

Guideline for the Management of Epidural Analgesia in Labour

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Distribution Control

Printed copies of this document should be considered out of date. The most up to date version is available from the Trust Intranet.

Consultation

The following were consulted during the development of this document: Consultant Obstetric Anaesthetist Group, Consultant Obstetrician Group, Practice Development Midwife Group.

Monitoring and Review of Procedural Document

The document owner is responsible for monitoring and reviewing the effectiveness of this Procedural Document. This review is continuous however as a minimum will be achieved at the point this procedural document requires a review e.g. changes in legislation, findings from incidents or document expiry.

Relationship of this document to other procedural documents

This document is a clinical guideline applicable to Norfolk and Norwich University Hospital Trust please refer to local Trust's procedural documents for further guidance, as noted in Section 5.

Inclusivity

Within this document we use the terms pregnant women, her/she. However, It is important to acknowledge that it is not only people who identify as women for whom it is necessary to access care. Maternity services and delivery of care must therefore be appropriate, inclusive and sensitive to the needs of those individuals whose gender does not identity does not align with the sex they were assigned at birth.

Guideline for the Management of Epidural Analgesia in Labour

Contents Page	
Quick reference	5
1.Introduction	6
1.1.Rationale	6
1.2.Objective	6
1.3.Scope	6
1.4.Glossary	6
2.Responsibilities and Roles	7
2.1.Anaesthetists	7
2.2.Midwives	7
2.3.Delivery Suite Co-Ordinator	7
3.Processes to be followed	8
3.1.Indications	8
3.1.1.Absolute Indication:.....	8
3.1.2.Relative Indication:.....	8
3.2.Contraindications	8
3.2.1.Absolute Contraindications:.....	8
3.2.2.Relative Contraindications (discuss with Consultant Anaesthetist):.....	8
3.3.Patient Consent	9
3.4.Insertion of an Epidural	9
3.4.1.Midwife Actions:.....	9
3.4.2.Anaesthetists Actions:.....	10
3.5.Setting up the epidural infusion pump	11
3.6.Establishing epidural analgesia for labour analgesia	11
3.7.Maintenance and monitoring of epidural for labour analgesia	12
3.8.Changing the Epidural Bag	14
3.9.Patient Controlled Epidural Analgesia (PCEA)	15
3.10.Review of Patients with Epidurals During Labour	15
3.11.Trouble-Shooting Ineffective Epidurals	15
3.12.Management of Complications of Epidural Analgesia	16
3.13.Emergency Drugs to be available on delivery suite at all times	17
3.14.Mobilisation and positioning	17
3.15.Caesarean sections and assisted deliveries in theatre	17
3.16.Removal of epidural catheter	17
3.17.Care of Epidural Related Equipment	18
3.17.1.Epidural trolleys.....	18
3.17.2.Epidural pumps.....	18
3.18.Anaesthetic Follow-up	18

Guideline for the Management of Epidural Analgesia in Labour

3.19.Serious Complications – Post Epidural.....	19
4.Related Documents	19
5.References	19
6.Monitoring Compliance of the service to be delivered	20
7.Appendices.....	21
7.1.Appendix A: Obstetric Neuraxial Analgesia Chart.....	21
7.2.Appendix B: Troubleshooting Labour Epidural Quick Reference Guide. 23	
7.3.Appendix C: Neurological Monitoring After Epidural.....	24
8.Equality Impact Assessment (EIA)	25

Guideline for the Management of Epidural Analgesia in Labour

Quick reference

1. Confirm indication/contraindication for epidural analgesia (see page 8)
2. Patient has read the Epidural information card
3. Check with Midwife in charge regarding safe staffing levels and provision of one-to-one care
4. Informed verbal consent taken by Anaesthetist
 - Complete epidural anaesthetic chart (Appendix A)
5. Patent wide bore IV cannula (16-18G) in-situ
6. Midwife to establish adequate CTG monitoring and assess foetal wellbeing (see Trust guideline for the use of Fetal Monitoring and Blood Sampling [Trust Doc ID 840](#))
7. Anaesthetist to insert epidural, prescribe, set up pump and connect to patient
 - Levobupivacaine 0.1% plus fentanyl 2micrograms/ml is the standard infusion mix for labour analgesia
8. Ensure an anti-emetic and omeprazole are prescribed, with oxygen as required
9. Ensure the following are available in the room:
 - Hartmann's solution, emergency pre-filled syringe of ephedrine
10. Anaesthetist must be present for initial or 'test-dose' and first blood pressure
11. Midwife to record observations on epidural anaesthetic chart
 - Blood Pressure and Heart Rate: Every 5 minutes after initial dose for 20 minutes. Thereafter dependent on PIEB/PCEA regime (see page 11 Table 2: Epidural regime prescription and HR/BP monitoring)
 - Motor Score (straight leg raise): Every 1 hour
 - Sensory Score (upper and lower levels of sensation to cold): Every 1 hour
 - Pain Score: Every 1 hour
 - Any concerns with observations or epidural efficacy should be escalated to the anaesthetist
12. A urinary catheter should be inserted following epidural placement (see Trust guideline Bladder Care in Labour and Postnatally [Trust Doc ID 12617](#))
13. Anaesthetist to review patient 30 minutes after insertion to ensure effective analgesia achieved and if required further appropriate management
14. After insertion, anaesthetist to complete <http://nnvmpatweb01/obsaudit/2008/login.asp> to facilitate patient follow-up
15. Refer to Appendix B for troubleshooting labour epidurals
16. Refer to page 16 for immediate management of labour epidural complications
17. Document epidural catheter removal on epidural chart, ensure appropriate LMWH timings (if relevant) and continue neurological monitoring for resolution of motor block (see page 16 and Appendix C)

Guideline for the Management of Epidural Analgesia in Labour

1. Introduction

1.1. Rationale

Epidural analgesia is a well-established technique to reduce pain in labour.

