SOP Name Siting of an Epidural in Labour

Written by	Federica Sant	Consultant Anaesthesia
	Name of other Originator	Title/Department

Checked by	Dr Daniel Farrugia	Consultant Anaesthesia
	Dr Tanya Esposito	Consultant Anaesthesia
	Dr Johann Scicluna	Consultant Anaesthesia
	Dr Marie-Therese Licari	Consultant Anaesthesia

Approved by	Dr Joseph Zarb Adami	Clinical Chair Anaesthesia
	Name, Surname and Signature	Title/Department

Change History

Version No.	Revision Date	Change Description

This document is not valid without all the number of pages specified

1. Purpose

1.1.1. The principal objective of the SOP is to act as a guideline for epidural insertion and management during labour.

1.1.2. To provide adequate analgesia for labour without significant side-effects.

1.1.3. This SOP will facilitate the streamlining and uniformity of epidural insertion and management according to evidence based guidelines.

1.1.4. The expected outcome through the use of this SOP is increased safety for the patient on Central Delivery Suite.

2. Scope

2.1.1 This SOP will be used when an epidural is requested for pain relief during labour.

2.1.2 This SOP applies to anaesthetists, midwives, nurses and obstetricians working on Central Delivery Suite.

3. Terms & Definitions

3.1.1 The anaesthetist refers to the anaesthetist on duty.

3.1.2 IV refers to intravenous.

3.1.3 IM refers to intramuscular

3.1.4 N. saline refers to normal saline

3.1.5 FBC refers to full blood count.

3.1.6 HELLP syndrome refers to haemolysis, elevated liver enzymes and low platelets.

3.1.7 LSCS refers to lower segment caesarean section

3.1.8 CVS refers to cardiovascular system

3.1.9 CSF refers to cerebrospinal fluid

3.1.10 BP refers to blood pressure

3.1.11 LOR refers to loss of resistance

3.1.12 FHR refers to fetal heart rate

3.1.13 VBAC refers to vaginal birth after Caesarean Section

3.1.14 CSE refers to combined spinal epidural

3.1.15 PDPH refers to post-dural puncture headache

4. Reference Documents

4.1. Mater Dei Hospital guideline for skin preparation prior to lumbar puncture and neuraxial block – August 2013

4.2. City Hospitals Sunderland NHS Foundation Trust guideline on inadequate regional block- September 2010

4.3. Westmead Hospital Manual of Obstetric Anaesthesia 2010

4.4. Southampton University Hospital guideline on regional anaesthesia- March 2010

4.5. St. George's Hospital London guideline on epidural analgesia in labour- April 2009

4.6. OAA/AAGBI guidelines for Obstetric Anaesthetic Services 2013

4.7. OAA/AAGBI/RA-UK guideline on regional anaesthesia and patients with abnormalities of coagulation – November 2013

4.8. Aberdeen Maternity hospital guideline on post-dural puncture headache – September 2009

4.9. St. Georges Hospital London guideline on post-dural puncture headache – April 2009

5. Responsibilities

5.1.1 The midwife is responsible for preparation of the patient for epidural. This involves siting a cannula, starting intravenous fluids and positioning the patient.

5.1.2 The midwife is also responsible for preparation of the sterile pack and other instrumentation required to perform the epidural and for assisting the anaesthetist during the insertion of the epidural.

5.1.3 The midwife should ensure that any blood tests required for the performance of the epidural have been taken and sent to the laboratory and are available on isoft for viewing by the anaesthetist

5.1.4 The anaesthetist is responsible for obtaining consent from the mother by ensuring that there are no contraindications (see Appendix 5), explaining the procedure and the risks it entails.

5.1.5 The anaesthetist is responsible for performing the epidural, ensuring that this is working and providing alternative pain relief acceptable to the patient if the procedure fails.

5.1.6 The midwife is responsible for checking the height of the block and the maternal blood pressure once the epidural is in place.

5.1.7 The midwife is responsible for calling the anaesthetist if the block height is too high/low, if the epidural is not working properly or if the patient is haemodynamically unstable.

5.1.8 The midwife is responsible for monitoring the foetus.

5.1.9 The anaesthetist is responsible for preparing and administering any bolus doses, top-ups and maintenance infusions of local anaesthetic.

