REGIONAL ANALGESIA IN LABOUR

For use in: (Clinical Area)  Anaesthesia and Maternity Department
For use by: (Staff Group)  Anaesthetist, Obstetric Doctors and Midwives
Distributed to:  All staff in the Anaesthesia and Maternity Department
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Date of issue:  September 2017
Date of review / by:  September 2020
Status:  APPROVED
Equality impact assessment (HO 2010)  September 2017

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1. INTRODUCTION

The regional techniques employed at the West Suffolk Hospital are intended to preserve motor function whilst alleviating the pain of all stages of labour. The anaesthetic department provide a 24-hour obstetric epidural service and aim to provide epidural analgesia within 30 minutes of being notified.

The Labour Suite (LS) provides patient controlled epidural analgesia with programmed intermittent bolus (PCEA+PIB). This method has been shown to decrease breakthrough pain requiring physician top-up, reduce local anaesthetic consumption without compromising analgesic efficacy and increase patient satisfaction by offering autonomy in pain relief during labour. We use a pre-prepared low dose epidural formulation of levobupivacaine (0.1%) and fentanyl (2 micrograms/ml).

On occasions, the low doses of levobupivacaine and fentanyl can prove insufficient, so higher concentrations of levobupivacaine (0.25%) or a bolus of fentanyl (50 – 100 micrograms) may be indicated on Labour Suite.

You must have received training on the use of the epidural pump and have the required competencies signed off. Please see the lead consultant anaesthetist for obstetrics as soon as possible after your arrival.

2. INDICATIONS FOR REGIONAL ANALGESIA

- Maternal request for pain relief
- Multiple pregnancies
- Breech presentation
- Hypertensive disorders and pre-eclampsia
- Vaginal birth after Caesarean Section (VBAC)
- Augmentation of labour
- Obesity (Consider if BMI is greater than 35, or if caesarean section is anticipated)

3. CONTRAINDICATIONS FOR REGIONAL ANALGESIA

- Absolute contraindications
  - Maternal refusal
  - Infection at the site of insertion
  - Full anticoagulation (therapeutic low molecular weight heparin given within 24 hours)
- Prophylactic anticoagulation (prophylactic low molecular weight heparin given within 12 hours)
  Note: Increasing numbers of women are now taking prophylactic low molecular weight heparin antenatally. Please specifically ask about this during your assessment. Low dose aspirin therapy (75mg) alone is not a contraindication to epidural analgesia.

- Relative contraindications
  - Thrombocytopenia
    If the platelet count is 80 - 100 x 10^9 /L ml there should be a recent normal clotting screen before an epidural is performed. In a woman with a rapidly falling platelet count, the platelet count and coagulation screening must be carried out within 4 hours prior to the epidural insertion.
  - Hypovolaemia
    Epidural may only be considered once the intravascular volume is restored and maintained.
  - Generalised sepsis – discuss with consultant anaesthetist
  - Valvular heart disease – discuss with consultant anaesthetist
  - Inadequate midwifery staffing levels
    A woman must be given one-to-one care by a midwife trained in epidural management. Epidural should not be done if one-to-one care is not available. If a woman is refused an epidural as a consequence of staffing issues, the lead consultant anaesthetist for obstetrics must be informed and a Datix form completed.

- Controversial areas
  - Back pain and previous back surgery
    There is no evidence that epidural anaesthesia causes back pain, or exacerbates existing back pain. However, women with previous back injury or surgery should be warned that there may be an increased risk of patchy block or accidental dural puncture.
  - Spina bifida
    Epidural analgesia should not be denied to these women. The extent and type of lesion should be defined and any pre-existing neurological deficit should be accurately documented. Epidurals can be sited above the lumbar anomalies, but there should be an awareness of a likelihood of unpredictable spread of local anaesthesia, resulting in patchy block or incomplete sacral analgesia. All cases should be referred to the consultant anaesthetist on call.

4. INFORMATION TO BE DISCUSSED

The woman should be given a brief outline of the procedure and the steps involved. Emphasis should be placed on the benefits (e.g. analgesia) and potential risks of having an epidural. A laminated epidural information card, in English, is in every room on CDS. Other translations are available on the OAA website www.oaa-
The woman should be offered this to read, and she and her partner should be given an opportunity to ask any questions.