This guideline aims to ensure effective and safe use of epidural analgesia on the Delivery Suite; delivered via a closed system using BD Bodyguard epidural pumps.

The pumps can be programmed to deliver an automated hourly bolus (Programmed Intermittent Epidural Bolus – PIEB) with the patient also able to administer bolus doses herself via the attached handset (Patient Controlled Epidural Analgesia-PCEA).

Within this guideline the recommendations for monitoring women receiving epidural analgesia for labour are based on those within the NICE Guideline (190) 'Intrapartum care for healthy women and babies: Pain relief' and the OAA/AoA Safety Guideline: 'Neurological monitoring after obstetric neuraxial blockade'.

1.2. Objective

The objective of this guideline is to:

- Provide a clear explanation and guidance for the safe set-up, initiation, maintenance and discontinuation of epidurals for labour analgesia in the Delivery Suite.
- Detail the management strategy for ineffective epidural analgesia, complications, or side effects.
- Clarify the responsibilities and roles of the multi-professional team in the provision of epidural analgesia.

1.3. Scope

For use by Anaesthetists, Midwives and Obstetricians caring for women in labour requiring epidural analgesia in the Delivery Suite only.

1.4. Glossary

The following terms and abbreviations have been used within this document:

Term	Definition
AoA	Association of Anaesthetists
BP	Blood pressure
BMI	Body mass index
OAA	Obstetric Association of Anaesthetists
PCEA	Patient Controlled Epidural Analgesia
PIEB	Programmed Intermittent Epidural Bolus
SBP	Systolic blood pressure
SLR	Straight leg raise

Guideline for the Management of Epidural Analgesia in Labour

2. Responsibilities and Roles

2.1. Anaesthetists

- The time from the anaesthetist being informed of a request for epidural analgesia until being able to attend should be within 30 minutes
- If the obstetric anaesthetist anticipates a longer delay, they should co-ordinate with other available anaesthetists or Delivery Suite Co-ordinator (to escalate to the 4th on Anaesthetic registrar or Consultant Obstetric Anaesthetist). Our aim is to attend in all cases within 1 hour from request
- Give appropriate explanation and obtain informed consent
- Establish effective epidural analgesia
- Prescribe the local anaesthetic mixture (bag and any top-ups) on the epidural anaesthetic chart
- Prepare the infusion pump and connect the line
- Review the epidural 30 minutes after insertion, regularly thereafter and after handovers to ensure patient is comfortable
- Troubleshoot epidural analgesia issues (see Appendix C) in a timely manner

2.2. Midwives

- Inform the anaesthetist without delay, when an epidural has been requested (or advised during consultation in antenatal care e.g. raised BMI)
- Establish CTG monitoring (see Trust guideline for the use of Fetal Monitoring and Blood Sampling [Trust Doc ID 840](#))
- Clinical care and monitoring of the patient receiving the epidural as described within this guideline
- Administer antacid (omeprazole 40mg) prophylaxis 12 hourly for duration of epidural analgesia
- Insert urinary catheter (see guideline Bladder Care in Labour and Postnatally [Trust Doc ID 12617](#))
- Check patient pressure areas every 2 hours
- Recognise and escalate concerns or complications
- Complete appropriate documentation on the epidural anaesthetic chart

2.3. Delivery Suite Co-ordinator

- Epidural analgesia must only be considered where one to one midwifery care can be provided by a midwife who has been assessed as competent
- Facilitate escalation to another anaesthetist if delays from request to attendance (>30 min) are anticipated

Guideline for the Management of Epidural Analgesia in Labour

3. Processes to be followed

3.1. Indications

3.1.1. Absolute Indication:

- Maternal request

3.1.2. Relative Indication:

An epidural considered early in labour may be beneficial for:

1. Obstetric reasons:

- labour augmentation
- twin pregnancy
- pre-eclampsia (without severe thrombocytopenia or coagulopathy)

2. Medical co-morbidities:

- high Body Mass Index (see guideline for Management of Women with Obesity during Pregnancy [Trust Docs ID 880](#))
- cardiovascular disease
- respiratory disease

3. Other risk factors for general anaesthetic (e.g. anticipated difficult airway)

3.2. Contraindications

3.2.1. Absolute Contraindications:

- Patient Refusal
- Administration of LMWH (*prophylactic dose within the last 12 hours, therapeutic dose within the last 24 hours*)
- Severe coagulopathy
- Thrombocytopenia – Platelet < 80 $10^9/L$ (with Platelet count <100 $10^9/L$ check coagulation and fibrinogen level)
- Localised sepsis over insertion site
- Hypovolaemia /cardiovascular instability
- Raised intracranial pressure

3.2.2. Relative Contraindications (discuss with Consultant Anaesthetist):

- Systemic infection
- Mild coagulopathy
- Pre-existing abnormalities of the vertebral column (e.g. previous spinal surgery)
- Pre-existing central or peripheral neurological conditions

Guideline for the Management of Epidural Analgesia in Labour

3.3. Patient Consent

Patients should be provided with an epidural patient information leaflet, counselled on the benefits and risks (Table 1) of the procedure by an anaesthetist and have the opportunity to process the information and ask questions.

A summary of the informed consent discussion should be documented in the patients notes or on the anaesthetic chart by the anaesthetist.

