measures e.g. “code red”, “major obstetric haemorrhage”

6.1.2 Diagnosis

It may be an obvious APH in that a woman presents with heavy, fresh red PV bleeding but be aware of concealed bleeds particularly in placental abruption which is associated with significant pain often with more minor amounts of visible bleeding. The abdomen may feel “woody” to the touch, however, if it doesn’t, do not rule out an abruption, the abdomen does not always take on the ‘woody’ feeling if it is a posterior placenta. Be alert to maternal observations and history. They tend to report acute pain which cannot be alleviated.
6.1.3 Management

Call for HELP!

In the hospital this requires the use of the Emergency Buzzer Call senior midwife, senior obstetrician, senior anaesthetist, porters and inform haematology and transfusion staff.

In the Community or a birth centre, contact the delivery suite who can then arrange an emergency paramedic ambulance, and if necessary can remain on the line to provide advice and support or even document for you. This will also allow them to have the necessary arrangements in place for when the woman is transferred e.g. theatre teams, porters etc.

It is important for someone to maintain communication with the woman and her birth partners and to give clear information as to what is happening.

A structured approach of simple ‘ABC’ should be used in all situations.

A = Airway

Ensure that the woman has a protected, patent airway, and think about her positioning (flatten the bed, remove to only one pillow, remove end of bed and remove bed from wall to allow easy access to airway).

B = Breathing

High flow O2 via a non-breathe mask

C = Circulation

Fluid replacement is one of the most important aspects of resuscitation in a haemorrhage situation. Therefore cannulation as soon as possible is imperative.
IV Access required:

2 x large gauge cannulas (orange 14ga (330ml/min) or grey 16ga (200ml/min)

Obtain and send urgently bloods for FBC, Clotting (inc Fibrinogen) and Cross match (4-6 units)

Fluids - Rapidly infuse 1 litre of crystalloid and 1 litre of colloid

Catheterise – Foleys indwelling catheter

Monitoring – Maternal BP, Pulse, oxygen saturations and respiratory rate. Chart all observations on a MOEWs or HDU chart

- Continual monitoring of FH if present

If operative delivery is required consider the use of cell salvage.

6.2 Post Partum Haemorrhage

6.2.1 Background and Theory

Definition

A primary postpartum haemorrhage (PPH) is defined as a blood loss of greater than 500mls within the first 24hrs of delivery.

A secondary postpartum haemorrhage is defined as excessive bleeding from the genital tract between 24 hours and 6 weeks following the birth of the baby.

A massive obstetric haemorrhage is defined by the Lead Professional and it is important to remember that a trickle and a gush can amount to the same effect.

Primary post partum haemorrhage is the most common form of major obstetric emergency and remains one of the major causes of death in both the developed and developing countries. The UK Confidential Enquiries report a fall in the number of deaths from haemorrhage in the last triennium. However, the majority of deaths were considered preventable with 6 out of 9 cases judged to have received substandard care.

The RCOG suggest that a PPH involving an estimated blood loss of 500 – 1000mls (and in the absence of clinical signs of shock) should prompt basic measures (e.g. close monitoring, intravenous access, full blood count, group and screen) to facilitate resuscitation should it become necessary.
If a woman then continues to bleed, after an estimated blood loss of 1000mls (or has clinical signs of shock or tachycardia associated with a smaller loss), this should prompt a full protocol of measures to achieve resuscitation and haemostasis.

**Incidence**

The incidence of postpartum haemorrhage is cited as being between 4-6% of all pregnancies. It is difficult to predict who or when a PPH may occur, however there is some suggestion that a previous history of PPH gives a 2-3 fold increase in risk.

**Risk Factors**

The cause of PPH is usually attributed to one of ‘4 T’s’:

- Tone – uterus not contracted for whatever reasons
- Tissue – retained placenta or parts of placenta
- Trauma – episiotomy or tears, uterine rupture
- Thrombin – low platelets, coagulopathy, heparin

Risk factors for PPH can also be categorised into these areas:

<table>
<thead>
<tr>
<th>TONE</th>
<th>TRAUMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiparity</td>
<td>episiotomy</td>
</tr>
<tr>
<td>Prolonged labour</td>
<td>operative delivery</td>
</tr>
<tr>
<td>Augmentation</td>
<td>macrosomia</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TISSUE</th>
<th>THROMBIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incomplete placenta</td>
<td>PIH</td>
</tr>
<tr>
<td>MRP</td>
<td>Abruption</td>
</tr>
<tr>
<td>Placenta praevia</td>
<td></td>
</tr>
<tr>
<td>Morbidly adherent placenta</td>
<td></td>
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</tbody>
</table>

