POSTPARTUM HAEMORRHAGE

MODULE: OBSTETRIC

TARGET: ANAESTHETIC CORE TRAINEES & ALL ANAESTHETISTS

BACKGROUND:
In the last triennial CMACE report, haemorrhage was the sixth highest direct cause of maternal death. It is a common complication of vaginal deliveries as well as Caesarean Sections. Every trust will have local guidelines on the management of major obstetric haemorrhage and it is important that all anaesthetists who work on labour ward are familiar with these and manage these cases appropriately.
## RELEVANT AREAS OF THE ANAESTHETIC CURRICULUM

### IG_BS_08
**In respect of intravenous induction:**
- Makes necessary explanations to the patient
- Demonstrates satisfactory practice in preparing drugs for the induction of anaesthesia
- Demonstrates proper technique in injecting drugs at induction of anaesthesia
- Manages the cardiovascular and respiratory changes associated with induction of general anaesthesia

### IG_BS_10
**In respect of airway management:**
- Demonstrates optimal patient position for airway management
- Manages airway with mask and oral airways
- Demonstrates hand ventilation with bag and mask
- Demonstrates correct head positioning, direct laryngoscopy and successful oral intubation techniques and confirms correct tracheal tube placement
- Demonstrates proper use of bougies
- Demonstrates correct securing and protection of LMAs/tracheal tubes during movement, positioning and transfer
- Correctly conducts RSI sequence

### IO_BS_07
Demonstrates role as team player and when appropriate leader in the intra-operative environment

### IO_BS_08
Communicates with the theatre team in a clear unambiguous style

### IO_BS_09
Able to respond in a timely and appropriate manner to events that may affect the safety of patients [e.g. hypotension, massive haemorrhage] [S]

### ES_BS_01
Manages preoperative assessment and resuscitation/optimisation of acutely ill patients correctly

### ES_BS_03
Manages rapid sequence induction in the high risk situation of emergency surgery for the acutely ill patient

### CI_BS_01
Demonstrates good non-technical skills such as: [effective communication, team-working, leadership, decision-making and maintenance of high situation awareness]

### CI_BS_02
Demonstrates the ability to recognise early a deteriorating situation by careful monitoring

### CI_BS_05
Demonstrates ability to recognise when a crisis is occurring

### CI_BS_06
Demonstrates how to obtain the attention of others and obtain appropriate help when in a crisis

#### 4.3
Administers blood and blood products safely

### OB_BS_01
Undertakes satisfactory preoperative assessment of the pregnant patient

### OB_BS_02
Demonstrates the ability to clearly explain and prepare an obstetric patient for surgery

### OB_BS_11
Demonstrates ability to recognise when an obstetric patient is sick and the need for urgent assistance

### GU_IS_03
Demonstrates the ability to manage the effects of sudden major blood loss effectively

### CI_IS_01
Demonstrates leadership in resuscitation room/simulation when practicing response protocols with other healthcare professionals

### CI_IS_02
Demonstrates appropriate use of team resources when practicing response protocols with other healthcare professionals

### OB_HS_03
Demonstrates the ability to be an effective part of a multidisciplinary team

### OB_HS_06
Demonstrates skill in managing emergencies including pre-eclampsia, eclampsia, major haemorrhage
INFORMATION FOR FACULTY

LEARNING OBJECTIVES:
- Management of major obstetric haemorrhage including haematology, appropriate monitoring and anaesthetising the patient
- Recognition of potential complications including Disseminated Intravascular Coagulation
- Awareness of drugs acting on uterus

SCENE INFORMATION:
- Location: Theatre (Maternity)

EQUIPMENT & CONSUMABLES
- Pregnant simulation model and neonatal model
- Crash trolley – fully stocked
- Checked anaesthetic machine
- Airway trolley – fully stocked for intubation
- GA drugs drawn up – Thiopentone, suxamethonium
- Emergency drugs in ‘fridge’ – suxamethonium, atropine, metaraminol
- Suction bottle – full of blood
- Bloody swabs
- Simulated blood for transfusion (O-ve, and cross- matched blood)
- Resuscitaire

PERSONS REQUIRED
- Anaesthetic Junior Trainee
- Anaesthetic Assistant
- Anaesthetic Senior Trainee (Optional)
- Obstetrician
- Scrub Nurse
- Theatre Assistant – runner (Optional)
- Paediatrician (Optional)
- Father (Optional)

PARTICIPANT BRIEFING: (TO BE READ ALOUD TO PARTICIPANT)

You are the anaesthetist on call for labour ward. This lady has just had a category II LSCS as she went into labour having had 2 previous sections. The section was performed under spinal anaesthetic block. The baby has been delivered and is in the resuscitaire. She is otherwise fit and well.

