University Hospitals of Derby and Burton NHS Foundation Trust

Epidural Analgesia in Labour – Full Clinical Guideline - QHB

Reference no WC/OG/55A

Index

1.0 Cautions/Contraindications for epidural analgesia in labour

1.1 Caution with Epidural

Refer to the antenatal anaesthetic clinic notes and if necessary, discuss with the Consultant Anaesthetist if the patient has any of the following:

- Previous spinal surgery, anatomical abnormalities of the spine, spinal Injury
- BMI>40
- Cardiac disorders (structural and valvular heart disease)
- Neurological and neuromuscular disorders
- Pre-eclampsia with falling platelet count (but still in range of 80-100)

1.2 Contraindications

- Maternal refusal
- Allergy to levobupivicaine
- Coagulopathy (INR>1.5, APTTR>1.5)
- Platelet count <80

- Prophylactic dose enoxaparin given within 12 hours, therapeutic dose given within 24 hours
- Spinal injury or anatomical abnormality
- Local or systemic sepsis
- Non-communicating raised intracranial pressure

2.0 Epidural analgesia with intrauterine fetal death

- Contraindications as above
- Should have FBC and coagulation screen prior to siting epidural to rule out consumptive coagulopathy as incidence can be as high as 13%
- Have a high index of suspicion for sepsis
- If epidural is contraindicated, consider morphine PCA

3.0 Responsibilities of doctors & midwives

3.1 Responsibilities of the Midwife

- Contacting the anaesthetist without delay once the epidural has been requested
- Clinical care of the patient receiving the epidural set out within this guideline
- Monitoring the effectiveness of the block (yellow epidural chart)
- Monitoring the extent of the sensory and motor block (yellow epidural chart)
- Monitoring the patient's vital signs and being able to recognise complications
- Initiate appropriate responses to a complication
- Communicating with medical and other staff as appropriate
- Completing appropriate documentation, co-signing the drug administration on V6
- Encouraging patient to mobilise if appropriate

3.2 Responsibilities of the Anaesthetist

  - The time from the anaesthetist being informed until being able to attend should not normally exceed 30 minutes
  - It must be within one hour except in exceptional circumstances
  - If the obstetric anaesthetist anticipates a long delay, he/she should co-ordinate epidural provision with the other available anaesthetists, including the consultant anaesthetist.
- Knowledge of the technique and its complications and communication with staff as appropriate
- Assuming overall responsibility for the epidural and that adequate anaesthetic assistance is available if called upon to perform duties elsewhere
- Giving appropriate explanation and obtaining consent
- Establishing effective epidural analgesia
- Prescribing and administering the epidural on V6
- Preparing the infusion and connecting the line to the patient as described below
- Responding to concerns of the attending midwife

- Reviewing the epidural after insertion and after handovers to make sure the patient is comfortable.

4.0 Consent for Epidural Analgesia

Verbal consent should be taken by anaesthetist following discussion to include:

- Inadequate analgesia (1:8)
- Headache (1:100)
- Nerve damage (temporary 1:1000, permanent, 1:24,000)
- Hypotension (1:50)
- Infection (1:50,000)
- Heaviness in legs
- Difficulty with pushing, increased chance of an instrumental delivery
- Itching
- Shivering
- No change in the LSCS rate and length of labour

5.0 Considerations during practical conduct of epidural

5.1 Essential equipment required:

- Smith epidural pump with patient control button and batteries for mobile epidurals.
- Yellow infusion delivery tubing
- Equipment for siting Epidural (can be found on dedicated epidural trolley)

5.2 Drugs to be available:

- Epidural Infusion Mixture – ready made mixture of 0.1% L-bupivacaine and fentanyl 2micrograms/ml
- 1% lignocaine for local infiltration
- Normal Saline ampoules

5.3 Emergency drugs (to be available on delivery suite):

- Phenylephrine
- Naloxone
- Ephedrine
- Atropine
- Adrenaline

6.0 Initiating and maintaining epidural analgesia

6.1 Epidural

- The anaesthetist is responsible for initiating epidural analgesia.
- Patients should have IV access. Routine IV fluid administration is not necessary, IV fluids should be prescribed just in case.
- Midwife should monitor baseline BP, pulse and foetal heart rate.
- Position patient (usually sitting)
- Anaesthetist should consider using pre-procedure ultrasound to assist with finding the midline, the vertebral level and the depth of the epidural space.
- Full aseptic precautions should be observed (hat, gloves, gown, face mask and chlorhexidine 0.5% spray left to dry)
- Site epidural with loss of resistance to saline technique
- Leave 3-5cm of catheter within the epidural space