Patients should be advised once an epidural is running, they will have reduced mobility, greater levels of monitoring and a diet of still isotonic drinks or water only (see guideline Maternity Clinical Guideline for Intrapartum Care [Trust Doc ID:850](#))

Table 1: Risks of having an epidural to reduce labour pain

Type of Risk	Frequency of Risk
Common	
Nausea and vomiting	
Pyrexia	
Itching	1 in 3
Epidural not effective enough in labour requiring further attention	1 in 10
Epidural failure in labour requiring replacement/re-site	1 in 20
Significant drop in blood pressure	1 in 50
Headache	1 in 100
<i>Not linked to long-term backache</i>	
Rare	
Nerve damage (e.g. numb patch on leg or foot)	Temporary: 1 in 1000 Permanent: 1 in 13,000 Severe (including paralysis) 1 in 250,000
Abscess in the spine or site of epidural	1 in 50,000
Meningitis	1 in 100,000
Haematoma (blood clot) in the spine at the site of epidural	1 in 170,000
Obstetric Implications	
Increase in 2 nd stage of labour	
Increased risk of instrumental delivery	
<i>Not linked to an increased chance of having a caesarean section</i>	

3.4. Insertion of an Epidural

3.4.1. Midwife Actions:

- Contact the anaesthetist on bleep 0011 or via Alertive without delay once the patient has requested an epidural.
- Collect the equipment and drugs required:
 - Epidural trolley (containing sterile pack, sterile gown/gloves/hat, chlorhexidine 0.5% in 70% alcohol, epidural mini-pack, 'lock-it' or device to secure catheter, occlusive clear dressing, Mefix tape and emergency pre-filled syringe of ephedrine).

Guideline for the Management of Epidural Analgesia in Labour

- Epidural pump with patient control button and charger.
- Epidural infusion mixture: pre-prepared low-dose levobupivacaine (0.1%) solution combined with fentanyl (20mcg/ml). The pre-mixed infusion bag should be checked by two midwives in accordance with the Trust Medicines policy and is kept in the controlled drug cupboard on delivery suite.
- Prepare the patient
 - Dress in a hospital gown with two patient ID labels.
 - Insert an IV cannula (if not done), which must stay in place until the end of the labour.
 - Take required blood tests (FBC, G&S and others as indicated. Any women with pre-eclampsia should have a FBC in the preceding 6 hours before siting an epidural).
 - Record baseline blood pressure, maternal and foetal heart rate.
 - Arrange adequate foetal monitoring pre-insertion.
 - Prime pump to commence an infusion of Hartmann's solution, with the designated giving set. The anaesthetist or obstetrician will prescribe the appropriate rate.
 - Position the patient sitting evenly on the bed, with feet resting on a support/stool (or as per anaesthetists request if they prefer an alternative position such as lateral).

3.4.2. Anaesthetists Actions:

- Ensure the patient is not at risk of coagulopathy (including recent LMWH; if administered antenatally an epidural may only be inserted >12hrs after prophylactic dose and >24hrs after a treatment dose).
- Consider using ultrasound pre-procedure to mark the mid-line, level and estimated depth to epidural space.
- If the procedure is deemed difficult, request assistance from the Emergency theatre ODP (bleep 1023) who can help with patient positioning, or equipment; or from a Senior Anaesthetist.
- Follow a strict aseptic technique and wear a facemask, hat, sterile gown and sterile gloves.
- Clean patients' skin with chlorhexidine spray 0.5% left to dry x2, taking care not to contaminate any needles to be used during the procedure.
- Site epidural with loss of resistance to saline technique.
- Secure catheter with 3-5cm of catheter within the epidural space; if the patient has a BMI>35 consider leaving up to 6cm.
- Document the procedure and any complications on the Epidural Analgesia Chart.
- Prescribe antacid prophylaxis and prescribe/set the pump regime (see Options A-C below).

Guideline for the Management of Epidural Analgesia in Labour

- Assess the epidural block 20-30 minutes after establishing pain relief (pain scores, sensory level and SLR), at every shift change or at the request of the midwife.

3.5. Setting up the epidural infusion pump

- Levobupivacaine 0.1% plus fentanyl 2micrograms/ml is the standard infusion mix for labour analgesia
- Load the bag (0.1% levobupivacaine plus fentanyl 2micrograms/mL) into the epidural pump and prime with the designated yellow giving set.
- The infusion should be connected to the epidural filter by a midwife and an anaesthetist together.
- Administer a 'test dose' of 10ml of 0.1% levobupivacaine plus fentanyl 2micrograms/mL ('bag mix') via the epidural pump (also see Section 3.6 for alternative options).
- The current regime options on the pump are for use with pre-filled bags of Levobupivacaine 0.1% plus fentanyl 2 micrograms/ml:

Option A: PCEA (10ml boluses/10min lock out, maximum 20ml/hr)

Option B: PCEA + PIEB (6ml bolus/20min + 7ml/hr automatic bolus)

Option C: PCEA + PIEB (8ml bolus/25min + 8ml/hr automatic bolus)

3.6. Establishing epidural analgesia for labour analgesia

- 1) After a 'test dose' of 10ml of 0.1% levobupivacaine plus fentanyl 2micrograms/mL ('bag mix') via the epidural pump and confirmation of a satisfactory response, consider a further 5-15ml clinician bolus of bag mix (0.1% levobupivacaine with 2 micrograms/mL fentanyl) via the epidural pump. This is the preferred method of 'test' and 'loading' doses - as also noted in section 3.5)

Alternative Options:

- 2) A manually administered 3-4ml 0.25% levobupivacaine* test dose followed by a cautious further 6-7ml of 0.25% levobupivacaine loading dose*. Depending on response this may be followed by 10ml of the standard epidural mix through the pump. Monitor closely for hypotension with this option. (*0.2% ropivacaine may be used instead of 0.25% levobupivacaine.)
- 3) Manually administered incremental injections of 0.1% levobupivacaine with 2 micrograms/mL fentanyl. A 10 mL pre-prepared ampoule can be used. **Do not puncture the 100 mL bag of pre-mix 0.1% levobupivacaine plus fentanyl that is intended for use through the pump.** These bags do not contain preservative and there is a risk of infection if subjected to multiple punctures. If the 10 mL ampoules are unobtainable a new, separate 100 mL pre-mix bag should be used and then discarded.
- 4) In some cases where pain is intense or labour is advanced the anaesthetist may chose to perform an intrathecal injection of 1-1.25 mL 0.25% plain levobupivacaine mixed with up to 25 micrograms fentanyl OR 3 mL of the 0.1% levobupivacaine with 2 micrograms/mL fentanyl (Combined Spinal Epidural, CSE)

Guideline for the Management of Epidural Analgesia in Labour

3.7. Maintenance and monitoring of epidural for labour analgesia

The Midwife caring for the patient should have no other clinical duties.

