



# Obstetric Anaesthetic Trainee Guidelines 2020

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## Introduction

The delivery suite is a rewarding but demanding place to work for all grades of anaesthetists. However, this is especially true if this is your first experience of obstetric anaesthesia.

You have to be ready to give anaesthesia at very short notice, occasionally without the opportunity to undertake a thorough anaesthetic pre assessment that you would usually perform.

The pressure to proceed with anaesthesia particularly if there are foetal concerns can be very intense, but it is important to put the mother's wellbeing first at all times.

Most category 1 or 'crash' Caesarean sections can be anticipated. The mothers have often been on the labour ward for some time.

The key to surviving on the delivery suite is anticipating potentially challenging situations. This means having some knowledge of each of the patients in the rooms.

It is important to be part of the handover with the obstetricians at the beginning of each shift so you have an idea of their plans and concerns. You can consider attending Obstetric ward rounds.

Communicate with the staff at regular intervals to ensure you have advance warning of any developing situations.

Contact senior anaesthetists as soon as possible if you are concerned about a patient. If the registrar is busy elsewhere call the consultant.

The telephone numbers in Singleton for cisco are:

Resident Obstetric Anaesthetist	25857
Second on call Anaesthetist	25854
Consultant Obstetric Anaesthetist 9-5	25858
Anaesthetic Assistant	25856

On bleep 5857 there are 3 keys. A Key for remifentanyl pump, one for epidural pump box and one for the fridge in the anaesthetic room.

Theatre keys for the CD cupboard are the responsibility of the midwife coordinator or Anaesthetic Assistant. To gain access one of these need to be present.

Paper copies of this document should be kept to a minimum and checks made with the electronic version to ensure

## Duties and Responsibilities of Obstetric Anaesthetist

On commencing a shift the Anaesthetic trainee must:

- Handover. Ensure that the incoming resident is fully informed about patients with epidurals, problems on the ward 19, all obstetric HDU and post-op cases. There is an Obstetric handover at 8:30 in the communication room.
- Check all the Anaesthetic equipment (2 machines and intubation equipment) in main theatre and back up theatre.
- Anaesthetic drugs. Ensure that at the start of each 24-hour duty period emergency drugs are drawn up, labelled and placed in the Anaesthetic fridge. Anaesthetic drugs include:
  - Thiopental 2.5% 20mls-have available but **not** drawn up
  - Suxamethonium 200mg/4mls-drawn up
  - Atropine 600mcg/1ml-drawn up
  - Ephedrine 3mg/ml 10mls-drawn up
  - Metaraminol 0.5mg/ml 20mls-drawn up
  - Propofol 200mg not drawn up
  - Phenylephrine 100mcg/ml (10mg into 100mls)30mls drawn up
  - Glycopyrolate 200mg/ml 3mls drawn up
  - Syntocinon 1unit/ml 5units in 5mls drawn up
  - Atracurium ampoule **not** drawn up
- Ensure that you know who your senior cover is and how to contact them. Call for help sooner rather than later and always notify the consultant of a serious labour ward emergency.

Throughout the duty period the Anaesthetic trainee should:

- Be instantly available for labour ward to provide safe and effective Anaesthesia for obstetric operative procedures
- Provide safe and effective analgesia for labour (remifentanil or epidural), ideally within 30 minutes. Any potential delays should be referred to second anaesthetist.
- Complete audit forms for all patients who have an Anaesthetic intervention, follow up all postnatal patients who had an anaesthetic intervention and enter the details on the Anaesthetic Obstetric Data Base.
- Identify **early** any problem patients on labour ward e.g. pre-eclamptic, high BMI

## **Caesarean Section**

### **Pre-operative assessment**

Women will present at any time on labour ward for an emergency caesarean section or elective caesarean section from ward19, home or antenatal clinic.

Take an Obstetric and Anaesthetic history

Note the urgency of Caesarean Section and that urgency can alter. This can have implications on the Anaesthetic technique. Category 1 may necessitate a GA

- **Category 1: Emergency.** *Immediate threat to the life of the woman or fetus decision to delivery 30 minutes.* (e.g. acute severe foetal bradycardia, uterine rupture, cord prolapse)
- **Category 2: Urgent.** *Maternal or foetal compromise which is not immediately life threatening. Decision to delivery 90 minutes* (e.g. sub optimal CTG or severe pre-eclampsia)
- **Category 3: Scheduled.** *No maternal or foetal compromise but needs early delivery decision to delivery 24 hours.* (e.g. Failed induction of labour, failure to progress)
- **Category 4: Elective.** *Delivery timed to suit woman and maternity staff* (planned elective LSCS)

Identify the reason for Caesarean Section-this may have implications on management in terms of length of surgery, pre-eclampsia or estimated blood loss.

Assess wellbeing of the mother during pregnancy. Note booking blood pressure, this will act as a reference point for blood pressure management during caesarean section.

Placental location. If there has been a previous caesarean section the location of the placenta must be known to ensure it is not overlying the uterine scar. In one study <sup>1</sup> the incidence of accreta with women known to have placenta praevia was 3% on 1<sup>st</sup> LSCS, 11% on 2<sup>nd</sup>, 40% on 3<sup>rd</sup> and 61% on 4<sup>th</sup>.

Airway assessment. It is well recognized that there is a higher incidence of difficulty intubating in the obstetric population. (See difficult/failed tracheal Intubation)

Ensure a Group and Save sample has gone and ensure an electronic issue of blood is available on the morning of the LSCS. If there is no electronic issue available blood must be cross matched.

Obtain consent for PR diclofenac

Discuss Anaesthetic Management including complications. Complications of regional Anaesthesia should include:

- 1 in 200 risk headache
- Paraesthesia-temp-rare, permanent-very rare
- Hypotension and associated nausea/vomiting
- Discomfort or failure of Regional Anaesthesia and the possibility of converting to GA 1% for elective LSCS and 3% for non-elective LSCS

Other risks (as stated by OAA leaflet) to be aware of include 1 in 50,000 epidural abscess, 1 in 100,000 meningitis, 1 in 170,000 epidural haematoma, 1 in 5,000 accidental unconsciousness and 1 in 250,000 severe injury including paralysis.

Risks of General Anaesthesia. GA is considered to carry an 8:1 relative risk for serious complication when compared to regional. (Shibli and Russell IJOA 2000; 9:160-167). The contra-indications to regional Anaesthesia are few. Can you justify why the patient is having a GA?

All women for caesarean section are to be given antacid prophylaxis. If time allows, Omeprazole 20mg the night prior to the caesarean section and the morning of caesarean section with metoclopramide 10mg added in the morning. Intravenous ranitidine 50mg and IV metoclopramide 10mg can be given as an alternative if there is a time constraint (IV effective 30mins compared to 2 hours PO)

Elective LSCS patients are given a 500ml bottle of still Lucozade. 250mls are to be drunk at 7am and the remaining half to be sipped until they go to theatre. (Diabetic patients or patients receiving GA do not get this)

### **Requirements for Anaesthesia**

Checked anaesthetic machine (should be done first thing in morning) and an Anaesthetic assistant

Emergency drugs must be instantly available. (Should be drawn up in the morning).