6. Safety Issues

6.1.1 The **absolute contraindications** to inserting an epidural are:

- Uncorrected anticoagulation or coagulopathy (see Appendix 5)
- Local sepsis
- Refusal

- Raised intracranial pressure (not benign intracranial hypertension)
- Inadequate staff to look after the patient
- Allergy to local anaesthetics

6.1.2 The **relative contraindications** to inserting an epidural are:

- Imminent birth of baby
- Hypovolaemia or ongoing antepartum haemorrhage
- Neurological disorders
- Gross spinal deformity
- Severe fetal distress
- Systemic sepsis – Temperature >38 degrees not treated with antibiotics

6.1.3. The **risks of the procedure** include:

- Hypotension (1 in 50)
- Postdural puncture headache (1 in 200)

- Potential for failure, either complete or partial (chance of resiting epidural catheter 5%)
- Risk of temporary nerve damage 1 in 10,000
- Risk of nerve damage >6months 1 in 100,000
- Severe injury including paralysis 1 in 250,000
- Risk of infection (abscess 1 in 50,000, meningitis 1 in 100,000)
- Risk of bleeding including haematoma (1 in 170,000)

6.1.3 In the case of a patient suffering from mild to moderate pre-eclampsia it would be standard practice to perform a neuraxial procedure within 6hrs of the last FBC and clotting screen.

6.1.4 If the patient has severe or fulminating pre-eclampsia or HELLP syndrome, an FBC and clotting screen should be checked immediately before performing the procedure as decreases in platelets can occur rapidly in these circumstances.

6.1.5 The total dose of bupivacaine should not exceed 2mg/kg in any 4 hour period

6.2.0 Epidural analgesia does not cause an increase in Caesarean section rate

6.2.1 Epidural analgesia may cause an increase in the rate of instrumental deliveries. This may be through prolongation of the second stage of labour.

6.2.2 It may be possible to mitigate the impact on the rate of obstetric intervention by keeping the dose of local anaesthetic to the minimum amount required to provide analgesia

6.3.0 There is no evidence to support the withdrawal of the epidural in the second stage

7. Method

7.1.0 The anaesthetist should attend to the patient within **60min** of being called and if unable to do so seek help from fellow colleagues on general rota. If nobody is available consider calling consultant on call.

7.1.1 Caution should be exercised in patient who have been given IM pethidine in the previous 4 hours

7.1.1 Patient should have been given the Epidural Information Card to read (see Appendix 2). This is found on the epidural trolley and is available in a number of languages

7.1.2 Verbal consent should be obtained (see example given in Appendix 1)

7.1.3 FBC is **not** required unless there is evidence of pre-eclampsia, antepartum bleeding has occurred, or anaemia or thrombocytopenia is suspected.

7.1.4 IV access should be present ideally with a 16G cannula but a minimum of an 18G cannula.

7.1.5 IV fluids should have been started. There is no evidence for the role of a fluid bolus prior to insertion. Hartmanns solution should be 1000ml q6-8 hourly unless otherwise indicated (CVS disease etc)

7.1.6 If the patient has a syntocinon infusion and is distressed to a degree that is affecting communication the infusion should be stopped and may be increased again once pain relief is achieved. This should be done in consultation with the obstetric team.

7.1.7 The patient should be positioned either in the left lateral or sitting positions according to the anaesthetist and patient's preferences.

7.1.8 Full aseptic precautions should be adopted (gown, hat, mask and gloves) and skin prepared using chlorhexidine 0.5% as per Mater Dei Infection Control guideline on skin preparation for neuraxial blocks.

7.1.9 Ideally epidural should be performed at L3/4 or below. Be aware that most anaesthetists think they are going lower than they actually are by 1-2 levels.

7.1.10 The skin at the chosen level should be infiltrated with up to 5ml 2% Lignocaine.

7.1.11 The Tuohy needle should be inserted using a standard loss of resistance (LOR) technique. Generally the epidural space is located between 4-6cm from the skin in an average-sized woman although it has been known to be found even at 3cm in slim women.

7.1.11 Avoid advancing the Tuohy needle during contractions. There is a higher risk of puncturing a vessel during contractions.

7.1.12 When the epidural space is reached the syringe should be detached. If a copious amount of fluid is leaking from the needle the possibility of dural puncture should be excluded by testing the fluid for glucose using a glucose monitoring set.

7.1.13 The characteristics of CSF can be found in Appendix 3.

7.1.14 If the fluid is positive for glucose, the insertion should be treated as a possible dural tap and further attempts at siting the epidural in that space abandoned.

7.1.15 If there is no obvious dural tap, the catheter should be threaded through the Tuohy needle aiming to leave 4-5cm in the epidural space.

7.1.16 The catheter should never be withdrawn back through the Tuohy needle as this can lead to the catheter shearing and part of it being left within the epidural space.