First 30 minutes following insertion and initial (test-dose) bolus:

- Measure and record BP and HR every 5 minutes
- Continuous CTG monitoring
- Document sensory block height to cold (bilaterally) at 20 minutes
- Midwife to remain in the patient's room
- If maternal analgesia remains unsatisfactory after two consecutive bolus doses (or if a woman is not pain free 30 minutes after any bolus) then the anaesthetist should be contacted and the epidural reviewed

For duration of epidural analgesia:

1. **Foetal heart rate monitoring:** Continuous (see Trust guidelines for the Use of Fetal Monitoring and Blood Sampling [Trust Doc ID 840](#))
2. **Blood Pressure and Heart Rate:**

Table 2: Epidural regime prescription and appropriate HR/BP monitoring required

Regime	At insertion	PCEA Patient Controlled Epidural Analgesia		PIEB Programmed Intermittent Epidural Bolus		Clinician Bolus
		Regime	Monitor	Regime	Monitor	
A	Every 5min for 20min	10ml/10min lockout patient controlled bolus	Every 5min for 20min after every bolus	N/A		
B	Every 5min for 20min	6ml/20min lock-out patient controlled bolus	*Not unless concerned	Automatic 7ml/hr bolus	Hourly	Every 5 min for 15 min
C	Every 5min for 20min	8ml/25min lock-out patient controlled bolus	*Not unless concerned	Automatic 8ml/hr bolus	Hourly	Every 5 min for 15 min

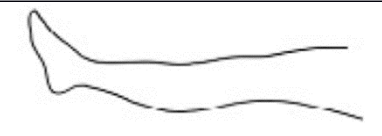


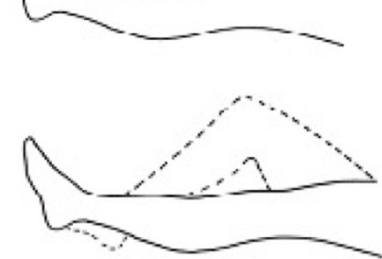
*Bolus is less than 10mls therefore there is no need to monitor BP unless concerns

The woman should be observed during and after each bolus and verbal contact maintained.

Guideline for the Management of Epidural Analgesia in Labour

3. Degree of Motor Block

- Perform a straight leg raise every hour and document the degree of motor block on the epidural chart

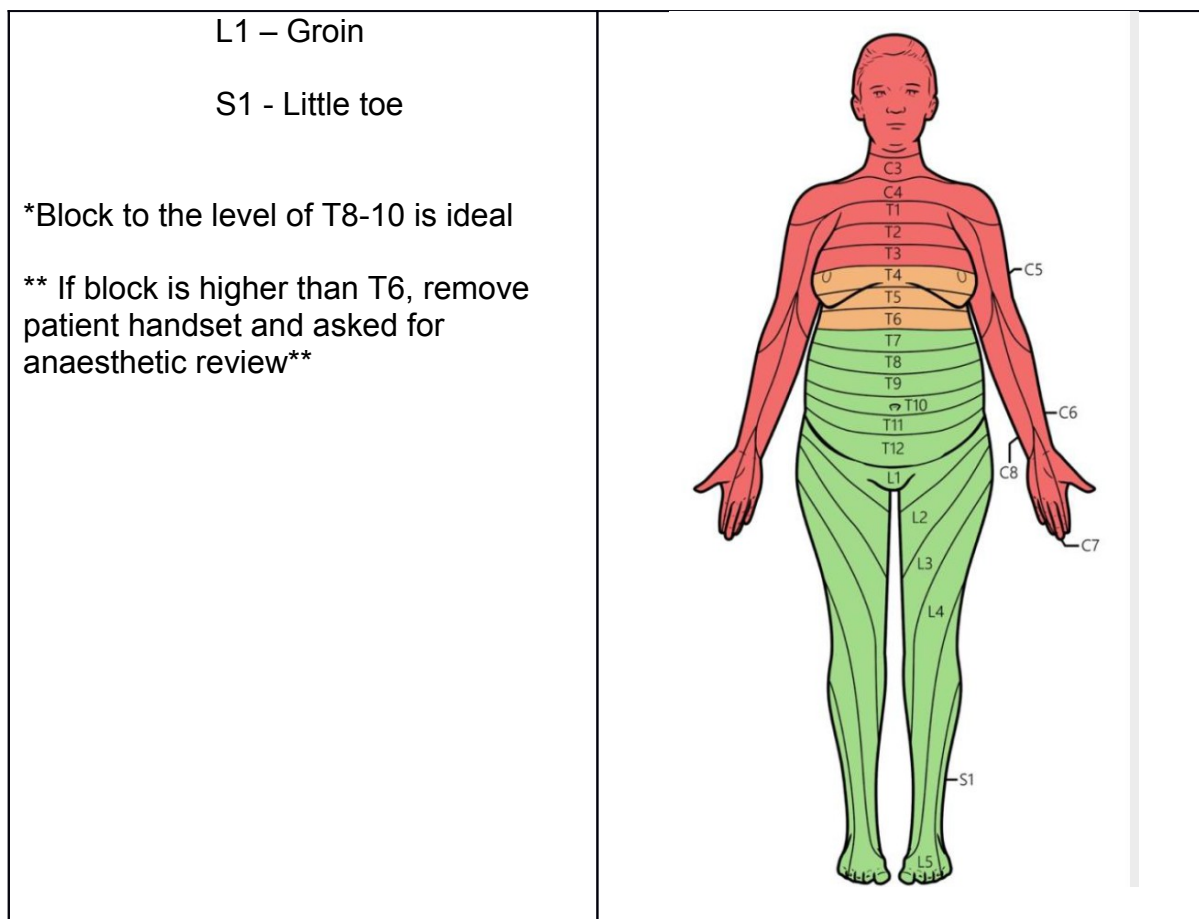
Bromage Motor Score	Degree of motor block	
1	Complete block, unable to move feet of knees	
2	Able to move feet only	
3	Just able to flex knees, free movement of feet	
4	No block, full movement of knees and feet	