Ensure pre-med given and patient starved this is time dependent.

Full monitoring (ECG, NIBP, Pulse oximeter, ET CO<sub>2</sub>) prior to induction

If emergency case midwife must monitor foetus on CTG.

Aorto-caval compression is avoided by placing the mother in a 15 degree left lateral tilt.

Antibiotic prophylaxis cefuroxime 1.5g and 500mg metronidazole (NICE) should be given prior to knife to skin were practicable. If the patient has a severe penicillin allergy Clindamycin 600mg IV plus gentamicin 1.5mg/kg IV should be given.

WHO Checklist must be done.

## Caesarean Section-Regional Block

### General Points.

#### Absolute contraindications

- Patient refusal (this needs to be fully discussed)
  - Localised sepsis
  - Anti-coagulated patients
  - Low Platelets. (Generally it is acceptable down to a platelet count of 80 if coagulation is normal. It is platelet function not necessarily platelet count that is important. Rapidly declining platelets are more of a concern than low stable platelet counts. (Always discuss these cases))
- [APPENDIX 1](#)

#### Relative contraindications

- Systemic sepsis( see epidural and concurrent infections)
- Aortic stenosis
- Neurological disease (for medico-legal implications or spina bifida)
- Previous back surgery (caution if metal work in-situ)

In the Obstetric population, conditions that may fall into the above contraindications include PET/HELLP, Abruptio, Sepsis or IUD.

### **Procedure**

Obtain informed consent (complications p6)

Establish IV access with largest cannula possible ideally a 16G cannula.

Commence 1L Hartmanns via an octopus 3 connector and ensure cannula is fast flowing. Have phenylephrine connected to one of ports

The lowest palpable Lumbar Interspace should be used. The spinal cord usually ends at L1/L2 but may extend to L2 or L3 and there can be tethering to the dura.

Tuffier's line is the line joining the iliac crests and it identifies the L3/4 space. Ultra sound can be used to locate space if needed

## Positioning the mother

Always ensure optimal positioning of the patient. Poor positioning is responsible for many failed regional blocks.

The ideal sitting position has the women's knees above her hips, feet flat on a stool and heels close to bed, shoulders relaxed, pillow close to abdomen, back gently curled outward. Avoid sitting the women on any dips in the bed.

The ideal lateral position has the women's head on a pillow with chin brought forward, back parallel and close to the end of the bed and legs brought up as far as they will go.

It is extremely important that the block is tested top to toe (particularly if an epidural has been used) and documented on anaesthetic chart as being adequate before the start of surgery.

Pain during Caesarean section is the most common cause of complaint made in obstetric anaesthesia

A block must demonstrate and is then considered adequate to proceed with surgery. A dense motor block, absent cold sensation upto T4, no sharp sensation by applying a gentle pinch to abdomen (usually done by surgeons)

## SPINAL

All spinal for surgery should be performed in theatre. Spinals can be inserted with the patient sitting or in lateral position. (If performed in lateral position the spinal block may raise quicker) They produce a more reliable block than epidural

Full asepsis (including face mask) is required. The skin should be prepared with 0.5% chlorhexidine (not 2 %) and allowed to dry before starting the procedure. This need only be done once.

***NB: Chlorhexidine is neurotoxic and it is extremely important that it doesn't come in to contact with any of the needles to be used. Ensure the chlorhexidine has been disposed of before opening the spinal /epidural packs.***

Use a 25G Whitacre or 24G Sprotte needle. Check for free aspiration of CSF at the beginning and end.

The standard spinal injection we give is 2.5mls 0.5% hyperbaric bupivacaine with 100mcg morphine and 20 mcg fentanyl



## EPIDURAL TOP UP FOR LSCS

Assess if epidural is suitable to be topped up by the following criteria:

1. Has the pre-existing epidural block must been working effectively in labour?
2. Is there a bilateral block to T10, with no more than 1 segment discrepancy between both sides?
3. Are there no missed segments or patchy block?
4. Has the epidural required no more than one additional top up for inadequate block from Anaesthetist during course of labour, which was successful?
5. Are there bilateral warm feet?

If yes, proceed to top up. If no remove and perform spinal

It is acceptable to commence topping up an epidural in the labour room and while "in transit" to save time but you must stay with the patient and monitor them throughout.

Anaesthesia usually takes 15-30 mins (*may be unsuitable for category 1 LSCS*).

The top up mix **must be labelled and drawn up in a 20ml syringe**, you can use:

- 10mls 0.5% chirocaine+10mls 2% lignocaine+100mcg fentanyl
- 20mls 0.5% Levobupivacaine + fentanyl 100mcg.

An epidural 'top up' box is in the anaesthetic room on labour ward to avoid time delays if topping up an epidural in a hurry. It contains all that is needed to top up an epidural but fentanyl must be obtained from CD cupboard. Please replenish once used.

The volume needed will depend on the pre-existing block and the height of patient. (Generally caution is needed when patients are <5ft).

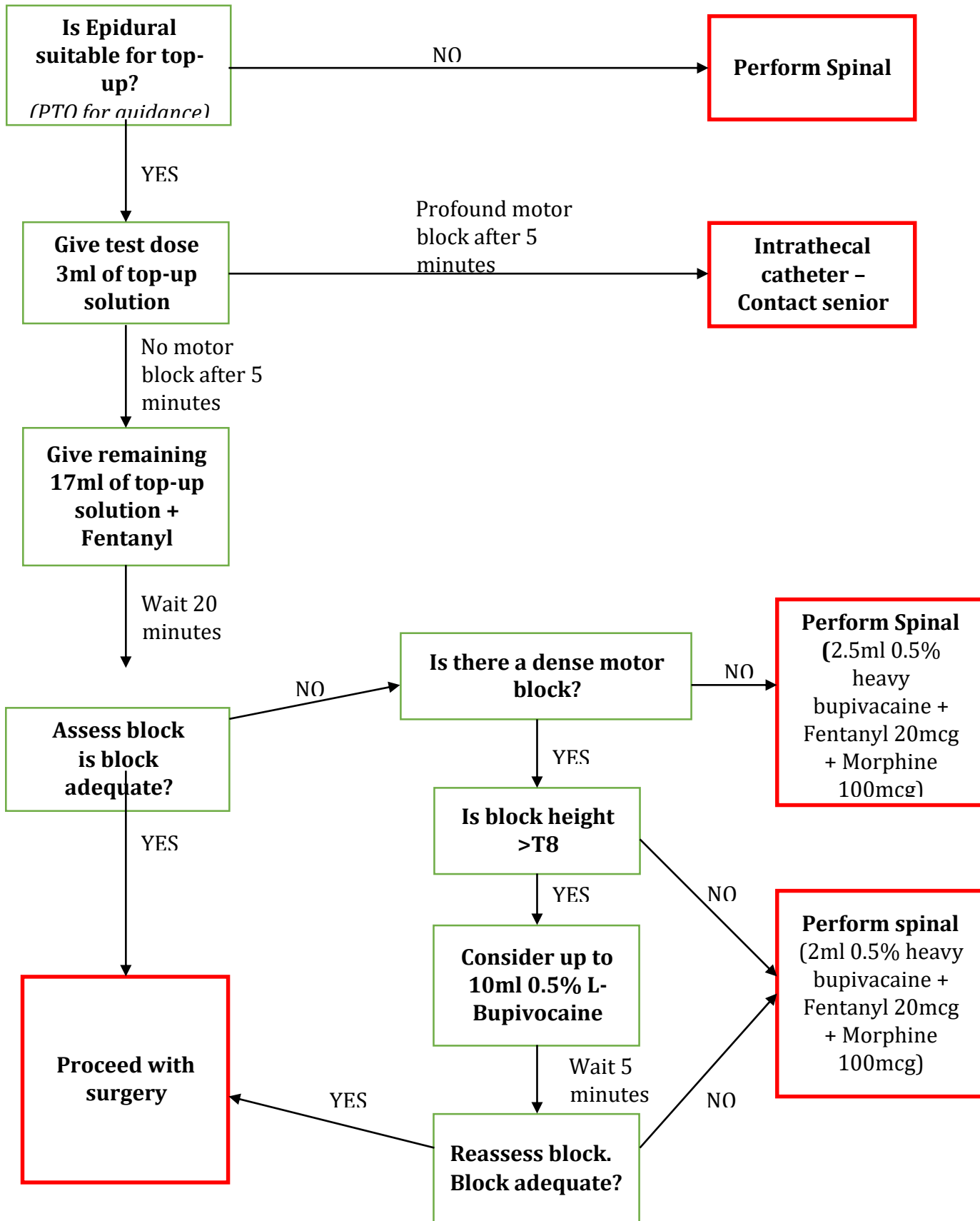
When topping up for LSCS aspirate the epidural catheter to ensure there has been no migration into CSF or blood. Give a 3ml test dose, wait for 5 minutes to ensure it is not a spinal catheter and give the remaining 17mls of the top up mix.