- Loading dose/test dose – using the epidural infusion mixture, usually a slow bolus of 10ml followed by a 7ml dose from the infusion pump.
- The anaesthetist should ensure that the patient is comfortable before leaving.
- The anaesthetist should give an explanation to the patient once comfortable about how to use the handset.
- PCEA handset can be given to the patient immediately, if the pump has been used to deliver the initial bolus

6.2 Combined Spinal epidural (CSE) in Labour

- Consider using a CSE to establish rapid analgesia.
- Either needle-through-needle, in a cooperative patient, *or* as an initial subarachnoid injection followed by epidural once patient is more comfortable.
- Spinal analgesia can be achieved using 4-5ml of the epidural infusion mix *or* 2ml 0.25% levobupivacaine.
- After the spinal, the patient should be having breakthrough pain/no motor block before the epidural can be tested and the PCEA commenced.

6.3 Setting up PCEA Pump

- Smith epidural infusion pump
- Unlock code 505
- PCEA bolus dose 6ml
- Lockout 20 minutes
- 7ml programmed intermittent bolus

7.0 Monitoring and care of patients while they have an epidural

7.1 Monitoring

- Anaesthetist and midwife are jointly responsible for maintaining epidural analgesia.
- Midwife should record blood pressure every 5 minutes for 15 minutes after spinal, after the initial epidural dose and after anaesthetist administered top-ups
- CTG should be monitored for 30 minutes after the initial epidural dose has been given and after any extra top-ups of 10ml or more, i.e. continuous CTG throughout the labour is not necessary unless there are other indications.
- Hourly assessment of:
    - Blood Pressure
    - Heart Rate
    - Respiratory Rate
    - Pain Score – see Appendix 1
    - Block Zone – see Appendix 1
    - Sedation Score – see Appendix 1
    - Motor Score – see Appendix 1

7.2 Management plan

- High block (Block zone D) – give oxygen 15L/min via non-rebreathe mask, remove the PCEA button, stop the pump, inform labour ward anaesthetist for urgent review.
- If patient is not comfortable 30 minutes after each press of the PCEA button, recall the anaesthetist.
- Management by anaesthetist for inadequate block:
  - Inadequate block height – clinician bolus of 10ml infusion mixture
  - Patients may have additional 10ml top ups (5+5ml 5min apart) of levobupivacaine 0.25% as required, by the anaesthetist, providing PCEA use is correct.
  - Missed segment – top-up with patient lying on missed segment side, consider withdrawing epidural catheter by 1-2cm, then further top-up
  - Inadequate block density (commonly rectal pressure with OP presentation) – consider top-up with 0.25% L-bupivacaine +/- 50-100 mcg fentanyl in sitting position (If this mixture is used, monitor BP for 5, 10 and 15 mins after bolus).
  - No block/persistently ineffective block – resite epidural
  - The PCEA button should be taken away from patients for 30 minutes after a top-up by an anaesthetist.

7.3 Mobilisation

- Patients are allowed to mobilize with their epidural providing they have no motor block (see Appendix 2).

7.4 Nutrition

- Patients with epidurals may continue to have a light diet and should be encouraged to drink water or isotonic fluids.

7.5 Documentation

- At present, use the yellow Epidural Record of Procedure to record details of the epidural and the above observations
- Any additional information (e.g. top-ups, re-siting and complications) can be written on the yellow epidural chart
- If insufficient room on chart, write in the maternity notes.
- The epidural should be prescribed and administered on V6 (Maternity epidural prescribing set available).
- In future, documentation of the epidural procedure may be available on V6.

8.0 Epidural and the second stage of labour

- Upon confirmation of full cervical dilatation in a woman with regional analgesia, unless the woman has an urge to push or the baby's head is visible, pushing should be

delayed for at least 1 hour and longer if the woman wishes, after which actively encourage her to push during contractions.
- After diagnosis of full dilatation in a woman with regional analgesia, agree a plan with the woman in order to ensure that birth will have occurred within 4 hours regardless of parity.
- Do not routinely use oxytocin in the second stage of labour for women with regional analgesia.
- Continue PCEA throughout labour and disconnect after completion of the 3rd stage and any necessary perineal repair.
- After delivery, record the total volume of epidural infusion mixture administered and disposed of.