4. Degree of Sensory Block

- Test the upper and lower level of the block bilaterally every hour by:
 - Touching an ice-cube (or Coolstix) on the patients shoulder to establish 'cold'
 - Run ice from the little toe up the leg to the groin; then from the groin up the abdomen to the chest on one side. Repeat on the opposite side.
 - Record the upper level (right and left side) AND the lower level (right and left side) on the epidural chart

Key Levels:	
T4 – Nipple	
T6 – Xiphoid	
T8 – Midpoint between the umbilicus and xiphoid	
T10 – Umbilicus	

Guideline for the Management of Epidural Analgesia in Labour



5. Pain Score

- Ask the patient to rate her current pain every hour, on a scale of 0 (no pain) to 10 (severe pain) and document on epidural chart

6. Pressure Areas and Epidural Insertion site

- Check pressure areas every 2 hours
- Sit patient forward and check integrity of epidural dressing and any dislodgement of epidural catheter intermittently every 2-3 hours

7. Local Anaesthetic Administered

- Record the total volume (ml) given (cumulative) every hour on the epidural chart

3.8. Changing the Epidural Bag

- It is the responsibility of the mid-wife to monitor when a new pre-filled bag of Levobupivacaine 0.1% plus fentanyl 2 micrograms/ml is required.
- When 'Near End' alarm is activated on the pump, press the 'Stop' key.
- Enter the Level 1 code to access the menu and select 'Change Bag'.
- Attach new pre-filled bag, ensuring there is no air in the giving set.
- Press the start key to confirm settings and start pump.

Guideline for the Management of Epidural Analgesia in Labour

3.9. Patient Controlled Epidural Analgesia (PCEA)

Patient Controlled Epidural Analgesia should only be instituted when satisfactory epidural analgesia has been established and maternal observations and the foetal heart rate are satisfactory. Satisfactory maternal observations include absence of symptomatic maternal hypotension and ability to straight leg raise both legs.

The woman needs to be instructed in how to use the Remote Dose Cord and when to administer a bolus dose. The midwife should supervise the woman administer the first two doses.

- All boluses should be administered with the woman sitting on the bed.
- The woman should only administer a bolus dose when she is sitting or lying down on her side.
- The bolus will be administered by using the Remote Dose Cord.

The woman should be asked to tell her midwife when she has administered a bolus dose and asked to inform the midwife of any light-headedness, nausea, dizziness, breathlessness or marked weakness of the legs. If the woman has any of these symptoms, the midwife should remove the Remote Dosing Cord from the woman and lay the woman in the left lateral position. The IV infusion rate should be increased to give a fluid bolus of 250 mLs. The anaesthetist should be called to attend. Maternal blood pressure and block height should be recorded and maternal leg weakness assessed (see Section 3.11 Management of complications of epidural analgesia).

3.10. Review of Patients with Epidurals During Labour

Women with epidurals during labour should be reviewed regularly to ensure that the epidural is working well and they are satisfied with their analgesia. Be proactive in this and do not solely rely on midwives to escalate issues.

As a minimum the epidural block should be assessed by an Anaesthetist 20-30 minutes after establishing pain relief (pain scores, sensory level and SLR), at every shift change or at the request of the midwife. This should allow early identification of problems and a chance to rectify them.

3.11. Trouble-Shooting Ineffective Epidurals

If an epidural is not giving adequate analgesia and attempts by the midwife to improve analgesia (e.g. patient positioning, top-ups) haven't helped, the woman should be reviewed by an anaesthetist (see Appendix B)

Disconnection from pump: If the disconnection is witnessed, wrap the end of the epidural catheter in a sterile swab and call anaesthetist immediately. The catheter end can be cut and re-sterilised. If the timing of the disconnection is unclear, the catheter may have to be removed.

Inadequate analgesia: This can be treated by giving additional top-ups through the pump, or, if the block is deemed to be not dense enough an additional bolus of 0.25% levobupivacaine can be administered by hand. Sometimes additional fentanyl (50mcg) can be useful in increasing the effectiveness of the analgesia, especially during the second stage when perineal pain can be difficult to cover with the epidural block.

Guideline for the Management of Epidural Analgesia in Labour

Unilateral Block or Missed Segment: The patient should be positioned on their side with the “unblocked” side down before giving a top-up bolus. This often helps the local anaesthetic spread with gravity to the downward side and improves the effectiveness.

If this proves ineffective then it can help to withdraw the catheter by 1cm, thus altering the catheter position within the epidural space hopefully allowing the anaesthetic to spread more effectively. Any adjustment of the catheter position must only be done by an anaesthetist who should wear sterile gloves and a facemask. The epidural catheter should be aspirated to check for blood/CSF before re-securing. The epidural site must be kept as clean as possible and new clean dressings must be applied afterwards.

Re-siting: If none of the above measures improve the effectiveness of the epidural then it may be appropriate to remove the epidural and site another one. In this scenario the woman needs to be made aware that although this is likely to improve their pain relief there is a chance that the second epidural may fail as well. It may be appropriate to discuss alternative options such as remifentanil PCA.

Rescue Combined Spinal Epidural (CSE): If an epidural is being re-sited consider performing a combined spinal-epidural. Women are often very distressed with pain at these times and the more rapid onset of analgesia provided by CSE can be advantageous. However, CSEs should only be performed by anaesthetists who are competent in the technique.