Generally with epidurals marked hypotension as seen with spinals is absent but ensure you have the emergency drugs to hand.

Post Delivery 2.5mg diamorphine via epidural catheter (5mg diamorphine dilute to 5mls and give 2.5mls followed by 2.5ml flush of saline). The epidural can be removed at the end of the operation unless there is an indication to leave it in.

Ensure Intra-thecal opioid sticker is completed.

**Epidural top up flow chart guide**



## **Management of Intrathecal catheter for LSCS**

If an intrathecal catheter has provided effective analgesia for labour and LSCS is required, the intrathecal catheter should be removed and a spinal inserted.

## **Prevention and Management of hypotension under Regional Anaesthesia for LSCS**

Hypotension is tolerated poorly in the pregnant patient. Clinical signs of hypotension include light headedness, nausea, vomiting, loss of colour, bradycardia. Nausea is usually the first sign of hypotension

CVS stability is more of a problem under spinal Anaesthetic

NIBP should be monitored closely during onset of Regional block until the baby is delivered

Modest crystalloid pre-loading with 500mls Hartmanns is recommended

Aorto-caval compression must be minimized/avoided by placing the pregnant lady in a left lateral position with 15° tilt.

Phenylephrine is the preferred vasopressor:

- it is delivered as an infusion, to be commenced at 30mls/hr as soon as the spinal anaesthetic has been given.
- the rate is then titrated against the patient's blood pressure
- phenylephrine may result in a reflex bradycardia, if the heart rate falls below 60-bpm glycopyrolate should be given IV.
- the phenylephrine must be discontinued by the end of the caesarean section.
- Ensure the octopus connector is removed at the end of the procedure so that there is no drug left in the connector, which could be accidentally flushed.

Alternatively and additionally, Ephedrine or Metaraminol may be administered.

Care must be taken when multiple vasopressors are used to avoid a marked vasopressor effect. When a vasopressor is administered ensure adequate time is given to see its effect before another dose or another drug is administered

## Management of a high regional block

This could occur with any regional block.

Signs/symptoms indicating a block is ascending too high include: Chest heaviness, Tingling fingers, Hypotension, Weak voice, inability to cough, talking in a whisper, Progressive respiratory inadequacy, deteriorating level of consciousness

This can be a life threatening event if CV stability is not achieved within 5 minutes, at which point the mother should have an immediate caesarean section.

### Treatment

ABC-Call for senior/consultant help

Reassure/explain to patient-put bed head up

If respiratory support is required RSI and GA

IV fluids and vasopressors as required (IV adrenaline maybe necessary)

Treat Bradycardia <60bpm with atropine

Usually by the end of the LSCS the spinal has receded enough to allow the patient to be extubated but utilize HDU/ITU post-delivery if needed

## Management of pain during Regional Anaesthesia block

It is important to differentiate between pain (unacceptable) and the tugging and pulling sensation (acceptable) that is felt during surgery.

Pain most frequently occurs during peritoneal swabbing/suturing. If pain occurs prior to delivery of baby it is likely that general anaesthesia will be required.

If pain occurs at uterine incision the baby would ideally be delivered before GA If pain occurs after delivery try the following:

1. Ask the Obstetrician to stop if possible
2. Offer entonox and/or Alfentanil bolus (250mcg boluses)
3. Consider ketamine (10mg boluses) if experienced in its use. Maintain verbal communication with patient. Call 2<sup>nd</sup> on call anaesthetist if considering giving.
4. A General Anaesthetic must be offered if the patient remains in pain
5. Document time of pain, time of intervention and the effect of any intervention. If GA is offered and declined document this.

## GENERAL ANAESTHESIA

### **Pre theatre**

If the indication is foetal compromise consider intra-uterine foetal resuscitation (IUF)

- Turn off syntocinon
- Consider terbutaline 250mcg SC unless abruption or severe APH
- Place woman in complete left lateral
- Treat hypotension with vasopressors
- Transfer to theatre and call 2<sup>nd</sup> on call

Assessment of patient

- Allergies
- Co-morbidities esp. PET
- Airway assessment
- Explanation-cricoid pressure, hearing voices during induction.
- Antacids should be given (omeprazole and metclopromide)

### **Theatre**

- Reassess FH, confirm need for GA, have a failed intubation plan
- sodium citrate 30mls
- Positioning, sniff the morning air, extended neck, consider HELP pillow particularly if high BMI
- Left lateral tilt
- Nasal oxygen at 5litres/min whilst awake or consider optiflow
- Pre-oxygenate with 10litres, with tight fitting mask until Eto<sub>2</sub> is 0.9
- WHO Checklist

### **Ensure**

- Good IV access
- Suction working
- Capnography working
- Communicate with Obstetricians when starting induction

### **Induction**

- Thiopentone 5mg/kg (unless haemodynamically compromised ie major haemorrhage, septic shock use reduced dose here)
- Suxamethonium 1.5mg/kg
- Consider addition of alfentanil if PET
- Increase nasal oxygen to 15ls when asleep if using nasal oxygen

- Await full muscle relaxation, at least **30 seconds**
- Intubate with short handled Macintosh laryngoscope
- Confirm correct placement of ETT: chest movement, breath sounds, sustained capnography trace
- ☒ **Go to failed intubation drill if unsuccessful**
- High gas flows (at least 6litres/min) to achieve MAC quickly
- O<sub>2</sub>: N<sub>2</sub>O ratio 50:50
- Allow Obstetricians to start

It is important to let nobody distract you whilst you are inducing and intubating the patient.