9.0 Management of Epidural Catheter Disconnection from Filter

9.1 Witnessed disconnection or unwitnessed disconnection within previous 5 mins

- Wrap catheter end in sterile gauze
- Bleep on-call anaesthetist
- Need:
  - Sterile Gloves
  - Sterile scissors
  - Chlorhexidine/Alcohol wipe
  - New Epidural Filter

- Wipe catheter with antiseptic swab and let dry
- Cut 5-10cm off the catheter
- Connect to new epidural filter
- Reconnect to epidural infusion

9.2 Unwitnessed disconnection for over 5 minutes

- Bleep on-call anaesthetist
- Remove epidural catheter
- Resite epidural if appropriate
- However, if difficult epidural access and short period of disconnection then consider reconnection of catheter after discussion with on-call consultant anaesthetist

10.0 Removal of Epidural Catheters

Remove after delivery of fetus and placenta and after perineal repair, UNLESS concerns re coagulation or anticoagulant drugs administered in which case leave the catheter in until coagulation has normalised. ***e.g.***
- HELLP syndrome
- Major Obstetric Haemorrhage
- Enoxaparin administered within 12 hours
- Need to administer enoxaparin within 4 hours of removal time

On removing the epidural catheter, document the presence of the catheter blue tip.

11.0 Mobilisation after Epidural Catheter Removal

In order to mobilise safely the patient must have regained adequate motor power to support her body weight and enough sensation to know where she is placing her feet.

See appendix 2.

12.0 Follow-Up

Patients should be reviewed after delivery, prior to discharge, and questioned regarding satisfaction with epidural analgesia and to elicit symptoms of complications related to epidural analgesia:

- Post-dural puncture headache
- Urinary retention
- Nerve Damage
- Haematoma/Abscess

13.0 Epidural Top-Up for LSCS/Trial of Instrumental Delivery

Ensure that epidural analgesia has been reliable through labour. If any concerns about patchy or inadequate block then remove epidural catheter and perform spinal anaesthesia.

Use epidural 'Quick mix' to establish rapid anaesthesia and give epidural diamorphine 3mg for LSCS.

Ensure adequate sacral block prior to start of procedure – supplemental infiltration of local anaesthetic may be required.

Grade 1 and 2 LSCS and trial of instrumental delivery – top-up can be started in the delivery room. Maximum of 10ml of local anaesthetic to be administered, anaesthetists to remain with patient until transferred to theatre, record blood pressures every 5 minutes

14.0 Complications of Epidural Analgesia

14.1 Bloody Tap

- If blood can be aspirated from epidural catheter then withdraw the catheter 1cm, flush with 0.9% saline and reaspirate.
- Repeat until blood no longer appears.
- If catheter does not clear or less than 3cm of catheter remains in the epidural space then resite epidural.

14.2 Dural Tap

See guideline 'Accidental Dural Tap and Post Dural Puncture Headache'

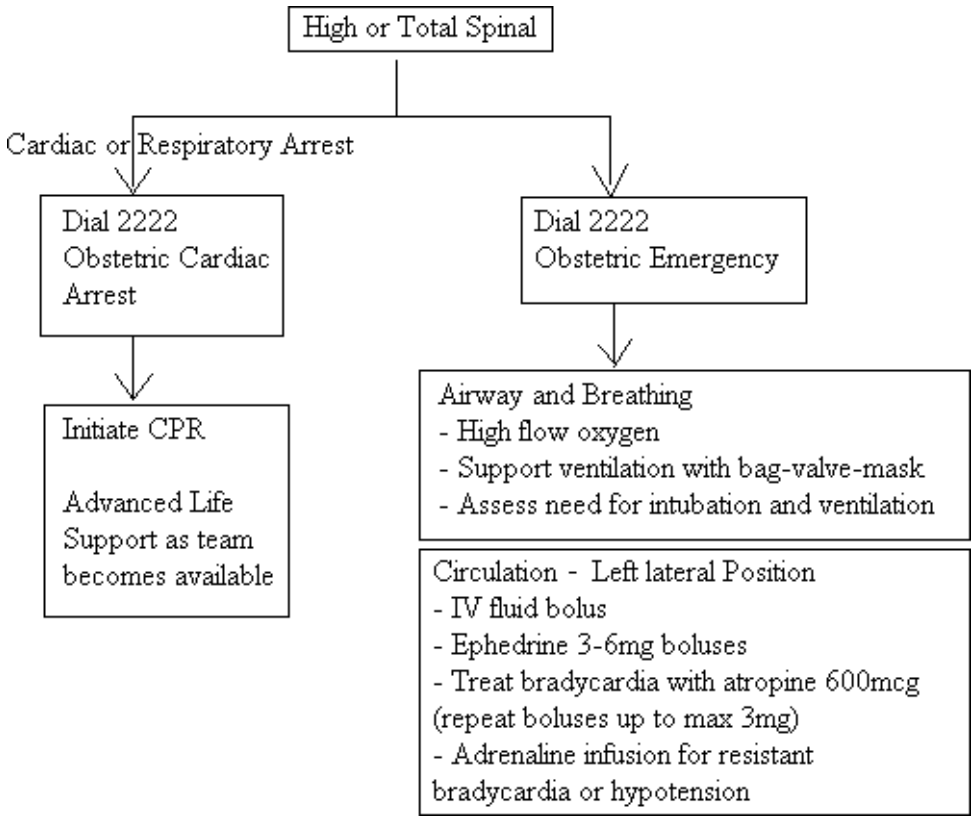
14.3 Hypotension (Defined as more than a 20% drop in basal BP)