**6.2.2 Prevention**

The active management of the third stage of labour lowers maternal blood loss and the risk of PPH (by 60%) and therefore prophylactic oxytocics should be offered routinely in the management of the third stage of labour. Prophylactic oxytocics in use are either:

- Syntometrine 1ml administered IM (in the absence of hypertension)
- Syntocinon 5 units given by slow intravenous injection
6.2.3 Diagnosis

Many PPHs are easy to see, the woman is obviously ‘gushing’ blood in front of your eyes, however remember that some PPHs result from insipid trickles over a few hours, or can be concealed. Therefore remember:

- Evaluate slow bleeding
- Collection of loss (e.g. sanitary pads if you feel heavily soaked pads are being changed frequently)
- Continuity of carer
- Suspect hidden blood loss, particularly if the woman is showing compensatory mechanisms
- Use capillary refill time as a guide

Due to the physiology of pregnancy, a woman can lose up to 2000mls before compensatory mechanisms appear.

We are historically poor at estimating blood loss, however, it is possible in the majority of situations to obtain a more precise measurement by measuring collected blood, and the weighing of swabs/linen etc... This is recommended.

6.2.4 Management

Once PPH had been identified, management involves four components, all of which must be undertaken simultaneously:

- Communication
- Resuscitation
- Monitoring and investigation
- Arresting the bleeding

Communication:

Call for HELP!

In the hospital this requires the use of the Emergency Buzzer Call senior midwife, senior obstetrician, senior anaesthetist, porters and inform haematology and transfusion staff

In the Community or a birth centre, contact the delivery suite who can then arrange an emergency paramedic ambulance, and if necessary can remain on the line to provide advice and support or even document for you. This will also allow them to have the necessary arrangements in place for when the woman is transferred e.g. theatre teams, porters etc.
It is also very important for someone to maintain communication with the woman and her birth partners and to give clear information as to what is happening.

**Resuscitation**

A structured approach of simple ‘ABC’ should be used in all situations.

**A = Airway**

Ensure that the woman has a protected, patent airway, and think about her positioning (flatten the bed, remove to only one pillow, remove end of bed and remove bed from wall to allow easy access to airway)

**B = Breathing**

High flow O2 via a non-breath mask

**C = Circulation**

Fluid replacement is one of the most important aspects of resuscitation in the PPH situation. Therefore cannulation as soon as possible is imperative.

IV Access required:

**2 x large bore cannulae**

The general consensus is that a total volume of 3.5 litres of clear fluids is the maximum that should be infused while awaiting compatible blood. However, the nature of the fluid infused is of less importance than rapid administration (using pressure cuff) and warming of the infusion. The woman needs to be kept warm using available and appropriate measures (e.g. Bair hugger)- this is because hypothermia affects clotting.

**Fluids**

The immediate danger is that poor circulation can lead to cardiac arrest. Therefore Fluid replacement needs to be IMMEDIATE and UNDER PRESSURE, in massive PPH we are always playing catch up. Fluid should continue to be replaced until the woman has received what has been lost.

**Crystalloid & Colloid**

- Up to 3.5 Litres until blood is available (2ltres crystalloid and/or 1-2 litres colloid)

**Cross Matched Blood**

- Initiate massive obstetric haemorrhage (MOH) protocol requesting 6 units
• If Cross matched unavailable give uncross matched group specific or O Rh Neg blood (x2 units in the fridge)
• Given through blood warmer

Other blood products

Remember transfusion of packed cells does not replace any of the blood clotting factors and therefore if 4 units or more of blood are transfused

Fresh Frozen Plasma (FFP) tends to be given 2:1 ratio with blood i.e. 8 units of blood and 4 units of FFP

Platelets if count is <50x109

Cryoprecipitate if fibrinogen < 1 g/l

Arresting the Bleeding

REMEMBER to keep considering the 4 T's

Consider transfer to theatre at the earliest and most appropriate time to allow ease of light, space and equipment

• Position flat
• Rub up the uterus (if done correctly this is uncomfortable to the practitioner and the woman!)
• Remove placenta (if not already removed)
• IV or IM syntocinon 5 units given as a bolus over 1 minute. If necessary an additional 5 units can be given if no response. Follow with a syntocinon infusion to maintain uterine contraction
• IV or IM ergometrine (warn the woman it may make her vomit!)
• Empty the bladder
• IM haemobate 250mcg (given at 15 minute intervals x maximum 8 doses)
• PR Misoprostol (600 – 800micrograms)
• Keep warm
• Bimanual compression
Surgical Measures

If pharmacological measures fail to control the haemorrhage, initiate surgical haemostasis sooner rather than later. Hydrostatic balloon is an appropriate first line surgical intervention for most women where uterine atony is the only or main cause of haemorrhage.