### **Extravasation of Thiopentone**

If thiopentone is administered down an intravenous cannula that has dislodged the thiopentone has been administered subcutaneously. Subcutaneous thiopentone can cause significant harm.

Once recognised another cannula will need to be secured and another dose of thiopentone administered.

The tissue cannula should remain in situ until you have time to aspirate any drug you can from it. It can then be removed.

The on call plastic surgeon in Morrison should be contacted and advice followed.

The patient will need to be informed, a datix form completed and follow up arranged in the anaesthetic obstetric clinic.

### **After delivery**

- If baby is in good condition the cord will be clamped at 1 minute
- Oxytocin 5IU over 1 minute consider oxytocin infusion
- Give opiates: fentanyl 100mcg, morphine 10-15mg
- Ensure antibiotics given
- If uterus atonic, give uterotonics, do not reduce MAC of volatile

### **Before extubation:**

- Consider emptying stomach with orogastric NG tube
- Ensure adequate analgesia (paracetamol, NSAIDs, opiates, TAP or ilioinguinal blocks)
- TOF: confirm reversibility
- Give reversal
- Confirm adequate reversal with nerve stimulator

### **Extubate:**

- Awake
- Head up or left lateral
- WHO sign out

### **Recovery**

- One to one care, another professional should look after the baby
- Anaesthetist to be immediately available for at least 30 minutes
- No relatives until fully awake

### **Modifications with severe PET**

- Low threshold for IABP monitoring
  - Obtund response to laryngoscopy : Alfentanil 1000mcg or Remifentanil 0.2mcg/kg/min
  - Obtund response to extubation
- NB: Magnesium may prolong NMB

### **Failed Tracheal Intubation**

#### **Best Practice Points**

- Ensure familiar with DAS guidelines ( see appendix)
- Always assess the patient's airway before induction of Anaesthesia
- Check all the intubation equipment daily and be familiar with its use
- Position the patient correctly before induction.
- Remember oxygenation is more important than intubation
- Call for help early
- Maternal welfare is paramount and takes priority over fetal considerations.

#### **Background**

The incidence of failed tracheal intubation in the general surgical population is 1:2200 but the incidence in the obstetric population may be as high as 1:250. Pharyngeal oedema probably explains some of this difference and it has been shown that Mallampati scores worsen throughout pregnancy.



## Pre-operative Assessment

Clinical assessment of the airway and risk of difficult intubation can be performed in a matter of seconds:

1. Mouth opening(should be greater than 5cms or three fingerbreadths)
2. Mallampati view (pharynx should be visible)
3. Jaw slide (should be able to push the lower incisors to the upper incisors)
4. Neck movement (full unhindered range of at least 90°)
5. Weight (BMI >35 are concern)
6. Evidence of possible laryngeal oedema (severe pre-eclampsia or URTI)
7. History of previous problems
8. Large protruding incisors

If there is any doubts about the ability to intubate a patient call for help and avoid General Anaesthesia where appropriate.

## Equipment that should be immediately available

Guedal airways

Nasopharyngeal airways

Various size ETT 7.0 and less

Gum elastic bougie

2<sup>nd</sup> generation LMAs

CMAC with D blade

CICO kit

ABMU scope (fibre optic)

This equipment is set out in draws on the airway trolley and corresponds to plan A, C and D in the DAS guidelines for failed intubation

Ensure you are familiar with the equipment available to you

## Problems that may be encountered

Remember most difficult intubations are due to poor positioning ,or inadequate muscle relaxation.

- use the HELP pillow for optimal positioning
- use an adequate dose of suxamethonium ( 1.5mg/kg)
- wait for the sux to work ( at least 30secs)

If Unable to insert laryngoscope. Cause could be

- suboptimal head and neck positioning-reposition
- breasts in the way-retract or try polio handle
- relaxant not working-wait
- cricoid hand in the way-adjust without releasing
- Muscle rigidity (could be MH or can ordinarily occur with suxamethonium)

If the laryngoscope cannot be inserted subsequently proceed as failed tracheal intubation. See appendix

**Post-operative care for LSCS**

WHO sign out must be done before leaving theatre

Post-operative analgesia and thromboprophylaxis (if required) must be prescribed prior to leaving theatre

Analgesia post operatively is provided during

- Spinal Anaesthetic by opioids (fentanyl and morphine) in the spinal
- Epidural top-up by administration of diamorphine (2.5mg) post-delivery via epidural catheter. Remember to remove the epidural catheter after the LSCS.
- General anaesthesia will require a PCA post operatively and local anaesthetic infiltration of the wound or TAP/iliac crest blocks depending on your experience.

If intra-thecal opioids have been administered the patient must stay on LDU for 2 hours. A green intra thecal sticker must be put on the prescription chart

Analgesia to be prescribed unless contra indicated should include:

Regular paracetamol 1g qds (if over 50kgs)  
 Regular Ibuprofen 400mg qds (if over 50kgs)  
 PRN tramadol  
 PRN Ondanestron  
 PRN oramorph

**Thromboprophylaxis**

Thromboprophylaxis should be prescribed 4 hours after the spinal or removal of the epidural catheter by anaesthetist if the risk scoring for prophylaxis is triggered. The dose will be prescribed depending on the mothers **booking** weight unless there has been significant weight gain (>12 kgs)

	Tinzaparin	Enoxaparin
<50 kgs	3,500 u/day	20mg
50-90kgs	4,500u/day	40mg
91-130kgs	3,500u/twice day	60mg
131-170	4,500u/twice a day	40mg twice day
>170 kg	75u/kg/day	0.6mg/kg/day

## **Anaesthesia for Trial of Assisted Vaginal Delivery/Instrumental Delivery in theatre**

If the cervix is fully dilated and has either failed to deliver the foetus without assistance, or the delivery has to be expedited, then an instrumental delivery with a Ventouse suction cup or a forceps may be attempted.

Urgency of delivery must be categorised

**You must be prepared to proceed to an IMMEDIATE LSCS and therefore a block adequate for LSCS is required prior to commencing the instrumental delivery.**

Pulling the fetal head down the birth canal often compromises the fetal blood supply resulting in fetal bradycardia. This may result in the obstetricians bailing out of the instrumental delivery and proceeding straight to a LSCS.

There will be no time in this situation to alter the block, therefore it is important to have the block to T5 to touch before you start the instrumental delivery. If you haven't started with a block to T5, then be ready to give an immediate GA.

It is usual practice for the obstetricians to allow themselves 3 pulls with the forceps/ventouse, after which time if there has been no descent of fetus they should proceed to an LSCS.

Stay alert to the developing situation so that you are not taken by surprise by the need to do a sudden LSCS.

Intravenous cefuroxime and metronidazole should be administered unless there is severe penicillin allergy

### **Instrumental Deliveries in the room**

The obstetricians may elect to perform the instrumental delivery in the room. This is a suitable location for a straight forward lift out procedure.