- Position patient left lateral
- Give oxygen 15L/min via non-rebreathe mask
- Call anaesthetist
- 1000ml IV fluid bolus (unless severe pre-eclampsia)
- Beware that new foetal heart rate abnormalities may reflect maternal compensation for hypotension

14.4 Inadvertent Intrathecal Injection and High Block/Total Spinal Symptoms

- Rapid onset of analgesia
- Profound leg weakness
- Ascending muscle weakness and paraeasthesia
- Hypotension
- Respiratory distress due to chest wall (block above T4) and diaphragmatic weakness (block above C5)
- Respiratory depression (cerebral involvement)
- Loss of consciousness (cerebral involvement)
- Respiratory Arrest (cerebral involvement)
- Bradycardia (block above T4)
- Asystole (cerebral involvement)

Flow chart for Management of High/Total Spinal

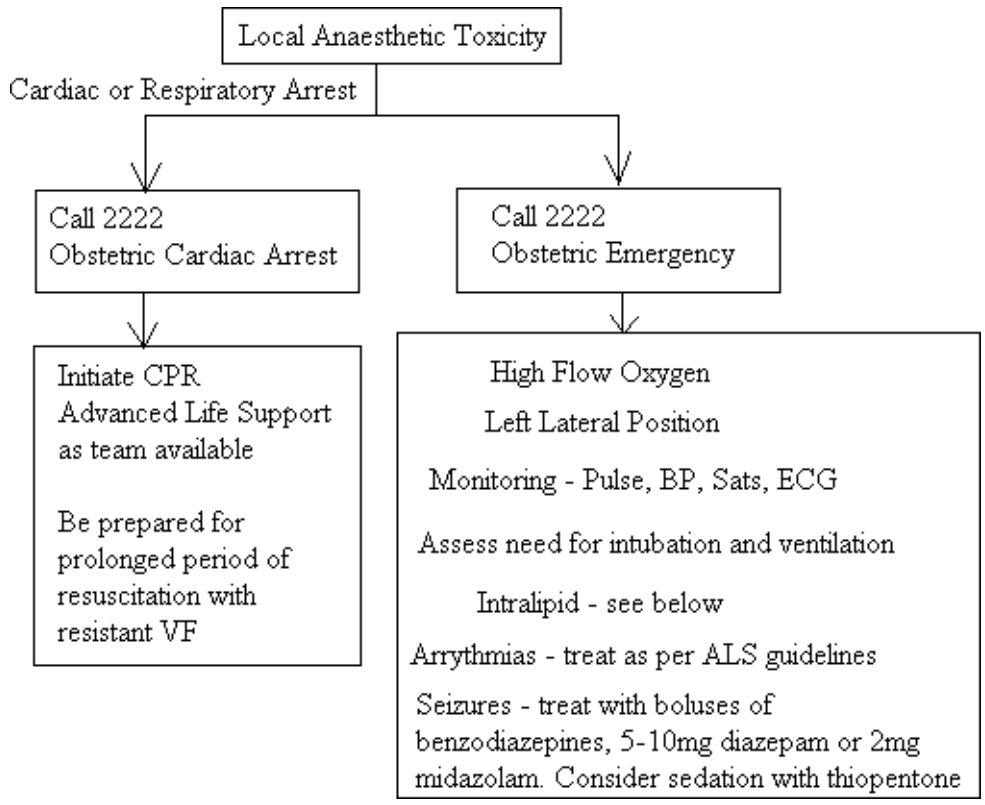


Also see “Guideline on management of acute maternal collapse”