7.1.17 If there is difficulty threading the catheter more saline should be injected through the Tuohy needle and another attempt at threading the catheter should be made. Alternatively the patient should try to straighten her legs/back slightly depending on the initial position chosen to site the epidural (sitting or lying).

7.1.18 The needle should never be rotated once the epidural space has been located as this is associated with a higher incidence of dural puncture.

7.1.19 The epidural catheter should be secured in place, using Mefix or equivalent.

7.1.20 If difficulties siting the epidural are encountered –senior help should be called after three needle attempts

7.1.21 A test dose of 3ml 0.25% bupivicaine should be given. Vigilance for signs of inadvertent intrathecal placement of the catheter should be exercised during the subsequent 5min and the patient alerted to possible symptoms of iv injection such as tinnitus and perioral numbness.

7.1.22 The first top-up should be 10-20ml of a mixture of bupivacaine 0.1% + fentanyl 2mcg/ml.

7.1.23 This can be given from the standard mix of 10ml bupivicaine 0.5% + 38ml N. saline + 2ml fentanyl in a 50ml syringe which is prepared for the constant infusion.

7.1.24 This should be given slowly in divided boluses of 5ml every 5min

7.1.25 No further top-up should be given if no demonstrable block is seen after the first top-up. At this point consideration for resiting the epidural should be given.

7.1.26 An epidural infusion may then be started using the standard mix of bupivacaine 0.1% and fentanyl 2mcg/ml going at **6-12ml/hr.** 10ml 0.5% bupivacaine + 38ml N. saline + 2ml fentanyl should be mixed in a 50ml syringe. It is of utmost importance to attach an anti-siphon valve between the syringe and the pressure tubing.

7.1.27 The procedure should be documented on the dedicated Maternal Epidural Analgesia Record available on the epidural trolley and also on the black Anaesthetic Procedures Book available at the desk on Central Delivery Suite.

7.1.28 The midwife and anaesthetist must be continuously present for at least 20mins post initial and subsequent top-ups.

7.1.29 The block height is checked 20 min after initiation of the block – there should be a bilateral block up to **T10.**

7.1.30 It may be useful to ensure that the midwife is confident in assessing block height by asking the midwife to check the block with the anaesthetist at this time. She should then assess the level of sensory block every hour.

7.1.31 The epidural should be reassessed at regular intervals by the anaesthetist who should **not wait to be called**. If the block height is higher than T7 the epidural infusion should be stopped.

7.1.32 Top-ups should be given by the anaesthetist when breakthrough pain occurs or if block height falls below T10. 8-10ml 0.1-0.2% bupivicaine with 25- 50 micrograms of fentanyl should be used. 2ml 0.5% bupivacaine + 7ml N. saline + 0.5-1ml fentanyl should be mixed for **0.1% solution or** 4ml 0.5%bupivicaine + 5ml N. saline + 0.5-1ml fentanyl for **0.2% solution**.

7.1.33 All top-ups should be documented on the dedicated epidural form.

7.1.34 Pain is common as labour progresses and a more concentrated solution than the one in the pump syringe may be needed. Bearing in mind denser motor block with higher concentrations of bupivacaine and possibility of increased instrumental delivery.

7.1.35 Maternal BP and pulse rate should be recorded every 5 minutes for 20min after any top ups and half hourly after that.

7.1.36 The mother should be nursed in a position to avoid aortocaval compression and to support their lower back throughout labour.

7.1.37 The midwife should commence fetal heart monitoring once epidural is in place or before this time if it is deemed necessary.

7.1.38 If at any stage there are concerns regarding fetal well being the procedure should be abandoned until proper assessment is made of the fetal status.

7.1.39 Notification of neurological deficit persisting >6hours after the last top up (without improvement) must be made to the anaesthetist on call. This must be followed up by the anaesthetist immediately.