If there is any doubt that the fetus may not be delivered vaginally, then the instrumental delivery should be undertaken in theatre with a full anaesthetic block.

For a simple 'lift out' delivery with an epidural in-situ, the epidural top up mix is usually adequate. If more analgesia is required 10mls of 0.25% bupivacaine is suitable.

If the mother is using remifentanyl then this can be continued for the delivery and supplemented with a pudendal block by the Obstetrician for the delivery and any suturing thereafter.

If the mother has no analgesia in place then the obstetricians will need to consider a pudendal block.

## EPIDURALS FOR LABOUR

The time from the Anaesthetist being informed about an epidural until being able to attend the mother should not normally exceed 30minutes, and must be within 1 hour except in exceptional circumstances. If a delay is expected call another anaesthetist.

A laminated OAA information sheet is available on the epidural trolley to give the mother and consent should be given.

IV drug abusers can be offered epidurals in addition to there normal background analgesia.

The procedure and common complications (see epidural chart) should be explained to the mother and consent should be sought.

Complications to include:

- 1 in 100 risk of Dural puncture and likelihood of headache
- Increase in the duration of labour
- Association with instrumental delivery
- Incomplete/failure of analgesia

A record on the epidural chart must be made of this conversation. The midwife will usually witness it.

Ensure no contra-indications, see coagulopathy and concurrent infection.

A pre-epidural BP, pulse and reassuring CTG must be obtained prior to insertion.

A reassuring CTG before proceeding with the epidural must be obtained and confirmed.

A trained midwife should be present for the procedure and to monitor the mother afterwards

A 14G or 16G cannula should be inserted and evidenced to be fast flowing. It is no longer necessary to pre-load the mother prior to epidural insertion.

Ephedrine in a pre-filled syringe must be available in the delivery room.

Epidurals should be performed under strict asepsis. The Anaesthetist should be gowned with gloves and facemask. The skin should be sprayed with 0.5% chlorhexidine and allowed to dry. (Chlorhexidine is neurotoxic and should not come in to contact with any of the epidural equipment.)

A suitable lumbar space is L3/4 or L4/5

Be aware that the epidural space is less than 4cms in 16% of the patients.

LOR to saline is recommended. It is a more precise sensation, easier to define, has a lower reported incident of accidental Dural puncture and missed segments.

Do not advance the needle or catheter or inject drugs into the epidural space during a contraction as the epidural veins become distended.

Aim to leave 4cms of epidural catheter in the space

NEVER attempt to withdraw the catheter back through the needle, or to advance the needle with the catheter through it. Always withdraw the needle first.

A negative aspiration will further confirm correct location. (a meniscus drop is also a reassuring sign you are in the right place)

Adequate analgesia for labour should cover T10-L1 in the first stage and T10-S4 for the second stage.

**Fluid in epidural catheter.** If fluid is freely flowing from the catheter it could be CSF (dextrose positive), saline from the epidural placement (dextrose negative) or possible epidural oedema (dextrose positive). CSF in the catheter is usually freely aspirated and continuous. If in any doubt give a 4ml bolus of epidural PCEA mix into the catheter and look for a spinal effect-profound analgesia.

**Blood in epidural catheter.** This could indicate the catheter is placed within a vein. Gently flush with saline and aspirate. If blood is still aspirating withdraw the catheter and repeat the flush/aspirate. Ensure enough epidural catheter remains in the epidural space. Hold the tip of the epidural catheter below the level of the patients back to confirm that blood is no longer seen in the catheter. If blood is still aspirated, re-site the epidural.

## **Low dose intrathecal analgesia to aid siting of epidural.**

At times there are patients who may be unable to sit and maintain the optimal position (OP) for epidural insertion due to a combination of labour pains and fatigue. You may decide this before you commence the procedure or it may become evident after the patient is prepped and draped that to continue will expose the patient to increased risk of complications. These patients may benefit from low dose intrathecal analgesia (LDIA) to provide rapid analgesia to allow patient compliance for insertion of the epidural.

### Low dose intrathecal analgesia

#### Preparation:

Ensure at least a 16G IV cannula is sited, functioning and secured (use Hyperfix® if diaphoretic), IV fluids and giving set attached to cannula and vasopressors at hand. You will need your epidural pack, epidural premix bag (0.1% Levobupivacaine and 2 mcg/ml of Fentanyl, volume 250mls) and spinal needle (25G Whittacre as used in theatre).

Ensure midwife understands the need to continuously physically support patient. If they are unable to do this then you require an extra person in the room to do this.

#### Patient preparation:

In the above patient group, it may be prudent to aid positioning of the patient. The patient should be sat near the edge of the bed, feet should be flat on the chair or stool, knees 90° in relation to the feet. The patients exposed back, should be disinfected with chlorhexidine gluconate 0.5% spray (Hydrex®) before allowing it to dry.

Ensuring sterility draw up 5 mls of epidural bag mix.

Using standard spinal technique inject 5mls of the epidural bag mix

#### After LDIA:

Ensure 5 minute BP checks for the following 15 minutes and that the patient has adequate physical support i.e. continuous presence of midwife in front of patient or actually being held by midwife.

Once analgesia is effective, you may now continue to siting the epidural. The height of the LDIA block should be assessed once the epidural has been sited, secured and the patient placed back in the bed.



## When do I give the epidural test dose?

Care should be taken to avoid pushing your spinal block high enough to cause cardiovascular and respiratory compromise. Be aware of the volume of saline injected when finding the epidural space, as this contributes to the potential epidural volume expansion effect (i.e. compression of the dural sac) and therefore potential for a high spinal block.

The best way to do this is to allow the block to partially wear off i.e. Cauda to T8, before testing or topping up an epidural. This should be explained to the mother. Test dose and topping up epidural must always be done by anaesthetist. Allow at least 10 minutes between LDIA and test epidural dose, ensure BP and block level are checked before and after each epidural dose.

Remember you have not ruled out an intrathecal catheter until you have witnessed a dose given down the epidural. The anaesthetist must be present for the test dose down the epidural.

## **What should I do if I have given a low dose spinal and the patient needs a Cat 1 LSCS?**

There is a risk of a high spinal block and conversion to a GA, however if time permits, you should use a standard dose for the Category 1 LSCS spinal. As always care should be taken with positioning of the patient to minimise the chance of a high spinal. Once the patient is supine and a left lateral tilt has been applied, you should immediately check the level of the block and the BP.

## How to manage a high block?

See pages 13.

## Establishing Epidural Block

Check IV access is secure

A test dose of 10mls of 0.1% levobupivacaine or 10mls of the PCEA bag mix (0.1% levobupivacaine with 2mcg/ml fentanyl) can be safely administered after a negative aspiration.

5 minutes after the test dose there should be no evidence of motor block, sensory block, paraesthesia, sympathetic block (vasodilatation and warm toes) or hypotension. If these signs are present this is a spinal catheter and proceed as per management of intrathecal catheter.

The main/first dose of 10-15mls from the PCEA mix bag can now be safely administered.

Continuous CTG and 5 minutely BP must be monitored for 20 minutes after every top up is administered.

Complete the epidural prescription chart and the computer audit form.