She is numb to T4 bilaterally and the surgeon is continuing the procedure.

The anaesthetist who started the case has been called away urgently to open a second theatre for another emergency.

Please continue her anaesthetic from this point onwards.
FACULTY BRIEFING:

‘VOICE OF MANIKIN’ BRIEFING:

You are in the labour ward theatre having a semi-elective Caesarean Section. You were due to have your elective LSCS next week but went into labour earlier today. Your baby has been delivered and is with the midwife. Your husband has gone out to call your parents.

Indication for elective LSCS: 2 previous LSCS
Past medical history: Fit and well
Obstetric Hx: 38/40 Normal pregnancy
Drug history: Ferrous sulphate
Allergies – nil

At the start of the scenario, you are happy to chat to anaesthetist. You start to feel quite sick after a while and become very anxious. You frequently ask where your baby and husband are. You overhear the surgeon panicking and that makes you more scared and you could become quite hysterical. If you are not anaesthetised midway through scenario, you come quite drowsy.

VOICE OF THE TELEPHONE HELP BRIEFING:

Help will arrive as soon as possible but the starred consultant is helping out in emergency theatres.

OTHER IN-SCENARIO PERSONNEL BRIEFING:

OBSTETRIC REGISTRAR:

This lady is bleeding uncontrollably due to uterine atony and a developing coagulopathy. You are initially focussed on gaining haemostasis (quiet and not easily distracted). Ask for ergometrine and haemabate.

As the blood loss becomes heavier you start to realise that you are reaching the limit of your ability to control the haemorrhage and become anxious. Ask the theatre team to call your consultant. Inform the anaesthetist that you are struggling to contain the blood loss – you are going to attempt a B-lynch suture, but have never done one before (volunteer this only if asked). You are worried that this may lead to the need for a hysterectomy.

SCRUB TEAM:

Be supportive of the surgeon, but increasingly concerned with the level of blood loss occurring. If the surgeon does not suggest calling the consultant, then the scrub nurse suggests it.

BLOOD BANK (TELEPHONE)

O-ve blood is immediately available. Type specific will take 10 minutes. Fully cross-matched blood will take 20 mins.

SENIORS (TELEPHONE)

Help will arrive soon as possible, but the consultant is helping out in emergency theatres
### Blood Gas Values

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.46</td>
<td>[7.340 - 7.450]</td>
</tr>
<tr>
<td>pCO2</td>
<td>3.4 kPa</td>
<td>[4.70 - 6.00]</td>
</tr>
<tr>
<td>pO2</td>
<td>28 kPa</td>
<td>[10.0 - 13.3]</td>
</tr>
<tr>
<td>pO2(A-a)e</td>
<td>kPa</td>
<td></td>
</tr>
</tbody>
</table>

### Oximetry Values

<table>
<thead>
<tr>
<th>Parameter</th>
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</tr>
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<tbody>
<tr>
<td>cHb</td>
<td>5.4 g/dL</td>
<td>[12.0 - 16.0]</td>
</tr>
<tr>
<td>sO2</td>
<td>99 %</td>
<td>[95.0 - 98.0]</td>
</tr>
<tr>
<td>rHb</td>
<td>%</td>
<td>[94.0 - 99.0]</td>
</tr>
<tr>
<td>rCOHb</td>
<td>%</td>
<td>[        ]</td>
</tr>
<tr>
<td>fHb</td>
<td>%</td>
<td>[0.02 - 0.06]</td>
</tr>
<tr>
<td>Hctc</td>
<td>0.24 %</td>
<td></td>
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</tbody>
</table>

### Electrolyte Values

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<tbody>
<tr>
<td>cK+</td>
<td>4.8 mmol/L</td>
<td>[3.0 - 5.0]</td>
</tr>
<tr>
<td>cNa+</td>
<td>137 mmol/L</td>
<td>[136 - 146]</td>
</tr>
<tr>
<td>cCa²⁺</td>
<td>1.10 mmol/L</td>
<td>[1.15 - 1.29]</td>
</tr>
<tr>
<td>cCl⁻</td>
<td>99 mmol/L</td>
<td>[98 - 106]</td>
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### Metabolite Values