7.1.40 Diet – Light diet if no obstetric risk factors. Women with risk factors can drink water.

7.1.41 Refer to Appendix 3 for complications and trouble-shooting of epidurals.

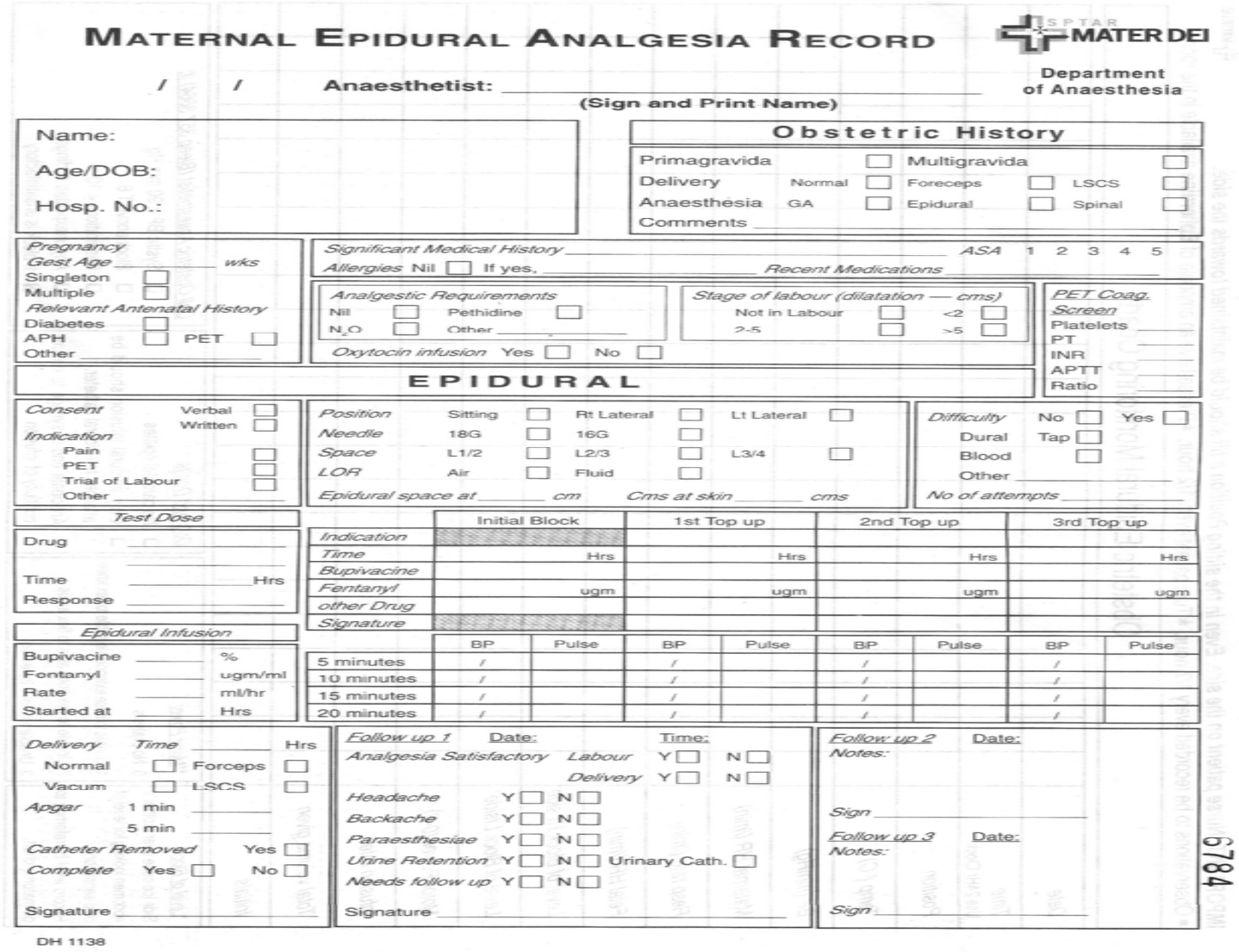
7.1.42 All patients who had a regional technique should be seen on the ward the day after the procedure and asked about headaches, lower limb weakness and urinary retention and reassured as regards lower back pain/tenderness. The latter usually lasts a maximum of 7 days.

7.2.1 The **equipment** needed to perform an epidural includes:

- a sterile pack available on Central Delivery Suite containing swabs, a gown, sponge forceps, a container for **0.5% chlorhexidine** solution and a tray. This is usually kept on the epidural trolley together with all the other equipment necessary to perform an epidural.
- Epidural set containing Tuohy needle, loss of resistance syringe, plastic epidural catheter and filter
- A selection of syringes including 2ml, 5ml, 10ml and 50ml.
- A selection of needles including 18G and 22G.
- An anti-siphon valve
- 0.9% saline for flushing catheter and to use in LOR to saline technique
- Bupivacaine
- Fentanyl

- High pressure tubing
- A syringe driver

8. Records



MATERNAL EPIDURAL ANALGESIA RECORD

HOSPITAL MATER DEI

Department of Anaesthesia

/ / Anaesthetist: _____
(Sign and Print Name)

Name:
Age/DOB:
Hosp. No.:

Obstetric History

Primagravida ☐ Multigravida ☐
Delivery Normal ☐ Forceps ☐ LSCS ☐
Anaesthesia GA ☐ Epidural ☐ Spinal ☐
Comments _____