A formal assessment of the epidural must be undertaken 20 minutes after administration of the first dose. Has the mother noticed a benefit? Are they still using the Entonox? Are her feet warm? What is the height if the block to ethyl chloride? Always ask "will this epidural be good enough to top up for LSCS?"

At 30 minutes from the test dose epidural block and maternal comfort must be confirmed.

After establishing an epidural block suitable for labour, it is useful to remind the mother that she needs to give herself a bolus in order to maintain analgesia, otherwise nothing will be going through the epidural

### **Immediate management of recognised Dural tap.**

Dural puncture may occur by means of the Tuohy needle or the epidural catheter. The hole in the dura (and arachnoid) allows CSF to leak out and the decrease in CSF pressure is responsible for the post-Dural puncture headache (PDPH). The incidence of PDPH is directly proportional to the size of the hole in the dura

(70% following puncture with 16G Tuohy needle). The definitive treatment is to seal the hole with an autologous epidural blood patch (EBP).

Accidental Dural puncture with a 16G Tuohy needle is usually obvious immediately. Withdraw the needle, noting depth of the epidural space and insert epidural at a different vertebral level.

The patient should be informed that her risk of headache is higher than 1 in 100 and events should be documented in the notes and on follow up documentation.

### **Unrecognised Dural tap**

An epidural catheter can be inserted uneventfully but upon inserting test dose or first dose behaves as a spinal catheter or can behave unusually (sub dural placement). In these cases it is advisable to remove the catheter and offer a re-site. The catheter will have breached the dura in some manner.

### **PCEA Maintaining analgesia.**

Epidural analgesia is maintained in labour using patient controlled epidural analgesia.

This has been shown to confer benefits in terms of reduced total dose of local anaesthetic, reduced lower limb motor blockade, and reduced number of clinicians top ups.

The mother should self-administer the PCEA until delivery.

There is no evidence that with holding epidural analgesia in the 2nd stage of labour improves the mother's ability to push or decreases the likelihood of an instrumental delivery. Therefore the mother should be encouraged to use the PCEA as necessary until the delivery is complete.

### Procedure for PCEA

1. Site epidural catheter and establish initial block (as per protocol above)
2. Set up the PCEA device as follows:

**250ml bag of 0.1% bupivacaine with 2mcg/ml of fentanyl  
bolus dose 10ml lockout 30 minutes**

Do not set up a background infusion

3. Connect PCEA device to patient epidural catheter. Ensure handset is connected to PCEA device.
4. Tell the patient that whenever the contractions begin to become painful, to inform the midwife. The midwife will then pass the PCEA handset to the mother, who may press the button, delivery 10ml of the epidural mixture.
5. The midwife will then monitor the mother's **blood pressure, every 5 minutes, for 15 minutes**, every time the mother presses the button and the PCEA delivers a dose.
6. Then the midwife will assess the block's **sensory level**, using ice or ethyl chloride, and assess the **motor block score** (Bromage Score), and document these on the Obstetric Epidural Chart.
7. All other observations are to be documented hourly (see Obstetric Epidural Chart).
8. The PCEA lockout will not allow another dose to be delivered within 30 minutes of a previous dose.
9. If the Mother still complains of pain after 2 consecutive PCEA top-ups, the midwife will inform the anaesthetic SHO, who will review (see Troubleshooting Protocol)

10. The following observations require the anaesthetic SHO to be contacted immediately:

<b>Motor Block Score</b>	<b>3</b>	<b>Respiratory Rate</b>	<b>&lt; 8/min</b>
<b>Sedation Score</b>	<b>3</b>		
<b>Systolic BP</b>	<b>&lt;80mmHg (requires Obstetric Crash Call)</b>		

### **Trouble shooting Epidurals-inadequate analgesia**

You may be asked to assess a mother who has inadequate analgesia from her epidural.....

Establish where the pain is

Has the epidural ever worked?

Ask about progress of labour

Check epidural site, is it still at appropriate length. If less than 3 cms offer a re-site.

Check the block

Check for bilateral warm feet, indicating sympathetic block

Topping up an epidural should involve checking IV access, a high volume, and low concentration solution. Topping up manually leads to greater dispersion of the drug in the epidural space. 10mls of top up bag mix should be sufficient

### **If you find...**

#### **No block.**

If after 30mls of 0.1% levobupivacaine no block is demonstrable it is unlikely to be in the right place and a re-site should be offered.

#### **Uni-lateral block.**

If there is a uni-lateral. The usual cause is too much epidural catheter in the epidural space. Pull the epidural catheter back 0.5-1cms and administer a bolus dose. Position the patient laterally so that the "missed side" is down.

The bolus should be high volume, low concentration and be bolused manually. This will help to spread the drug in the epidural space.

The usual bolus would be 10-20 ml of 0.1% bupivacaine. If this does not work a re-site of the epidural should be offered with the explanation that this might happen again.

#### **Missed segments.**

This is rare. The patient will have preserved sensation over 1/2 dermatomes. Try boluses to increase the volume in the epidural space if this does not work a re-site should be offered with the explanation that this might happen again.

### **Subdural block.**

The epidural gives a high sensory block but minimal motor block with usual or small doses. It is a very variable and unreliable block and any blocks behaving unusually refer to seniors. A re-site will be required if subdural placement is confirmed with an explanation this may happen again.

If adequate analgesia has not been achieved despite offer a resite and if despite your best efforts there is no improvement in analgesia call for senior help

### **No sacral block**

If called into see a lady who is nearing delivery and she is complaining of pain where previously there they had been comfortable assess for sacral block. It is likely to be absent. Ensure the epidural catheter has not moved, sit the patient up and administer a bolus of 10mls 0.25% Bupivacaine, the addition of 50mcgs of fentanyl can be useful.

If this fails a re-site should be offered but be mindful that obtaining optimal positioning of the women in the later stages of delivery can be challenging.

### Epidural Disconnections

If this was a poorly functioning epidural remove the catheter and offer a re-site

If the epidural was working well, explain to the mother the small increased risk of infection versus the risk of a re-site and she what she wishes to do

If the disconnection is between the filter and the giving set replace the filter, giving set and bag of bupivacaine

If the disconnection is between the clamp and the filter, then the catheter could have been contaminated. In this case aseptically cut 10cms of the catheter using sterile scissors and gloves. Replace the clamp and filter and reconnect

If the disconnection is between the catheter and the clamp, check that the catheter is not sitting in any obvious contaminants. If it is it will have to be removed. If not, then aseptically cut 10cms off the catheter and reconnect to a new clamp and filter

In all cases ensure the epidural catheter is removed as soon as possible after delivery

Document all actions taken in the intrapartum notes

At the post natal ward follow up, ensure the mother knows what happened, the small risk of complication and ensure she is given written letter about infections and [epidurals \( appendix\)](#)

## **Epidurals and Concurrent infections**

Administering an epidural in a parturient who has a concurrent or suspected illness is a contentious issue.

The management of such women presents many challenges. All decisions should be discussed with the consultant ensuring the following is done:

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- All women who request epidural analgesia should have a thorough history, and where appropriate examination taken to exclude any concurrent infection or sepsis
- Vital signs must be noted (including temperature)
- Relevant blood tests should be requested or noted e.g. FBC
- Any possible source of infection should be noted (PROM, Chorioamnionitis, UTI...)