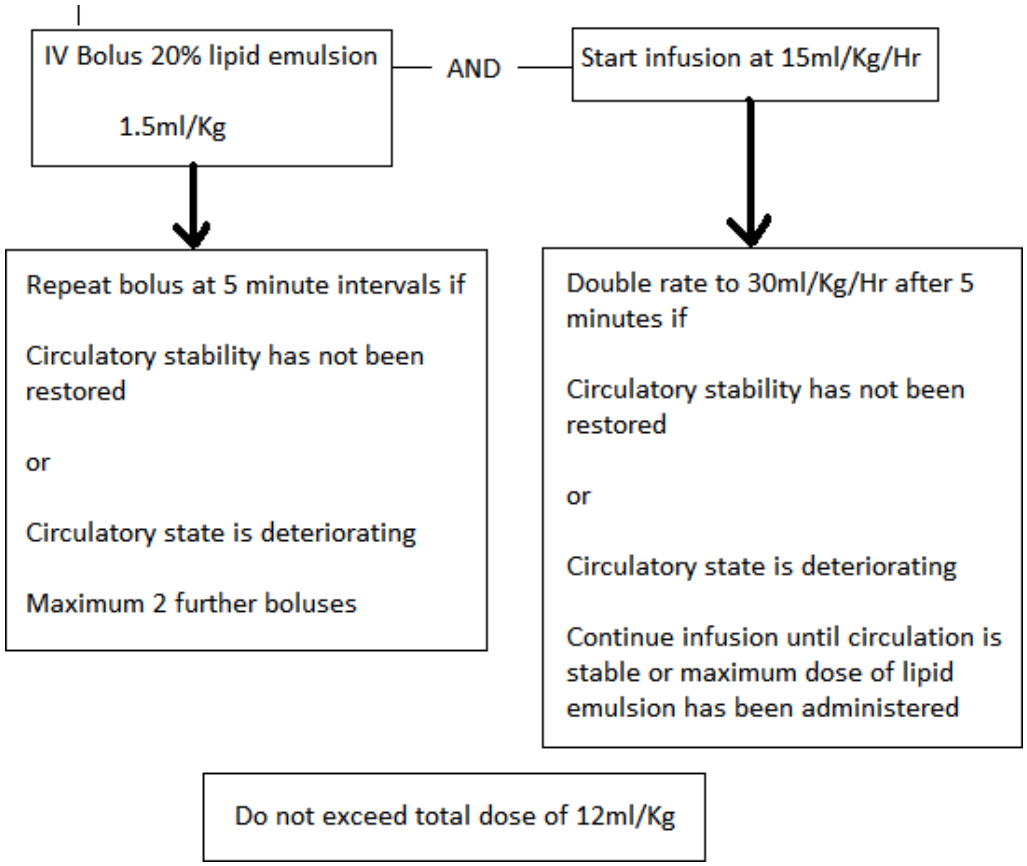
14.5 Local Anaesthetic Toxicity

- **Symptoms:**
  - Perioral numbness/paraesthesia
  - Tinnitus
  - Agitation
  - Seizures
  - Loss of consciousness
  - Cardiac arrhythmias

Flow chart for the management of Local anaesthetic toxicity



Intralipid for Local Anaesthetic Toxicity



14.6 Itching

- Consider ondansetron 4mg IV
- Side effect of fentanyl – can be reversed by iv boluses of naloxone 40mcg at 5 minute intervals

14.7 Nausea and Vomiting

- Check blood pressure and treat hypotension
- Consider antiemetics

14.8 Urinary Retention

- In-Out catheter as required during labour if unable to urinate
- If difficulties persist after delivery then catheterise
- Refer to anaesthetist

14.9 Pyrexia

- Pyrexia commonly develops after 6 hours of epidural analgesia
- If previously apyrexial and no focus of infection then no intervention required
- Do not assume that pyrexia is related to epidural, ask about other symptoms/signs of infection and investigate and treat appropriately

14.10 Post Dural Puncture Headache

See guideline 'Accidental Dural Tap and Post Dural Puncture Headache'

14.11 Nerve damage

- Specific questioning at follow-up after epidural analgesia in order to elicit sensory or motor symptoms in a dermatomal distribution
- Contact the consultant obstetric anaesthetist covering delivery suite.
- Isolated sensory disturbance – can be discharged home to be reviewed in obstetric anaesthetic clinic
- Motor symptoms – discuss with consultant covering labour ward regarding need to investigate immediately or discharge home and review later. Consider referral to physio/orthotics if foot drop present.
- Epidural abscess/haematoma symptoms –see below
- Email the patient details to the obstetric lead to arrange later review in the obstetric anaesthetic clinic.

