Worcestershire Acute Hospitals NHS Trust

Epidural Analgesia for Labour

This guidance does not override the individual responsibility of health professionals to make appropriate decision according to the circumstances of the individual patient in consultation with the patient and /or carer. Health care professionals must be prepared to justify any deviation from this guidance.

Introduction

This guideline is for use by the following staff groups:
Anaesthetic Doctors
Midwives
Obstetric doctors

Lead Clinician(s)

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Approved by *Maternity Governance Meeting* on:	19th September 2025
Approved by Medicines Safety Committee on:	10th December 2025
Review Date: This is the most current document and should be used until a revised version is in place	19th September 2028

Key amendments to this guideline

Date	Amendment	Approved by:
Sept 2025	Guideline review in line with current practise	MGM

Worcestershire Acute Hospitals NHS Trust

Contents

1. Introduction

Epidural analgesia is a highly effective method of pain relief during labour. When performed safely and monitored diligently, it enhances maternal comfort and satisfaction.

Scope:

This guideline aims to ensure effective and safe use of epidural analgesia on the Delivery Suite.

Applicable to midwives, anaesthetists, obstetricians, theatre staff, and other relevant personnel involved in the care of patients receiving epidural analgesia during labour.

Covers clinical responsibilities, insertion procedures, monitoring requirements, management of special populations, training, equipment, safe removal, follow-up and complications.

Exclusions:

Epidural analgesia in non-obstetric purposes is governed by separate policies.

2. Purpose

Ensure safe and effective administration of epidural analgesia for labouring patients.
Clarify Roles and Responsibilities of relevant team members.
Standardise procedures for epidural insertion, maintenance, monitoring, and troubleshooting.
Minimise complications through monitoring and escalation pathways.

3 Roles and Responsibilities

3.1 Anaesthetists

Provide epidural analgesia in line with this policy.

Handover any pending requests, running epidurals, and patients requiring specific follow-up at each shift change (verbally and via SAFE tool).

Conduct daily postpartum follow-ups.

Communicate any specific removal instructions, particularly concerning anticoagulant use.

Recognise and act on escalation triggers as outlined in this policy.

Duty Obstetric Anaesthetist ('2nd on', bleep 701):

Respond promptly to epidural requests, or escalate to 4th on if unable to.

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 duty obstetric anaesthetist anticipates a longer delay, they should co-ordinate with other available anaesthetists or the Delivery Suite Co-ordinator and escalate to the 4th on call anaesthetic registrar. If the 4th on call is not available, the duty obstetric anaesthetist can check whether anaesthetists covering other tiers of the on-call rota are obstetric competent and whether they are available to help.

Must have completed the RCoA's Initial Assessment of Competence in Obstetric Anaesthesia.

Must be familiar with the supervision structure and routes for seeking assistance.

Duty Senior Resident Anaesthetist ('4th on', bleep 703)

Respond to requests for assistance from the duty obstetric anaesthetist and delivery suite coordinator to, where possible:

Facilitate requests for epidural commencement or troubleshooting, where the duty obstetric anaesthetist is unable to respond in a timely manner.

Assist the duty obstetric anaesthetist with difficult epidural placement.

Please note that the 4th on call rota is not always covered.

Duty Obstetric Consultant Anaesthetist (bleep 601) or On Call Consultant Anaesthetist

Provide advice to the duty obstetric and duty senior resident anaesthetists regarding suitability for epidural analgesia where relative contraindications are present.

Ensure daily follow-up visits are completed and any complications or complaints are handled appropriately.

3.2 Midwives

Facilitate the patient's request for epidural analgesia and promptly notify the anaesthetist.

Undertake all aspects of preparation, monitoring, escalation, epidural catheter removal and documentation in line with this policy.

Conduct monitoring as described in the Monitoring and Troubleshooting section below.

Escalate any concerns to the duty obstetric anaesthetist

Maintain accurate records of pertinent events in Badgernet, including request and insertion times, bolus doses, observations, complications and troubleshooting.