Reading the current literature, the following would seem a sensible and reasonable approach but discuss all cases first with consultant responsible for labour ward:

If a woman is found to be fit and well but incidentally has a raised WCC up to 25 it would seem safe to offer epidural analgesia.

If a woman is systemically unwell or has a concurrent infection Remifentanyl analgesia should be offered first if analgesia is required. If she subsequently requires theatre for LSCS or trial of forceps it would seem safe to proceed with spinal anaesthesia, **if** appropriate antibiotics have already been administered (ideally an hour before). This decision should always be made on an individual risk/benefit basis and with senior input.

Any women who receives an epidural who may be at subsequent increased risk of developing an epidural abscess should be discharged home with advice regarding signs and symptoms of epidural abscess, which should prompt her to seek immediate medical attention. An information sheet should be given with contact details on it.

## **Epidurals and a potential Coagulopathy**

Before siting an epidural or spinal, it is important that a potential coagulopathy is excluded.

Obstetric reasons for a coagulopathy include pre-eclampsia, in particular HELLP where the platelet count can fall rapidly.

DIC can develop in obstetric patients particularly following a placental abruption, PPH and an intrauterine death.

In addition, some patients will be on prophylactic LMWH due to risk factors such as increased BMI.

General guidelines:

- Fit and well mothers with none of the above, and no concerns re sepsis, do not need a full blood count before siting an epidural
- Any mother with pre-eclampsia or HELLP should have a FBC within 6 hours of siting an epidural/spinal. The platelet count should be at least 100 for an epidural, and >80 for a spinal. However, the trend is more important. A rapidly falling count is more concerning than the actual platelet count.
- A further FBC may be required before removing the epidural catheter
- A mother that has an antepartum haemorrhage large enough to result in an intra uterine death is at high risk of developing DIC. An FBC and coagulation studies will be needed just before siting an epidural/spinal.
- Remember a normal fibrinogen level at the end of pregnancy is 4-8mg/l. A level of 2 or less is very low and predictive of major obstetric haemorrhage.
- A mother with an IUD of any cause should have an FBC and coagulation study before siting the epidural.
- If a mother is on prophylactic LMWH then wait 12 hours before siting an epidural/spinal. If she is on a treatment dose then wait 24 hours before siting an epidural or spinal.
- If in any doubt discuss potential coagulation issues with the anaesthetic consultant.

### **Post Dural puncture headache (PDPH)**

PDPH will occur 70% of time after a known Dural puncture with a Tuohy needle but can occur after spinal (especially if multiple attempts were made) and after apparently uncomplicated epidural.

If a patient complains of occipito-frontal headache after epidural/spinal relieved by lying and exacerbated by sitting/standing, then you must assume this is a PDPH.

Epidural Blood patch (EBP) is the treatment of choice and is 70% effective; 90% if effective if repeated.

Patients should be well hydrated, offered regular analgesia and can be encouraged to drink caffeine. These are secondary treatments and should not be used as first line management of PDPH.

CSF production is auto regulated and excessive oral or IV fluid intake is of no benefit in the treatment of established PDPH. Its role in prevention of PDPH when a Dural tap has occurred is debatable. Avoid dehydration in all cases. DO NOT recommend prolonged bed rest to prevent onset of PDPH.

## **EPIDURAL BLOOD PATCH**

A patient with a postural headache after a known or suspected Dural puncture OR a patient with no confirmed puncture but a postural headache persisting for 24 hours is best treated by an epidural blood patch. This should be performed 48hrs-72hrs post puncture time, unless contraindicated. All blood patches should be carried out on the labour ward, and a consultant should be involved in the decision.

The patient should be given the PDPH leaflet prior to EBP being undertaken

Contraindications: Sepsis (pyrexia, raised white cell count)

Epidural blood patch:

1. needs two anaesthetists, both scrubbed
2. Identify and prepare venepuncture site.
3. Use Tuohy needle to identify epidural space in usual way, being aware of the possibility of a short distance from skin to space.
4. Obtain blood sample (20ml for patch plus 10-15ml for blood culture bottles) using an aseptic technique.
5. Inject up to 20ml blood slowly through Tuohy needle or catheter.
6. Stop injecting if patient complains of pain in back.
7. Encourage patient to lie flat for 1 hour then mobilise normally.
8. Warn patient against lifting and straining for next 2 weeks.

The patient must be reviewed after 2 hours. If all is well, she may go home if appropriate but should be instructed to contact the duty anaesthetist if the headache returns or if she feels unwell. Give her the labour ward phone number and record in the notes that you have done so. Follow up telephone contact after 4 weeks or Obs clinic if the patient would like a debrief or discussion with anaesthetist.

## **Remifentanil PCA**

Remifentanil has been identified as safe and effective analgesia for use in the intrapartum period.

Acting within 1-2 minutes it offers analgesia that can be timed with contractions.

In common with other opioids it may cause respiratory depression, sedation, pruritus, nausea and vomiting. It crosses the placenta but has no clinically significant neonatal depressant effects at commonly used doses.

Remifentanyl can be given to any woman requesting its use if they are in established labour and over 36 weeks' gestation. Its use in women of gestation < 36 weeks must be discussed with the consultant Anaesthetist.

Entonox can be used in addition.

IV drug abusers can be offered remifentanyl in addition to their normal background analgesia.

Contraindications include:

- Allergy to opioids
- Other parenteral opioid administration in preceding 4 hours (includes pethidine)
- No PCA trained midwife to administer 1:1 care
- Relative contra-indications also include pre-eclampsia and multiple pregnancy, high BMI >45 (In these cases an epidural would be better suited)

Procedure

SpO<sub>2</sub> monitoring of the mother and CTG monitoring of the baby must be established before the woman starts the PCA and continuously monitored whilst remifentanyl is used.

A remifentanyl observation chart must be completed and **a midwife must be assigned to give one to one care**. If the midwife is required to leave the room for a brief period, she must ensure that the woman cannot use the PCA during this time.

The patient must read the remifentanyl PCA information leaflet and be made aware of potential side effects, particularly that 1:10 women will experience transient lowered oxygen saturations requiring the administration of additional oxygen via nasal specs.

A dedicated cannula must be inserted. (Usually 20G)

2mg remifentanyl are drawn up by the anaesthetist and diluted into **50mls saline**. 40 microgram/ml final solution concentration.

A dedicated remifentanyl PCA pump set to deliver 1ml (40mcg) bolus over 10 seconds with a 2 min lockout must be used.

Only the patient must use the PCA button.

**The anaesthetist must be present observing the woman for the first 4 boluses of remifentanyl.**

If oxygen saturations <90% for 15 seconds give 2ls/min of oxygen via nasal cannula.

The Anaesthetist must be contacted if:

- A sedation score of less than 3 (eyes closed but rousable to voice)
- RR<8
- SpO<sub>2</sub> remaining below 90% despite oxygen via nasal specs □ Any other concerns

## Intra Uterine Death

You may be asked to provide labour analgesia for mothers who have had an intra uterine death diagnosed and need to proceed to a vaginal delivery.