Pregnancy
Gest Age _____ wks
Singleton ☐
Multiple ☐
Relevant Antenatal History
Diabetes ☐
APH ☐ PET ☐
Other _____

Significant Medical History _____ ASA 1 2 3 4 5
Allergies Nil ☐ If yes, _____ *Recent Medications* _____

Analgestic Requirements
Nil ☐ Pethidine ☐
N_2O ☐ Other _____
Oxytocin infusion Yes ☐ No ☐

Stage of labour (dilatation — cms)
Not in Labour ☐ <2 ☐
2-5 ☐ >5 ☐

PET Coag. Screen
Platelets _____
PT _____
INR _____
APTT _____
Ratio _____

EPIDURAL

Consent Verbal ☐ Written ☐
Indication
Pain ☐
PET ☐
Trial of Labour ☐
Other _____

Position Sitting ☐ Rt Lateral ☐ Lt Lateral ☐
Needle 18G ☐ 16G ☐
Space L1/2 ☐ L2/3 ☐ L3/4 ☐
LOR Air ☐ Fluid ☐
Epidural space at _____ cm *Cms at skin* _____ cms

Difficulty No ☐ Yes ☐
Dural Tap ☐
Blood ☐
Other _____
No of attempts _____

Test Dose
Drug _____
Time _____ Hrs
Response _____

Epidural Infusion
Bupivacine _____ %
Fentanyl _____ ugm/ml
Rate _____ ml/hr
Started at _____ Hrs

	Initial Block	1st Top up	2nd Top up	3rd Top up
Indication				
Time	Hrs	Hrs	Hrs	Hrs
Bupivacine				
Fentanyl	ugm	ugm	ugm	ugm
other Drug				
Signature				

	BP	Pulse	BP	Pulse	BP	Pulse	BP	Pulse
5 minutes	/		/		/		/	
10 minutes	/		/		/		/	
15 minutes	/		/		/		/	
20 minutes	/		/		/		/	

Delivery *Time* _____ Hrs
Normal ☐ Forceps ☐
Vacum ☐ LSCS ☐
Apgar 1 min _____
5 min _____
Catheter Removed Yes ☐
Complete Yes ☐ No ☐
Signature _____

Follow up 1 Date: Time:
Analgesia Satisfactory *Labour* Y ☐ N ☐
Delivery Y ☐ N ☐
Headache Y ☐ N ☐
Backache Y ☐ N ☐
Paraesthesiae Y ☐ N ☐
Urine Retention Y ☐ N ☐ Urinary Cath. ☐
Needs follow up Y ☐ N ☐
Signature _____

Follow up 2 Date:
Notes:
Sign _____
Follow up 3 Date:
Notes:
Sign _____

6784

DH 1138

IMPORTANT: Nurse patient on the side. Even in the sitting Position a tilt should be maintained towards the side.

*Observations to be recorded every **1/2 hour**. *Turn patient every **1/2 hour**. *Please have an ampoule of **Ephierdine** available in the room.

Obstetric Epidural Monitoring Chart

Date																								
Time Use 24Hr Clock																								
Position																								
Temp (°C)																								
BP (mmHg)																								
Maternal HR (/min)																								
Resp rate (/min)																								
Fetal HR (/min)																								
Level of Block Rt side																								
Level of Block Lside'																								
*Motor Power (0-3) ***																								
Infusion rate																								
Total volume given																								
Initials																								

"Level of Block
Side ice cube over mother's abdomen looking for level of cold sensation.
Record level by referring to dermatome chart.

***Motor Power*
0. No pralysis
1. Unable to raise extended leg able to flex knee
2. Unable to flex knee able to flex ankle
3. Unable to move lower leg

Do's and Don'ts
- ☐ No parental opiates
- ☐ Only epidural infusion should be attached to epidural catheter.
- ☐ Anticipate end of syringe to ensure contiuity of infusion

Call Obstetric Anaesthetist (Bleep 357 3664) if:
- ☐ Systlic BP < 90 mm Hg
- ☐ Block above T 6
- ☐ Respirations < 10
- ☐ Any unexpected findings
- ☐ If block is unsalisfactory

9. Appendices

Appendix 1

Obtaining consent to perform an epidural for pain relief in labour

The following is one example of how to approach the subject of epidurals with a patient in labour

Introduction

An epidural is the most effective form of pain relief for childbirth. It also allows you to remain awake and participate in the birth of your baby. Epidurals are usually straight forward to put in and very safe, but as with any medical procedure there is the possibility of complications. You and your partner should read this information sheet carefully so you can make a decision about having an epidural for your labour and delivery. You can discuss this further with your anaesthetist, obstetrician or midwife.