3.12. Management of Complications of Epidural Analgesia

Problem	Action
Hypotension	If the woman feels unwell after a bolus or exhibits signs of maternal hypotension (faintness, nausea, dizziness) or develops sudden marked motor weakness of the legs (unable to straight leg raise either leg) then no further boluses should be given. Turn women into left lateral position. IV fluid infusion should be increased to give a fluid bolus of 250 ml. Check maternal blood pressure: if SBP<90 pull buzzer and call anaesthetist to attend.
High or Dense Block	Check SLR after initial dose and hourly thereafter. Contact the anaesthetist <u>urgently</u> if the patient develops very heavy legs (unable to lift legs off bed) or the numbness reaches beyond the chest. If a high/dense block occurs rapidly: think could this be a total spinal emergency? Manage as for hypotension above.
Maternal Pyrexia	Pyrexia is common in labour with a multitude of causes. Follow the Trust Guideline for the Management of Peripartum

Guideline for the Management of Epidural Analgesia in Labour

	Pyrexia and Sepsis Trust Docs ID 855
Nausea/ vomiting	Check maternal blood pressure and exclude hypotension. Administer an anti-emetic and ensure adequate hydration.
Respiratory rate <10/minute	Do not allow further boluses. Consider oxygen if conscious level decreased. Call anaesthetist, locate Naloxone.

3.13. Emergency Drugs to be available on delivery suite at all times

- Ephedrine
- Phenylephrine
- Naloxone
- Atropine
- Adrenaline
- 20% lipid emulsion (i.e. Intralipid 20% emulsion, Fresenius Kabi AB)

3.14. Mobilisation and positioning

The patient may mobilise if:

- The midwife and the partner are available in the room to assist.
- The degree of motor block of the legs has been assessed and the power is deemed sufficient to allow the patient to stand. This should be assessed prior to mobilisation and be recorded by the midwife in the notes.

If the mother wishes and feels able to do so she should be encouraged to adopt upright positions (see Trust guideline A Maternity Clinical Guideline for Intrapartum Care [Trust Docs ID 850](#))

3.15. Caesarean sections and assisted deliveries in theatre

When a decision is made for a patient to go to theatre, no further boluses should be given without discussing with the anaesthetist beforehand. The anaesthetists will then administer their own top-ups manually.

3.16. Removal of epidural catheter

Once the 3rd stage of labour is complete and there is no concern regarding perineal tears or PPH, then the epidural catheter can be removed.

If the patient has been to theatre, the epidural catheter is usually removed by the anaesthetist; it may remain in situ if there are concerns with coagulopathy.

Check for contraindications to epidural catheter removal:

- LMWH within previous 12 hours
- Platelets < 75
- Severe PPH or HELLP with last FBC/Platelet count > 4-6 hours ago
- EBL > 1500 ml (or less if < 60kg)
- Clotting disorder

Guideline for the Management of Epidural Analgesia in Labour

- Any other concerns

If any present: DO NOT remove the epidural catheter until discussed with the anaesthetist.

If there are no concerns:

1. Using an aseptic technique, remove dressing and remove epidural catheter with gentle traction. If resistance is encountered, do not persist and contact the anaesthetist.
2. Apply appropriate small dressing to the area.
3. Record the time and that the catheter was 'intact' (presence of the blue tip) on the epidural anaesthetic chart.
4. Complete a thromboembolic risk assessment. If LMWH is indicated, ensure it is prescribed for > 4hrs after epidural catheter is removed.
5. Inform the patient of the expected time of return of bilateral straight leg raise (approximately 4 hours after last epidural local anaesthetic dose).
6. The patient should not attempt to mobilise until it is recorded that full motor power has returned.
7. Disposal of the remaining 'bag mix' solution should be made by two midwives and documented on the epidural chart

3.17. Care of Epidural Related Equipment

3.17.1. Epidural trolleys

- These should be restocked daily by a Midwifery Support Worker
- A stock list can be found in the top drawer of the trolley with the appropriate type and number of equipment needed
- After use, the Midwife should clean the top of the trolley and return to the Delivery Suite corridor.

3.17.2. Epidural pumps

- When an epidural pump is in use, the number of the pump must be clearly marked next to the patients name on the delivery suite board.
- When the pump is no longer in use it should be cleaned and returned to the equipment cupboard and plugged in to recharge.

3.18. Anaesthetic Follow-up

All women receiving regional analgesia or anaesthesia should be reviewed the following day, including weekends. This should be documented on the electronic Obstetric Anaesthetic database including:

- Headache
- Back pain
- Any residual neurological deficit
- Any concerns regarding their anaesthetic care

Guideline for the Management of Epidural Analgesia in Labour

3.19. Serious Complications – Post Epidural

Contact the anaesthetist urgently if following the removal of an epidural catheter, the following occur:

- Numbness or weakness that is not improving over 2-4 hours after epidural analgesia cessation
- The patient is unable to straight leg raise bilaterally 4 hours after epidural analgesia cessation
- Severe headache (or photophobia, neck stiffness, drowsiness)
- Back pain
- Leg pain

Further escalation will be according to the Trust guidelines on the Management of Maternal Postnatal Neurology Injuries ([Trust ID 12793](#)) and the Management of Inadvertent Dural Puncture and Post Dural Puncture Headache in Obstetrics ([Trust Doc ID 1306](#)).

All concerns should be escalated to the Obstetric Anaesthetic Consultant.