14.12 Epidural Haematoma

- **Signs and Symptoms:**
  - Back Pain
  - Radicular type pain radiating down legs
  - Constipation
  - Incontinence
  - Leg weakness progressing to flaccid paralysis
  - Paraesthesia
  - Sensory loss

- **Management:**
  - Review by labour ward anaesthetist
  - Discuss with on-call consultant anaesthetist and obstetrician
  - Do not give LMWH
  - Urgent spinal imaging – preferably MRI
  - Discuss with neurosurgeon at Queen's Medical Centre, Nottingham

14.13 Epidural Abscess

- **Signs and Symptoms:**
  - See epidural haematoma
  - Fever/sepsis

- **Management and Investigations:**
  - Review by labour ward anaesthetist
  - Discuss with on-call consultant anaesthetist and obstetrician
  - Full Blood Count and CRP, blood cultures
  - Start empirical antibiotics – Benzyl Penicillin and Flucloxacillin IV
  - Discuss ongoing antibiotic therapy with microbiology/neurosurgeon
  - Urgent spinal imaging – CT or MRI
  - Discuss with neurosurgeon at Queen's Medical Centre, Nottingham

14.14 Meningitis

- **Signs and Symptoms:**
  - Headache
  - Photophobia
  - Visual Disturbance
  - Fever
  - Neck Stiffness
  - Confusion
  - Drowsiness
  - Nausea and Vomiting

- **Differential Diagnosis:**
  - Simple Headache
  - Migraine
  - Post Dural Puncture Headache
  - Pre-Eclampsia
  - Encephalitis
  - Subarachnoid/Subdural or Intracerebral Haemorrhage
  - Central Venous Sinus Thrombosis

- **Management and Investigations:**
  - Review by labour ward anaesthetist
  - Discuss with on-call consultant anaesthetist and obstetrician
  - Refer to general medicine
  - Take blood for FBC, CRP, U&Es, LFTs and Blood Culture
  - Empirical IV antibiotics – Cefotaxime 2g QDS
  - Consider CT scan
  - Lumbar Puncture – send CSF for Gram stain, Cell Count, MC&S, PCR, Glucose and Protein
  - Care for patient on labour ward or HDU/ITU if appropriate

15.0References

https://pathways.nice.org.uk/pathways/intrapartum-care

Zimmerman DL et al. Adding fentanyl 0.0002% to epidural bupivacaine 0.125% does not dely gastric emptying in labouring parturients. Anesth Analg 1996; 82: 248-51

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	5.0	Jun 2020	Obstetric Anaesthetic Team	Review
	6.0	Jun 2023	Obstetric Anaesthetic Team	Review - no changes
Intended Recipients: Essential reading for All Midwives All and Obstetric Anaesthetists. Information for Obstetricians				
Training and Dissemination: How will you implement the Clinical Guideline, cascade the information and address training				
Linked Documents:				
Keywords:				
Business Unit Sign Off			19/06/2023: Maternity Guidelines Group: Miss S Rajendran – Chair 19/06/2023: Maternity Governance Group - Mr R Deveraj	
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Implementation Date:			04/07/2023	
Review Date			July 2026	
Contact for Review			Joanna Harrison-Engwell	
Lead Executive Director Signature				

Appendix 1

Assessment of Block Height

Block to cold assessed
Use ethyl chloride spray or an ice cube wrapped in a plastic glove

Zone A – thighs and pubic region (inadequate block – self top-up or anaesthetist to top-up)
Zone B – above pubic region to umbilicus (safe advised zone - continue)
Zone C – above umbilicus to nipples (caution advised – repeat assessment in 30 minutes, inform anaesthetist is level rising)
Zone D – above nipples (dangerous level, turn off epidural infusion pump and inform anaesthetist)

Motor Score hip and knee movement	**Pain Score**	**Sedation Score**
0 – full movement	0 – unaware of contractions, no pain	0 – fully alert
1 – partial weakness but able to flex knee	1 – aware of contraction but not painful	1 – drowsy but easily roused
2 – marked weakness	2 – moderate pain	2 – roused with difficulty (shaking)
3 – no movement	3 – severe pain	3 – unrousable

Appendix 2