What is an Epidural?

An epidural is an injection of pain killing medicines into the lower part of your back. This stops the pain when you have a contraction. It is usually possible to stop the pain, but still allow you to move your legs and to push when the time comes for your baby to be delivered. Epidurals are put in by doctors who work in the Department of Anaesthesia at Mater Dei Hospital.

How is the Epidural Performed?

First you will have a “drip” inserted into a vein in your arm. This is to give you extra fluid to stop your blood pressure dropping. Next your anaesthetist will position you, either lying on your side or sitting up. Next your skin will be cleaned with an antiseptic solution and made numb with a small amount of local anaesthetic. This may sting, but only for a few seconds.

The epidural needle will then be inserted. This is the most critical part of the procedure and it is important you stay very still. Once the needle is in the right place a very small plastic tube (catheter) will be threaded through the needle into the epidural space. During this you might feel some tingling or faint “electric shocks” in your back or legs which is quite normal. You should tell your doctor if you feel this. After this the needle is taken out and you are left with the flexible plastic tube in your back. This tube is used to give the pain killing medicine. The epidural can be “topped up” as often as needed through this plastic tube. You may lie comfortably on the plastic tube.

What are the Risks?

There are some side effects from epidurals which are common, but are only temporary.

These include the following;

- Shivering and shaking
- Your legs may get heavy and feel numb

- Difficulty passing urine which will require a catheter to be inserted. This is common during labour even when epidurals are not used.
- Your blood pressure may drop. This may make you feel sick. It can be easily treated.
- Localised backache at the site of the epidural injection for 7 to 10 days. Epidurals are not linked with long term back pain.

There is the possibility of more serious, but very rare complications which you should know about. These include;

- Headache, which happens about once every 200 epidurals.
- Breathing difficulties, and a severe drop in blood pressure.
- Infection or a burst blood vessel where the epidural goes into the back. This is very serious, but is very rare.
- Nerve damage – this is very rare.

Will it Affect my Labour?

Modern epidurals have very little effect on your labour. They are thought to increase the total length of your labour by a very small amount but do not increase the chance of Caesarean section. In some cases an epidural may even speed up your labour.

Appendix 2

EPIDURAL INFORMATION CARD

Epidurals in labour – what you need to know

(This card is a summary. Further information is available from www.oaaformothers.info
Please discuss anything that is not clear with your anaesthetist).

Setting up your epidural

- You will need to have an intravenous cannula and maybe a drip.
- While the epidural is being put in, it is important that you keep still and let the anaesthetist know if you are having a contraction.
- Usually takes 20 minutes to set up and 20 minutes to work.
- Some epidurals do not work fully and need to be adjusted or replaced.

Advantages of an epidural

- Usually provides excellent pain relief.
- Sometimes a **spinal** is given first for a quicker effect.
- The dose or type of local anaesthetic can sometimes be altered to allow you to move around the bed. This is a low-dose (or mobile) epidural.
- In general epidurals do not affect your baby.
- Can be topped up for caesarean section if required.

Possible problems with your epidural

- Repeated top-ups with stronger local anaesthetic may cause temporary leg weakness and increase the risk of forceps or ventouse delivery.
- The epidural may slow down the second stage of labour slightly.
- You may develop low blood pressure, itching or a fever during the epidural.
- The epidural site may be tender but usually only for a few days. Backache is NOT caused by epidurals but is common after any pregnancy.

The other side of this card gives important risks of epidurals

Obstetric Anaesthetists' Association January 2008

Appendix 3

Tips on differentiating CSF from Saline

	CSF	Saline
Temperature	Warm	Cold
Protein	Present	Absent
Glucose	At least a trace	Absent
pH	≥7.5	<7.5

Appendix 4

Blood in catheter

- Common problem. Best avoided by inserting between contractions. Alternatively inject 5-10 ml of normal saline via Tuohy needle, hold, then feed catheter. Aspiration test reliable with low false negative of 0.2-0.4%. Withdraw about 1cm, flush with saline and try to re-aspirate. Repeat as necessary. If unable to leave sufficient catheter length in space, resite catheter.

Paraesthesia or pain

- Transient paraesthesia while threading catheter may be expected but if it persists you **must** stop threading and **withdraw the needle and the catheter together.** If there is pain on injection of local anaesthetic you should not proceed.

Hypotension

- Usually defined as a drop in systolic BP of ≥ 20% from baseline. If uncorrected it may compromise uteroplacental flow.