Ensure adherence to timing guidelines (e.g., 12 hours post prophylactic LMWH, 24 hours post therapeutic dose) and any patient-specific instructions from the anaesthetist.

Inspect the catheter tip for completeness and document removal details.

Ensure that a Regional Anaesthetic Alert Bracelet (RAAB) is attached to the patient's wrist, with the time and date at 4 hours after epidural catheter removal on delivery suite documented on RAAB. See RAAB Standard Operating Procedure.

3.3 Obstetricians

Care Coordination:

Communicate promptly with anaesthetists regarding any changes in maternal condition or high-risk labour scenarios.

Support decisions regarding alternative analgesia or expedited delivery if maternal or fetal conditions worsen.

3.4 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 in caring for a patient with an epidural.

Liaise with the duty obstetric anaesthetist to facilitate escalation, if delays from request to attendance (>30 min) are anticipated.

4 Indications and Contraindications

4.1 Indications

Absolute

- **Maternal Request** for effective pain relief.

Relative

- **Complex or Prolonged Labour**, especially with oxytocin augmentation.
- **Hypertensive Disorders** of pregnancy (e.g., pre-eclampsia) to aid in BP control.
- **Multiple gestation pregnancy**
- **High BMI** or medical conditions where general anaesthesia poses increased risks.
- **Other risk factors for general anaesthetic** (e.g. anticipated difficult airway).
- **Anticipated Operative Delivery** (instrumental or caesarean section).
- **Cardiac and respiratory disease**.

4.2 Contraindications

Absolute:

- **Declined by patient**.
- **Inadequate trained staff.**
- **Coagulopathy** (INR >1.4, Platelet count <75 $\times 10^9$/L) or recent LMWH (within 12 hours post- prophylactic dose or 24 hours post- therapeutic dose).
- **Localized Infection** at the insertion site.
- **Hypovolaemia** or haemodynamic instability.
- **Raised intracranial pressure**
- **Allergy** to agents prescribed in epidural.
- **Spina bifida -** see below.

Relative:

- **Sepsis** - consider risk/benefit balance and discuss with consultant in most cases: adverse factors include active fever, haemodynamic instability, possible systemic complications including coagulopathy; favouring factors include improvement in observations, absence of fever, established on systemic antibiotics.
- **Neurological disorders** - see below.
- **Spinal pathology** - see below.
- **Mild Coagulopathy** or borderline platelets (75–100 $\times 10^9$/L) – discuss with consultant.
- **Cognitive or communication impairment** leading to significant difficulty in the assessment of function or complications (though in most cases should still be provided if deemed in best interests, and block / neurology monitored as able)
- **Inadequate foetal monitoring** (always discuss with midwifery and/or obstetric teams if you recognise difficulty with CTG monitoring, non-reassuring trace, etc.)**.**
- **Portal hypertension** with suspected or proven lumbar epidural varices.

Table 3 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	> 12 h	6–12 h	< 6 h	< 6 h
LMWH – therapeutic dose	> 24 h	12–24 h	6–12 h	
UFH – infusion	Stopped > 4 h and APTTR ≤ 1.4			APTTR above normal range
UFH – prophylactic bolus dose	Last given > 4 h	Last given < 4 h		
NSAID + aspirin	Without LMWH	With LMWH dose 12–24 h	With LMWH dose < 12 h	
Warfarin	INR ≤ 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	
Pre-eclampsia	Platelets > $100 \times 10^9.l^{-1}$ within 6 h of block	Platelets 75–$100 \times 10^9.l^{-1}$ (stable) and normal coagulation tests	Platelets 75–$100 \times 10^9.l^{-1}$ (decreasing) and normal coagulation tests	Platelets < $75 \times 10^9.l^{-1}$ or abnormal coagulation tests with indices ≥ 1.5 or HELLP syndrome
Idiopathic thrombocytopenia	Platelets > $75 \times 10^9.l^{-1}$ within 24 h of block	Platelets 50–$75 \times 10^9.l^{-1}$	Platelets 20–$50 \times 10^9.l^{-1}$	Platelets < $20 \times 10^9.l^{-1}$
Intra-uterine fetal death	FBC and coagulation tests normal within 6 h of block	No clinical problems but no investigation results available		With abruption or overt sepsis
Cholestasis	INR ≤ 1.4 within 24 h	No other clinical problems but no investigation results available		