4. Related Documents

Trust Guidelines:	Trustdocs ID:
Bladder care and Fluid Balance, Antenatal, Intrapartum and Postnatal	12617
Use of Fetal Monitoring and Blood Sampling	840
Intrapartum Care	850
Management of Maternal Pyrexia in Labour	855
Management of Maternal Postnatal Neurology Injuries	12793
Management of Inadvertent Dural Puncture and Post Dural Puncture Headache in Obstetrics	1306
Management of Women with Obesity during Pregnancy or Post Bariatric Surgery	880

5. References

- Agarwala R, Millar CM, Campbell JP. Haemostatic disorders in pregnancy. BJA Education. 2020 May;20(5):150-157.
- Faculty of Pain Medicine. *Best Practice in the Management of Epidural Analgesia in the Hospital Setting*. London: Royal College of Anaesthetists, 2020 <https://fpm.ac.uk/sites/fpm/files/documents/2020-09/Epidural-AUG-2020-FINAL.pdf> (accessed 12/04/2023)
- National Institute for Health and Care Excellence. Clinical guideline [CG190]: Intrapartum care for healthy women and babies, 2014 (revised 201) London: NICE, 2017 <https://www.nice.org.uk/guidance/cg190> (accessed 12/04/2023)
- Purva M, Russell IF, Kinsella M Caesarean section anaesthesia: technique and failure rate. In: Colvin JR, Peden CJ, eds. *Raising the Standard: a*

Guideline for the Management of Epidural Analgesia in Labour

Compendium of Audit Recipes, 3rd edition London: Royal College of Anaesthetists. <https://www.rcoa.ac.uk/system/files/CSQ-ARB2012-SEC8.pdf> (accessed 12/04/2023)

- Royal College of Anaesthetists, Royal College of Nursing, Association of Anaesthetists of Great Britain and Northern Ireland, British Pain Society, European Society of Regional Anaesthesia. Good practice in the management of continuous epidural in the hospital setting. (2004)
- Yentis, S.M., Lucas, D.N., Brigante, L., Collis, R., Cowley, P., Denning, S., Fawcett, W.J. and Gibson, A. (2020), Safety guideline: neurological monitoring associated with obstetric neuraxial block 2020. *Anaesthesia*, 75: 913-919. <https://doi.org/10.1111/anae.14993>

6. Monitoring Compliance of the service to be delivered

Compliance with the process will be monitored through the following:

Key elements	Process for Monitoring	By Whom (Individual / group /committee)	Responsible Governance Committee /dept	Frequency of monitoring
Neurological monitoring with labour epidural as per guidance	Review of epidural observation chart on follow-up	Obstetric Anaesthetist Group	Dept of Anaesthesia	Annual
Response time from request to anaesthetist attendance for epidural insertion	Midwifery survey	Obstetric Anaesthetist Group	Dept of Anaesthesia	Bi-Annual
Rate of Epidural blood patch	Review of ORSOS	Obstetric Anaesthetist Group	Dept of Anaesthesia	Annual

The audit results are to be discussed at relevant governance meetings (Anaesthesia and Maternity) to review the results and recommendations for further action. Anaesthetic and Maternity governance teams will ensure that the actions and recommendations are suitable and sufficient.

Guideline for the Management of Epidural Analgesia in Labour

7. Appendices

7.1. Appendix A: Obstetric Neuraxial Analgesia Chart

Obstetric Neuraxial Analgesia/Anaesthesia Chart

Norfolk and Norwich 
University Hospitals
NHS Foundation Trust

Patient Addressograph Label

Patient name:

DoB:

Hospital number:

Supervising Consultant Anaesthetist:

Patient Assessment

Allergies:

Medications:

Anticoagulation: N/A **OR** Time of last dose: _____

Consent

- Hypotension
- Nausea/vomiting
- Itching, pyrexia
- Slight increase in 2nd stage
- Small increased risk of instrumental delivery
- No long-term back problems
- Headache 1 in 100
- Failure/re-insertion 1 in 20
- Permanent nerve injury 1 in 13,000
- Information sheet

Insertion of Regional Analgesia

Epidural Spinal CSE → Needle-through-needle 2 separate insertions

Sterile technique (G/G/H/M/D) 0.5% chlorhexidine (x 2 + dry) Position: Sitting Lateral

Local infiltration: _____ Level: _____ Midline / Paramedian

Epidural: Needle: _____ LOR saline/air: _____ cm Catheter mark at skin: _____ cm

Paraesthesia: Y / N Negative aspirate: Y / N Meniscal drop: Y / N Dural tap: Y / N

Spinal: Needle: _____ Paraesthesia: Y / N Clear CSF: Y / N

Number of attempts: _____ Problems with insertion?: _____

Performing Anaesthetist: _____ Date: _____ Time: _____

Epidural Analgesia Prescription

Levobupivacaine 0.1% with Fentanyl 2micrograms/ml: Other: _____

Obstetric Epidural Pump Protocol: Option A: PCEA (10ml/10min)

Option B: PCEA + PIEB (6ml/20 min + 7ml/hr automatic bolus)

Option C: PCEA + PIEB (8ml/25min + 8ml/hr automatic bolus)

Prescribing Anaesthetist Print Name/Signature: _____

Date: _____

Epidural Top-up/ Rescue Drugs Administered:	Volume (ml)	Date/Time	Print Name/Signature

Guideline for the Management of Epidural Analgesia in Labour

Epidural Analgesia in Labour Observation Chart

Date:	Time:																					
BP	200																					
mmHg																						
HR	180																					
	160																					
	140																					
	120																					
	100																					
	80																					
	60																					
	40																					
Pain score (0-10)																						
Upper limit sensory level																						
R/L		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Lower limit sensory level																						
R/L		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Motor Score																						
Total (ml) epidural																						
local anaesthetic given																						

<p>Events</p> <p>A:</p> <p>B:</p> <p>C:</p>	<p>Document any other local anaesthetic below (eg. Pudendal blocks, skin infiltration) with drug name, dose and time:</p>	<p>Epidural Catheter</p> <p><input type="checkbox"/> I confirm the catheter is in the epidural space</p> <p><input type="checkbox"/> Patient infirm, unable to lie on their back with straight legs (approx. 45 degrees)</p> <p>Date:</p> <p>Name:</p>
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Guideline for the Management of Epidural Analgesia in Labour

7.2. Appendix B: Troubleshooting Labour Epidural Quick Reference Guide



TROUBLESHOOTING LABOUR EPIDURALS

Maximum doses over 4 hours: Levobupivacaine 2mg/kg, fentanyl 200 micrograms

2 str

If called to assess/top-up an epidural, perform a full assessment:

Where is the pain/discomfort?