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<tr>
<td>rGlu</td>
<td>6.9 mmol/L</td>
<td>[3.5 - 10.0]</td>
</tr>
<tr>
<td>cLac</td>
<td>2.1 mmol/L</td>
<td>[0.5 - 1.6]</td>
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### Acid Base Status

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<tr>
<td>cBae(ect)c</td>
<td>-2.5 mmol/L</td>
<td></td>
</tr>
<tr>
<td>cHCO₃⁻(P,ext)c</td>
<td>18 mmol/L</td>
<td></td>
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CONDUCT OF SCENARIO

INITIAL SETTINGS

A: Patient and Self-maintained.
B: RR 12
C: HR 90 BP 105/60 (sBP keeps dipping below 90)
D: GCS 15/15
E: Abdomen exposed, Pfannenstiel incision, baby delivered after 2 mins.

EXPECTED ACTIONS

- Recognition of surgical problem.
- Rapid communication with obstetrician.
- Call for help.
- Fluid resuscitation
- Reassure patient
- Patient warming

BLEEDING

A: Patent and self-maintained
B: RR 20
C: HR 114, BP 94/60
D: Anxious, GCS 15/15

ONGOING HAEMORRHAGE

A: Patent
B: RR 28
C: HR 120, BP 76/40.
D: Hysterical and confused, GCS 14/15. Vomits
E: Surgery continues and obst. Asks for Syntometrine, haemabate and Consultant help

EXPECTED ACTIONS

- Blood products to be given.
- Major Obstetric Haemorrhage call.
- Anaesthetise the patient recognising haemodynamic instability.
- Call for another pair of hands.
- Rapid infusor
- Additional invasive monitoring

LOW DIFFICULTY

- Grade 1 intubation
- Surgeon controls bleed
- Patient stabilises rapidly with fluids and drugs

NORMAL DIFFICULTY

- Patient continues to bleed
- Remains hypotensive & unstable
- Good fluid management, warming, monitoring, help

HIGH DIFFICULTY

- CVS instability +++ on induction
- Unresponsive to vasopressor unless aggressively fluid resuscitated
- Consider cell saver
- Deranged clotting

RESOLUTION

Bleeding resolves with surgical intervention and future management discussed i.e. ICU
DEBRIEFING

POIANTS FOR FURTHEH DISCUSSION:

Technical:
• Management of major postpartum haemorrhage
  o Physical
  o Pharmacological
  o Anaesthetic strategies
  o Surgical techniques
• Performing emergency RSI in the obstetric patient

Non-technical:
• Based on established non-technical skills frameworks e.g. ANTS, NOTECHS etc
• Appropriate communication with patient, obstetric theatre team, blood bank and haematologists.

DEBRIEFING RESOURCES

Management of obstetric haemorrhage
http://www.frca.co.uk/article.aspx?articleid=100758

http://ceaccp.oxfordjournals.org/content/5/6/195.full.pdf+html?sid=f09fcb24-f59a-43ef-9aab-10d2b607ea79

Prevention and Management of Postpartum Haemorrhage
### INFORMATION FOR PARTICIPANTS

#### KEY POINTS:
- Management of major obstetric haemorrhage including haematology, appropriate monitoring and anaesthetising the patient
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#### RELEVANCE TO AREAS OF THE ANAESTHETIC CURRICULUM

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**FURTHER RESOURCES**

Management of obstetric haemorrhage
http://www.frca.co.uk/article.aspx?articleid=100758


Prevention and Management of Postpartum Haemorrhage
PARTICIPANT REFLECTION:

What have you learnt from this experience? (Please try to list 3 things)

How will your practice now change?

What other actions will you now take to meet any identified learning needs?
PARTICIPANT FEEDBACK

Date of training session: ..........................................................................................................................

Profession and grade: .................................................................................................................................

What role(s) did you play in the scenario? (Please tick)

- Primary/Initial Participant
- Secondary Participant (e.g. ‘Call for Help’ responder)
- Other health care professional (e.g. nurse/ODP)
- Other role (please specify):
- Observer

<table>
<thead>
<tr>
<th>Strongly Agree</th>
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<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
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<td>I found this scenario useful</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I understand more about the scenario subject</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have more confidence to deal with this scenario</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The material covered was relevant to me</td>
<td></td>
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Please write down one thing you have learned today, and that you will use in your clinical practice.

How could this scenario be improved for future participants?
   (This is especially important if you have ticked anything in the disagree/strongly disagree box)
What went particularly well during this scenario?

What did not go well, or as well as planned?

Why didn’t it go well?

How could the scenario be improved for future participants?