5. **CONSENT FOR REGIONAL ANALGESIA**

Gaining informed consent from a woman in labour is controversial, when their judgement can potentially be altered by pain or by parenteral analgesia. Ideally preliminary information should have been given in the antenatal clinic.

Discussions with women regarding epidurals should be documented on the epidural chart, with note of any witnesses (e.g. midwife, partner).

When gaining consent the following should be recorded:
- General history – including history of back injuries, coagulopathies, local skin infections, and neurological disorders
- Problems with current pregnancy
- Gestation and parity
- Current progress in labour
- Medications, including dose and time of any antenatal low molecular weight heparin
- Allergies

*If a woman refuses an explanation of the procedure or side effects this should be recorded on the epidural chart.*

6. **PREPARATION FOR EPIDURAL**

- Ensure resuscitation equipment is available on the CDS
- Secure intravenous access with a 16-gauge cannula
- Commence 1000mls Hartmann’s over 6 hours – a preload is not required for low dose epidurals
- Ensure blood pressure monitoring equipment is available in the room and record baseline maternal observations and document them on MEOWS chart
- The midwife ensures that the foetal heart rate is reassuring before starting

7. **SITING THE EPIDURAL AND INITIATING ANALGESIA**

7.1 Standard epidural loading dose

*This is the routine method for initiating epidural analgesia at WSH.*

The epidural is sited using an aseptic technique with the mother in the sitting or lateral position. The loss of resistance technique is a matter of individual choice for
the anaesthetist. However, the preferred method for trainees is loss of resistance to saline.

Aim to leave 4cm of the catheter in the epidural space and connect to the pre-primed yellow epidural infusion set.

The initial epidural loading dose is 10 – 20ml of the pre-mixed bag solution (0.1% levobupivacaine with 2mcg/ml fentanyl). This can be administered either by using the clinician bolus facility on the epidural pump, or by withdrawing the bolus amount from the epidural infusion bag into a syringe. Strict asepsis must be observed to avoid contamination of the epidural infusion bag. All subsequent boluses must be administered through the epidural pump as epidural infusion bags do not contain preservative and are not suitable for multi-dosing.

7.2 Combined spinal and epidural (CSE)

Indications for the CSE technique may include:
- Severe maternal distress
- Late stage of labour including second stage
- Previous failed attempt at siting epidural needle or catheter

Either a ‘two-space technique’ or ‘needle through needle technique’ can be used. Unless trainee anaesthetists have had training and been supervised in the ‘needle through needle’ technique, the two-space technique is preferred.

When doing two space technique, the spinal is administered at L3/4 or L4/5 level. The epidural is sited ideally at a space above the spinal level, if not it can also be done at the same level.

At an appropriate lumbar space, give an intrathecal injection of 1ml of 0.25% levobupivacaine with 15 – 25mcg fentanyl using a fine gauge pencil-point needle. After the intrathecal injection, the epidural is sited in the standard way. It is advisable to flush the epidural catheter with about 2mls of 0.9% saline to ensure that blood clots do not block the catheter.

Once labour pain has begun to recur, the anaesthetist must give the first epidural bolus prior to initiating the automated analgesia from the pump.

8. MAINTENANCE OF ANALGESIA

Following the initial loading dose, if satisfactory epidural analgesia has been established and the maternal observations and CTG are stable, programmed intermittent boluses (PIB) with PCEA can be initiated.

The epidural pump is configured for programmed intermittent boluses with PCEA:

Demand dose 6 ml
Demand dose lock out 20 min
Programmed dose: 7 ml
Programmed dose interval: 1 hour

Note that the epidural pumps in main recovery are not programmed to deliver epidural analgesia for obstetric patients.

There is a separate programme available for plain bupivacaine (0.125%) in obstetrics. Plain bupivacaine is only indicated if the patient cannot have fentanyl or the standard formulation is not available.

Check the settings with the midwife, connect the standard epidural mixture bag to the pump, and start the pump. The anaesthetist needs to instruct the woman to use the remote dose cord and administer a bolus dose when she starts to become uncomfortable, rather than waiting for severe pain. The midwife should supervise the woman while administering the first two bolus doses. The woman should be asked to inform her midwife when she has administered a bolus dose.