Epidural:

- Check chart; previous sensory levels to cold, effectiveness, catheter mark at skin?
- Check connections/dislodgement?
- Total volume of LA given?

Check current block:

- Sensory levels to cold (upper & lower)?
- Is it symmetrical?
- Is there a missed segment?
- Is there sacral sparing?

Clinical state:

- Mother's pr
- Orientation
- Urinary cath
- If in severe p (VBAC?), pla

NO BLOCK; LOW BLOCK		UNILATERAL BLOCK		MISSED SEGMENT		POOR SACRAL COVERAGE	
	<p>Give 10–20ml of 'bag mix' in semi-recumbent position. Retest block at 15-20 min.</p> <p>If still no block or remains inadequate, consider re-site at a different interspace.</p>		<p>Turn patient laterally to unblocked/sore side down. Give 10ml of 'bag mix'. Recheck block in 15 min.</p> <p>If no change, pull back catheter by 1-2cm (leave 3 cm in epidural space; 4 cm if obese) and give a further 10-15ml of 'bag mix'. Recheck in 15-20 min.</p> <p>If still sore on one side, in lateral position give 5-10ml 0.25% Levobupivacaine* with 50mcg fentanyl. Recheck block in 15-20 min. If block still inadequate consider re-siting epidural at a different interspace.</p>		<p>First exclude a unilateral block.</p> <p>Initially give 10-20ml of 'bag mix'. If a unilateral missed segment, turn patient laterally, to sore side down.</p> <p>If a true missed segment, give 7-10ml 0.25% Levobupivacaine* with 50mcg Fentanyl in lateral position, sore side down.</p> <p>If block still inadequate consider re-siting epidural at a different interspace.</p>		<p>Suspect if patient complains of rectal/vaginal/perineal or groin pain. Check lower sensory level (lateral aspect of foot for S1/S2 coverage). Give 10-20ml of 'bag mix' with patient sitting upright. Recheck block at 15-20 min.</p> <p>If remains inadequate, consider re-site at different interspace or CSE for labour.</p>

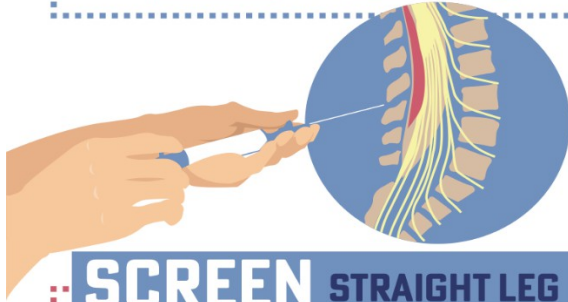
7.3. Appendix C: Neurological Monitoring After Epidural

OBSTETRIC SAFETY GUIDELINE



NEUROLOGICAL MONITORING AFTER SPINAL / EPIDURAL

Spinal cord complications are **RARE** but **SERIOUS**



INFORM

PATIENT OF TIMING

Patients should be encouraged to alert staff if this is delayed

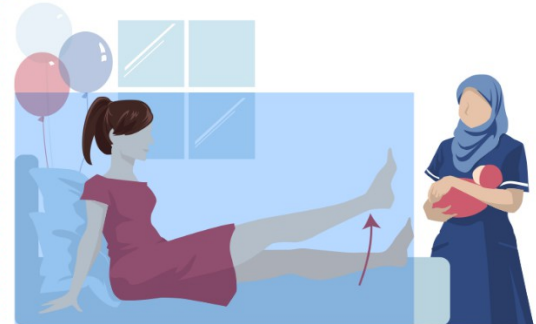
Resolution of Block

3-5 HOURS

SCREEN STRAIGHT LEG RAISE



EVERY HOUR DURING LABOUR EPIDURAL



4 HOURS AFTER LAST SPINAL OR EPIDURAL DOSE

Unable

Yentis SM, Lucas DN, Brigante L, Collis R, Cowley P, Denning S, Fawcett WJ, Gibson A. Safety guideline: neurological monitoring associated with obstetric neuraxial blockade

Guideline for the Management of Epidural Analgesia in Labour

8. Equality Impact Assessment (EIA)

Type of function or policy	Existing
-----------------------------------	----------

Division	Women's and Children's	Department	Maternity
Name of person completing form	J Walker/ V Maxey	Date	19/05/23

Equality Area	Potential Negative Impact	Impact Positive Impact	Which groups are affected	Full Impact Assessment Required YES/NO
Race	No	No	N/A	No
Pregnancy & Maternity	No	No	N/A	No
Disability	No	No	N/A	No
Religion and beliefs	No	No	N/A	No
Sex	No	No	N/A	No
Gender reassignment	No	No	N/A	No
Sexual Orientation	No	No	N/A	No
Age	No	No	N/A	No
Marriage & Civil Partnership	No	No	N/A	No
EDS2 – How does this change impact the Equality and Diversity Strategic plan (contact HR or see EDS2 plan)?	Not impact			

- **A full assessment will only be required if: The impact is potentially discriminatory under the general equality duty**
- **Any groups of patients/staff/visitors or communities could be potentially disadvantaged by the policy or function/service**
- **The policy or function/service is assessed to be of high significance**

IF IN DOUBT A FULL IMPACT ASSESSMENT FORM IS REQUIRED

The review of the existing policy re-affirms the rights of all groups and clarifies the individual, managerial and organisational responsibilities in line with statutory and best practice guidance.