The usual practice once IUD had been diagnosed is to induce labour with prostaglandin pessaries. This can take several days.

Remember this is a very difficult time for the parents, so be sensitive to their situation.

The mother is potentially at risk of DIC, particularly if the cause of the IUD was a placental abruption. In this situation DIC can develop very rapidly. DIC can also develop if the foetus has died some time ago (usually 1-2 weeks).

The mother is also at risk of PPH secondary to an atonic uterus, retained products and sepsis.

If a mother is requesting analgesia for labour then remifentanil PCA is preferable.

If she wants an epidural, then an FBC and coagulation studies should be performed prior to siting an epidural and if prior to withdrawing if significant time frame.

If the IUD was due to a placental abruption, then due to the risk of developing DIC the benefits of siting an epidural should be carefully weighed up, and discussed with the consultant.

### Intra-operative Cell salvage

Use of IOCS has been demonstrated to be safe in Obstetrics

Its use has been endorsed by CEMACH, AAGBI, MBRACE and NICE

Patients who will benefit from cell salvage include:

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- Anaemic patients
- Malplacentation of placenta
- Previous uterine surgery
- Emergency LSCS particularly where labour has been prolonged and oxytocin has been used
- Patients refusing blood products (Jehovah's witnesses)

Initially cell salvage can be set up to collect blood and if enough blood is collected then it can be processed at that point. This is a cost-effective use of cell salvage. Jehovah Witnesses require the cell salvage circuit to be set up in continuity with them.

To maximise blood collected all swabs should be washed gently in 2 litres of N/saline and this aspirated into the cell salvage machine. It is important not to wring out the swabs.

In rhesus negative mothers with rhesus positive babies there is an additive exposure to foetal cells and resultant maternal rhesus incompatibility. All rhesus negative mothers must have anti D and a Keilhauer to identify the dose of anti D needed. Ensure the midwife looking after the mother is aware cell salvage blood has been re-infused.

## **Post Natal Ward Round**

The purpose of the post-natal ward round is to follow up all patients that have had an anaesthetic intervention.



The main aim is to pick up complications of the anaesthetic which has usually been a spinal or epidural.

All patients should be seen within 24 hours post-delivery.

A check needs to be made to exclude a headache, or any residual motor or sensory neurological deficit.

It is also an opportunity to check that post-delivery pain control is adequate, and that the mother was generally satisfied with the anaesthetic.

Headache: Differential diagnosis

- Simple fatigue
- Migraine
- Pre-eclampsia
- Post Dural puncture headache
- More serious vascular complications e.g. central venous thrombosis, CVA, subarachnoid.

Classic features of a PDPH: postural headache, worse sitting up, relieved by lying down, occurring 1-7 days after a neuraxial block. Associated features e.g. dizziness, stiff neck, nausea, tinnitus

If you think a mother has a PDPH discuss with the consultant. She shouldn't be discharged until she has been seen or at least discussed with the consultant.

Be alert to potential serious causes of the headache.

Red Flags:

- Headache not responding to simple analgesia
- Associated with other neurological symptoms /signs
- Raised BP
- Signs of sepsis
- Confusion or depressed GCS

## **Post-natal neurological deficits**

These occur most commonly in women who have laboured and are due to neuropraxia from compression and stretching of nerve roots. However, in women who have had neuraxial procedures a full neurological examination including signs of vertebral pain and sepsis should be performed and documented.

Important diagnoses not to miss include:

- epidural/spinal haematoma
- epidural abscess
- meningism
- cauda equina syndrome

If any of the above are possibilities then an urgent MRI will need to be arranged. Discuss all patients with neurological deficits immediately with the consultant

## Cardiac arrest

It is rare in pregnancy estimated to occur 1 in 30,000 deliveries. The aetiology of cardiac arrest may be different and includes amniotic fluid embolism, pulmonary embolism, eclampsia, drug toxicity (LA and MG), cardiac cause and haemorrhage.

Use standard ABC approach and ALS algorithm appendix 2

Remember 4 H s and 4 T s.

Hypoxia, **Hypovolaemia** (haemorrhage or sepsis), Hyperkalaemia and other metabolic disorders, Hypothermia.

**Thromboembolism, Toxicity** (our local anaesthetics or magnesium), Tension pneumothorax and cardiac tamponade.

Resuscitation in the pregnant patient requires the following modifications from ALS in the non-pregnant population:

Aorto-caval compression. In the supine position 90% of the vena cava is occluded at term and the resultant SV may only be 30% of a non-pregnant lady. To restore venous return and cardiac output a maternal pelvis tilt to the left greater than 15 degrees is recommended. If the tilt exceeds 30 degrees then chest compressions will not be effective. Achieving the tilt is best if the table is tilted. Manual displacement of the uterus can also be used.

Chest compressions are performed slightly higher on the sternum due to the gravid uterus. Do not apply pressure over the top of the abdomen or bottom tip of the sternum. A firm surface is required to perform effective CPR.

Peri arrest/perimortem caesarean section-prompt caesarean delivery is recommended by the resuscitation council as a resuscitative procedure for cardiac arrest in the near-term pregnancy. It is stated that a caesarean section should commence within 4 mins of cardiac arrest and delivery accomplished by 5 mins. (nb Call for caesarean section prior to 4 mins and cancel if not required.) Transfer of the patient to theatre will delay delivery and is not necessary, diathermy will not be needed as there is little blood loss with no cardiac output. Upon delivery and successful resuscitation transfer can occur then.

Resuscitation following local anaesthetic toxicity. The administration of IV lipid emulsion is recommended in suspected LA toxicity. (in context of recent LA use) Remember that cardiac arrhythmias may be very refractory to treatment.

## Further resources

1. [www.oaa-anaes.ac.uk](http://www.oaa-anaes.ac.uk)

OAA home page for information leaflets for patients, translations of documents, educational meetings and guidelines

2. OAA DAS Obstetric airway guidelines
3. WISDOM on intranet under clinical systems. Contains A-Z guidelines of Obstetric guidelines throughout wales
4. [www.aagbi.org/sites/default/files/la\\_toxicity\\_2010\\_0.pdf](http://www.aagbi.org/sites/default/files/la_toxicity_2010_0.pdf) guideline on management of severe local anaesthetic toxicity

## Maternity Services

### Checklist for Clinical Guidelines being Submitted for Approval

Title of Guideline:	Obstetric Anaesthetic Trainee Guidelines 2020
Name(s) of Author:	Susan Williams
Chair of Group or Committee approving submission:	Obstetric Anaesthetists
Brief outline giving reasons for document being submitted for ratification	Revised version
Details of persons included in consultation process:	Labour ward Forum
Name of Pharmacist (mandatory if drugs involved):	
Issue / Version No:	3
Please list any policies/guidelines this document will supercede:	Replaces version 2 Obstetric Anaesthetic Trainee Guidelines
Date approved by Group:	April 2020
Next Review / Guideline Expiry:	September 2022
Please indicate key words you wish to be linked to document	Anaesthetic, epidural, anaesthetists, trainee, remifentanyl, PCEA, cell salvage, spinal
File Name: Used to locate where file is stores on hard drive	