The woman must inform the midwife of any light-headedness, nausea, dizziness, breathlessness or significant leg weakness. If she has any of above symptoms:

- The midwife should remove the remote dosing cord from the woman
- The woman should lie in the left lateral position
- The IV infusion rate should be increased to give a fluid bolus of 250 ml
- The anaesthetist should be called to attend
- Maternal blood pressure, pulse rate, respiratory rate, O2 saturation and block height should be recorded
- Maternal leg weakness should be assessed

If analgesia is inadequate after two consecutive bolus doses, the midwife can give a 10 ml clinician top up through the pump, with a maximum of one clinician top up per hour.

Prior to giving a top up ensure:

- The intravenous infusion is running freely
- The epidural catheter has not become dislodged from the back, and the filter is still connected properly
- The MEOWS score is 3 or less
- The CTG is reassuring

If pain persists in spite of a clinician top up, the duty anaesthetist should be informed and asked to review the epidural.

9. OBSERVATIONS FOLLOWING EPIDURAL SITING

The midwife should record maternal blood pressure and pulse rate every 5 minutes for at least 20 minutes after the initial loading dose and any subsequent clinician epidural boluses.
For the smaller (6ml) epidural boluses administered by the woman, using the remote dose cord, observations are not usually required unless there are concerns about the woman’s condition, or the woman complains of new symptoms.

The 770 bleep holder should be available to attend/advice on the CDS.

**Throughout epidural analgesia, hourly observations must be recorded on the MEOWS chart.**

These observations include:
- Infusion rate of the epidural pump
- Number of epidural boluses given in the previous hour and no of attempts
- Volume of epidural solution infused by the pump in previous hour
- Pain score (0-10, 0 for no pain, 10 for worst pain imaginable)
- Level of sensory block using ice
- Bromage score (motor block)
- Maternal blood pressure, pulse rate, respiratory rate, neurological score

We currently continue CTG monitoring throughout labour once the epidural is sited.

All women with epidural analgesia should be encouraged to change position regularly. Pressure sores have been described after the use of epidural analgesia. Regular position changing by the woman and awareness of skin care by midwives may prevent injury.

The use of epidural analgesia in labour may cause mild maternal pyrexia especially if the ambient room temperature is high. However, where there is a persistent significant maternal pyrexia (>38°C) and/or other risk factors for pyrexia, a full clinical assessment should be undertaken.

Bladder care will normally involve an indwelling catheter, inserted at the earliest opportunity after epidural insertion.

### 10. ASSESSMENT OF ANALGESIA

Analgesia may be assessed clinically by the absence of painful contractions, or by the dermatomal method using loss of ice sensation as a guide. The block will need to be up to T10 to be effective, and can only be usefully assessed 20 minutes after the initial loading dose has been given.

#### 10.1 Trouble shooting

| Unilateral Block | Give a 10 ml clinician bolus with the mother lying on the painful side. |
| Persistent Unilateral Block | The anaesthetist withdraws the catheter to 3 cm and gives a |
further top up with mother lying on the painful side.
- If unsuccessful, resite epidural.

*Remember, a poorly functioning epidural in labour cannot be expected to function perfectly if a caesarean section is required.*

| Inadequate pain relief | • Assess the level of the block.  
|                        | • Ensure the mother understands the PCEA concept of bolus administration.  
|                        | • Ensure the bolus button is being activated correctly.  
|                        | • The midwife can give a 10 ml clinician top up. |

| Persistent pain | • Assess the level of the block.  
|                | • The anaesthetist could give up to 10ml of 0.25% levobupivacaine or 50 – 100 micrograms of fentanyl. |

| Break through pain in 2nd stage | • An additional 10ml clinician top up may be given by the midwife.  
|                                | • Should the low dose infusion prove inadequate, the anaesthetist can give up to 10ml of 0.25% levobupivacaine.  
|                                | **There is no reason to stop epidural analgesia during the second stage of labour.** |

### 10.2 Potential problems

| Paraesthesia or pain on insertion of epidural needle or catheter | • If this is of more than a transient nature, then the epidural should be abandoned and insertion attempted in another space. |

| Catheter in an epidural vein | • Flush the catheter clear with normal saline and withdraw a millimetre at a time. The catheter should not be withdrawn to less than 3cm in the epidural space.  
|                             | • Repeat the aspiration to ensure no further blood is obtained. If blood continues to be aspirated, abandon the interspace and try another. |