- The anaesthetist should leave a labelled syringe of ephedrine 3mg/ml by the bed side and instruct the midwife as to when and how to use it. This should be written in the notes.

- If BP<90mmHg, the midwife should turn the woman on her side, give 500ml of Hartmanns stat, administer O2 at 6L/min, give 6mg(2ml) ephedrine and call the anaesthetist.

- Phenylephrine prn to be administered by anaesthetist only.

Inadequate analgesia

Although regional analgesia is the most effective form of pain relief in labour it is not always perfect.

If asked to review the block in a labouring woman:

- Assess the distribution of the block using ice or ethyl chloride.

- Observe the woman during several contractions and try to establish the site and nature of the painful sensations.

- Top-ups should be given by the anaesthetist when **breakthrough pain** occurs or if block height falls below T10. Use 8-10ml 0.1-0.2% Bupivicaine with 50 micrograms of fentanyl. Bearing in mind denser motor block with higher concentrations of bupivacaine.

- If there is still inadequate pain relief after a top-up has been given (and documented in the notes), the block should be checked carefully – it should be up to T10.

- Unblocked segments may be relieved with 50-100 micrograms of fentanyl.

- The patient should have warm dry feet bilaterally indicating a sympathetic block.

Missed segment

- Try increased concentration of local anaesthetic (lignocaine 2% or bupivacaine 0.25% 5ml + 5ml) while lying on side that is not blocked.

Unilateral block

- Pull catheter back so that 2-3cm remains in space and try further dose.

- Resite catheter at different space

Patchy block

- Try stronger dose as above. Consider possibility of subdural block

Persistent perineal pain

- Try bolus of fentanyl 50mcg in 10ml of N saline with woman sitting.

Pain breaking through a good block

- Consider the possibility of uterine scar dehiscence (risk for women attempting VBAC). The pain is typically continuous rather than solely during contractions.

- Consider full bladder although catheter often in situ.

Important points

- Always remember that catheter may have worked its way out, especially if block was previously working well. Check site for evidence of leakage.

- Do not give parenteral (IM/SC) and neuraxial opioids together.

- If analgesia still inadequate after 60min (max), the epidural should be re sited. Consider a CSE technique using 1ml 0.25% Bupivacaine and 25 micrograms fentanyl for the spinal dose.

- If the above approaches fail and the woman is still unhappy, seek senior help.

- Persistent pain should be managed with sympathy and explanation.

- Poor regional analgesia in labour predicts poor surgical anaesthesia. Have a low threshold for re siting a poor epidural in a woman at risk of Caesarean section.

Subdural block

Aetiology

Separation of arachnoid from dura mater by epidural catheter. The subdural space has more potential capacity posteriorly and laterally. Since the arachnoid and dura maters are attached together on the ventral nerve root, the anterior nerve roots (which transmit motor and sympathetic fibres) are relatively spared. In contrast to the extradural space, which terminates at the foramen magnum, the subdural space extends cranially.

Characteristics

- Block spreading unexpectedly high over 20-30 min, sometimes as high as the cervical dermatomes.

- Nasal stuffiness and Horner's syndrome can develop

- Patchy sensory block, often with missed segments and persisting pain.
- Relative sacral sparing.
- Minimal motor block.
- Blood pressure can be well maintained (severe hypotension is rare)
- Probably more frequent than originally thought (up to 2%).

Management

- Since the arachnoid is easily torn, a subdural catheter may rupture through following a bolus dose, changing the block from a subdural to subarachnoid or even total spinal. In addition, postdural puncture headache may follow.
- The catheter should **not** be left in situ.
- Resite epidural at different site.

- If surgical anaesthesia required shortly after the diagnosis of a subdural block, consider a combined spinal epidural technique at another space if time permits.

- A small subarachnoid local anaesthetic dose can be supplemented by incremental epidural doses as necessary. If delivery is urgent, general anaesthesia is indicated.

Accidental dural puncture

- Either needle or catheter can breach the meninges. Postdural puncture headache may be the first manifestation.

- Attempt to resite catheter at another interspace. If technically difficult, or at all unsure, request more experienced help.

- If a further tap occurs, consultant input MUST be sought.

- Further follow up on Acute Pain Round to check for evidence of post dural puncture headache (PDPH).

Remember

- An infusion regimen can only be considered after a catheter has been resited at another interspace *and* several boluses have not exhibited excessively fast onset or an unusually extensive block. Discuss with consultant first.

- Make sure everyone is aware of the block finally achieved.

- Inform and counsel woman and document management plan in notes.