This is an intrauterine catheter, inserted into the uterus and filled with 500mls saline.

If going into theatre and surgical options being used then consider the use of cell salvage

Other surgical considerations:

- EUA - exclude high vaginal or cervical tears
- Evacuation of retained products
- B Lynch Suture (requires abdominal access)
Obstetric Emergency Drills Training

- Uterine artery ligation
- Tranexamic Acid (1g IV given 4 hourly up to a maximum of 3 doses)
- Embolisation
- Hysterectomy
- Novo Seven

RCOG suggest that a hysterectomy should be considered sooner rather than later, with the Consultant involving a second Consultant in the decision.

Factor VII is a factor in the clotting of blood accelerating the conversion of prothrombin to thrombin. Novo Seven is a drug that mimics the same effect. It is very expensive and therefore its use must be agreed between Consultant Obstetrician, Consultant Haematologist and the Hospital Manager.

Following major obstetric haemorrhage, women are likely to require a higher level of care in the postnatal period e.g. high dependency, intensive care. This should be agreed by the obstetric and anaesthetist consultants and a plan of care documented.

**Monitoring & Investigation**

When cannulated obtain and send urgently bloods for:

- FBC
- Group & Cross Match (4-6 units)
- Coagulation Screen inc fibrinogen

The following observations should also be undertaken:

- Foley's indwelling catheter to monitor urine output
- Accurate fluid balance
- BP, Pulse, O2 sats, RR every 15 mins
- PV loss
- Uterine contraction

Repeat bloods will be done at the request of the obstetric or anaesthetic lead.
6.2.5 Documentation

In a haemorrhage situation it is imperative to have a nominated scribe as soon as possible. It may be prudent to have 2 scribes in these situations, assigning one to ‘fluid management’ and the other to everything else.

Use the PPH Proforma

It is important to record:

- The staff in attendance and the time they arrived
- The sequence of events
- The time and administration of different pharmacological agents given
- The time of surgical intervention where relevant
- The condition of the mother throughout the different steps
- The estimated / measured blood loss throughout
- The timing of fluid and blood products given
7.0 Maternal Sepsis

PLEASE REFER AND FAMILIARISE TO ORGANISATIONAL MANAGEMENT OF SEPSIS

Maternal Sepsis

The management of severe maternal sepsis is prompt instigation of multiple overlapping actions. The exact order will be determined by the need of the individual mother and available resources.

Initial Management

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Clinical Features Suggestive Of Sepsis

Fever or rigors
Diarrhoea or vomiting
Rash
Abdominal /pelvic pain and tenderness
Offensive vaginal discharge
Productive cough
Urinary symptoms

Clinical Diagnosis:

As a guide, clinical diagnosis of severe sepsis would usually be associated with 2 or more of the following:

- Temperature >38°C or <36°C measured on two occasions at least 4 hours apart
- Heart rate >100 beats/minute measured on two occasions at least 4 hours apart
- Respiratory rate >20/minute measured on two occasions at least 4 hours apart
- White cell count >17x10⁹/L or <4x10⁹/L or with >10% immature band forms, measured on 2 occasions

Features Of Septic Shock:

- Hypotension – systolic blood pressure 90mmHg or below in the absence of other causes e.g. bleeding
- Hypoxaemia
- Poor peripheral perfusion, mottled skin
- Oliguria
- Metabolic acidosis
- Elevated lactate (Serum lactate ≥4 mmol/L is indicative of tissue hypoperfusion)
- Positive blood cultures
- Abnormal coagulation and bleeding
- Abnormal renal and liver function tests
- Plasma glucose>7.7 mmol/l in the absence of diabetes is one of the diagnostic criteria for sepsis
Risk Factors

- Retained products
- Caesarean Section
- Premature Rupture of Membranes
- Premature Labour
- Wound Haematoma
- Invasive Uterine procedure
- Cervical Suture
- Obesity
- Impaired Immunity
- Diabetes
References:

Royal College of Obstetricians & Gynaecologists. Green-top Guideline No.52 Prevention & management of Postpartum Haemorrhage. May 2009