| Hypotension | • This may manifest as maternal nausea and vomiting, or foetal bradycardia.  
|            | • Treatment should include intravenous fluids and ephedrine, which is available as prefilled syringes containing 3 mg/ml.  
|            | • Persistent foetal bradycardia should be treated with maternal left lateral position and oxygen. The obstetricians should be notified of foetal distress. |

| Disconnection of epidural catheter | • If disconnection occurs distal to the filter (eg between filter and yellow giving set), change the filter and the yellow giving set. The infusion can be restarted after flushing the new filter with epidural solution.  
|                                  | • If disconnection occurs proximal to the filter filter (eg between filter and epidural catheter), then one of the following must be done:  
|                                  |   o If the disconnection is witnessed then the tubing may be reconnected after wiping with a chlorhexidine wipe, |
and removing 3cm of the epidural catheter with a sterile blade.
  o If the disconnection is not witnessed then the epidural catheter needs to be resited to avoid introduction of infection into the epidural space.

| If block height exceeds T6 or the woman develops severe leg weakness |  • Remove the PCEA handset until the block height returns to T10 and/or the woman is able to straight leg raise.
  • Inform the 770 bleep holder. |
|---|---|
| Suspected total spinal |  • **STOP EPIDURAL PUMP**
  • Declare an obstetric emergency
  • Refer to total and high spinal anaesthesia guide and call the duty consultant anaesthetist |
| Accidental dural puncture |  • There are two approaches to this problem, either:
  o Remove the catheter and resite in a different space. Warn the mother and midwife of dural puncture and anticipate post dural puncture headache. PCEA can be still be used but one must be aware of the possibility of catheter migration and high block. Midwives should not give clinicians top ups unless directed by the anaesthetist.

  OR

  o If the epidural has been difficult and regional analgesia is desirable, the catheter can be left in the subarachnoid space and intermittently topped up by the anaesthetist only.
  o The consultant on call must be informed prior to its use.
  o The catheter should be clearly marked – **SPINAL CATHETER FOR ANAESTHETIST TOP UP ONLY.**

  • DO NOT USE PCEA.

  o Boluses of 1ml of 0.25% levobupivacaine and 15 – 25mcg of fentanyl can be administered by the anaesthetist.

  • These women must be followed up regularly by an anaesthetist postpartum and a consultant anaesthetist should be kept informed of their progress. |

### 11. RESPONSIBILITY
It is the responsibility of the anaesthetist who sites an epidural to accurately document the procedure on the epidural chart, and on the electronic EuroKing register. The on-call 770 bleep holder retains overall responsibility for all epidurals at all times. Responsibility for individual women is delegated to their midwife, who must have received specific instruction and training on epidural management, and act within the agreed epidural guidelines.

12. FOLLOW-UP

After the epidural catheter is removed, or after any attempted epidural, motor blocks must be checked every 6 hours for 24 hours and recorded on the MEOWS chart. It is important that all women who have any anaesthetic intervention are reviewed by an anaesthetist before they return home. Follow-ups are done by the outgoing night 770 bleep holder once the block has resolved. All women must be given the Information on spinals and epidurals leaflet prior to discharge, even if regional analgesia was only attempted. Any problems/complications should be documented in the hospital notes and on EuroKing, and plans for further follow-up or referral to the consultant anaesthetist should be made as appropriate.

13. REFERENCES


National Audit of Major Complications of Central Neuraxial Block in the United Kingdom, NAP3


14. ASSOCIATED DOCUMENTS

MAT0054 Total and High Spinal
MAT0050 Bladder Care
MAT0046 Electronic Fetal Monitoring

15. MONITORING / AUDIT STANDARDS

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<tr>
<th>Responsibility of:</th>
<th>Consultant Anaesthetist for Obstetrics</th>
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| Standard to be assessed: | % of woman satisfied with regional analgesia in labour (>90%)  
| | % of woman who have recommended observations on MEWOS chart (100%) |
| Frequency and method of monitoring: | Annual audit of PCEA questionnaires and MEOWS |
| Reviewed | Multidisciplinary review via the Clinical Governance Steering Group and subsequent monitoring of action |
16. **AUDIT STANDARDS**

**MAT0052 Regional Analgesia in Labour, Sept 2017**

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<tr>
<th>STANDARDS</th>
<th>Yes</th>
<th>No</th>
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<tr>
<td>Number of epidural boluses given in the previous hour recorded on MEOW chart</td>
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<td>No of attempts at epidural bolus in the previous hour recorded on MEOW chart</td>
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