- Elective instrumental delivery at full dilation is advisable *only* if headache arises during labour.

- Prophylactic blood patch is not recommended before the headache develops

Post Dural Puncture Headache

- Headaches in the postnatal period are common.

- The key-differentiating factor between a “normal” post-natal headache and a post dural puncture headache is the **positional** nature of the latter.

Common features of post dural puncture headache include:

- typically onset is 24-48 hours post dural puncture. Untreated they are said to last 7-10 days but may last longer.

- characteristically worse on standing.
- Headache is often absent after overnight bed rest, but returns after mobilising.
- usually in the fronto-occipital regions and radiates to the neck, with associated neck stiffness.
- photophobia, diplopia and difficulty in accommodation common. Hearing loss, tinnitus and VIth nerve palsy possible.
- nausea in up to 60%
- If a headache was originally worse on standing, and then becomes worse on lying (particularly after prolonged severe dural puncture), it may be an indication of subdural haematoma. Urgent neurological opinion and CT scan should be sought
- The severity of the headache should be documented. The Lybecker classificationof severity for PDPH is modified to include the response to treatment.

I. Mild PDPH (Score 1)

- Postural headache with slight restriction of daily activities

- Not bedridden
- No associated symptoms
- Responds well to non-opiate analgesics (Paracetamol, NSAID, Caffeine)

II. Moderate PDPH (Score 2)

- Postural headache with significant restriction of daily activities
- Bedridden part of the day
- Associated symptoms may or may not be present.
- Requires the addition of opiate derivatives

III. Severe PDPH (Score 3)

- Postural headache with complete restriction of daily activities
- Bedridden all day
- Associated symptoms present (photophobia, diplopia, tinnitus, nausea, vomiting)
- Not responsive to the conservative management described below.

Medical staff should have a high index of suspicion for other serious causes of post-natal headache. These do not have the postural component and should be excluded.

- Pre-eclampsia headache (recent labour complicated with pre-eclampsia – up to ten days post-partum)
- Migraine headache (history of migraine)
- Meningitis (neurological symptoms and signs of infection)
- Intracranial haemorrhage (signs of intracranial hypertension)
- Intracranial mass lesion (signs of intracranial hypertension)
- Cortical vein thrombosis (convulsions, intracranial hypertension, fever, deteriorating consciousness, MRI & MRA are diagnostic)
- Post-natal depression headache
- Non-specific postnatal headache.

Management

- Explanation and reassurance to the patient.

- Daily (at least) anaesthetic review, by consultant.
- Trial of conservative management for first 24-48 hours.
- Bed rest for symptomatic relief (no evidence in literature that it helps). Note there may be need to prescribe thromboprophylaxis.
- Adequate (not over) hydration, oral or intravenous.
- Analgesia. Use regular paracetamol and diclofenac, providing the latter is not contraindicated. Supplemental opioids eg.codeine (plus lactulose) frequently required.
- Oral caffeine. Controversial. Encourage usual use only.
- Offer epidural blood patch from Day 2 for unrelenting or disabling headache

Appendix 5

Table 1

Relative risks related to neuraxial blocks in obstetric patients with abnormalities of coagulation

Risk factor	Normal risk	Increased risk	High risk	Very high risk
LMWH – Prophylactic dose	>12h	6-12h	<6h	<6h
LMWH – Therapeutic dose	>24h	12-24h	6-12h	
UFH – infusion	stopped >4h and APTT equal to or <1.4			APTT above normal range
UFH – Prophylactic dose	Last given >4h	Last given <4h		

NSAID + aspirin	Without LMWH	With LMWH dose 12-24h	With LMWH dose <12h	
Warfarin	INR equal to or <1.4	INR 1.4-1.7	INR 1.7-2.0	INR >2.0
General anaesthesia	Starved, not in labour, Antacids given		Full stomach or in labour	

Table 1 (cont.)

Relative risks related to neuraxial blocks in obstetric patients with abnormalities of coagulation(cont.)

Risk factor	Normal risk	Increased risk	High risk	Very high risk
Pre-eclampsia	Plts >100 within 6h	Plts 75-100(stable) Normal coag	Plts 75-100(decreasing) Normal coag	Plts<75 or abnormal coag>1.5 or HELLP
Idiopathic Thrombocytopenia	Plts>75 within 24hr of block	Plts 50-75	Plts 20-50	Plts<20

Intra-uterine fetal death	FBC and coag normal within 6h of block	No clinical problems but no investigation results available	With abruption or overt sepsis
Cholestasis	INR equal to or <1.4 Within 24h	No other clinical problems but no investigation results available	