4.3 Investigations

In patients with no medical or antenatal risk factors, a full blood count with normal platelet count from 28-week antenatal checks is sufficient prior to epidural insertion.

In patients with suspected or diagnosed pre-eclampsia, a platelet count of >100 ×10⁹/L should be obtained within 6 hours of epidural insertion. If platelet count is 80–100 ×10⁹/L, or there are derangements of liver function tests, clotting tests should also be checked and the case discussed with a consultant. If platelet count is rapidly falling, the patient has deranged clotting function or HELLP syndrome, epidural analgesia is contraindicated.

In patients with obstetric cholestasis, clotting tests with INR ≤1.4 should ideally be obtained within 24 hours of epidural insertion. If the patient has had stable or improving clinical condition and liver function tests, and normal prior antenatal clotting test(s), then a consultant may advise proceeding without up-to-date results.

4.4 Structural Spinal Pathology

History, examination, existing imaging and medical notes should be reviewed to ascertain the nature of pathology and which levels may be suitable. Discuss with the duty consultant anaesthetist if in doubt about suitability. Where offered epidural analgesia, patients should be counselled upon specific risks including possibility of the procedure taking more attempts and/or resulting in partial or complete failure. These patients would have been referred and assessed in the antenatal anaesthetic clinic with an agreed plan available on Badgernet.

Degenerative back pain / lumbar disc herniation: epidural can be offered; have increased vigilance for postoperative neurological impairment.

Previous spinal surgery: epidural can be offered if unoperated lumbar spaces are available with suitable margin of safety from hardware; scarring at other levels may result in patchy analgesia despite successful insertion.

Uncorrected scoliosis: epidural can be offered; unilateral block is more common, but is usually overcome with positioning / higher volumes of local anaesthetic.

Corrected scoliosis (anterior fusion): epidural can be offered; no increased risk of complications.

Corrected scoliosis (posterior fusion): epidural can be offered if unoperated lumbar spaces are available with suitable margin of safety from hardware; residual scoliosis and scarring at other levels may result in patchy analgesia.

Spina bifida: risk of cord damage if previous surgery and/or cord tethering; always discuss with consultant and review prior imaging / notes; likely contraindicated.

Spinal vascular malformations: risk of vascular puncture and haematoma; always discuss with consultant and review prior imaging / notes; likely contraindicated.

4.5 Neurological / Neuromuscular Pathology

Multiple sclerosis: considered safe; increased relapse rate in immediate postpartum period but independent of epidural analgesia.

Myasthenia gravis: can be offered and may help to avoid GA.

Spinal cord injury: high caesarean rate, though if labouring can be offered in absence of spinal cord stimulator (SCS) and may reduce autonomic dysreflexia risk.

Neurofibromatosis: should undergo neurology review +/- imaging; possibility of highly vascular nerve root tumours risking direct trauma and haematoma, and intracranial tumours risking herniation in the event of accidental dural puncture.

Previous Guillan-Barre syndrome: may have residual neurological impairment, autonomic instability and exaggerated response to neuraxial block; take individualised decision with consultant input and incrementally dose with caution.

5 Request Process

The midwife looking after the patient should contact the duty obstetric anaesthetist (bleep 701).

The referring midwife should have all relevant information available to convey in an SBAR manner.

A set of baseline observations should be recorded: BP, HR, SpO2, respiratory rate, foetal heart rate

A vaginal examination should have been performed within 4 hours of the request, in accordance with obstetric protocol.

All relevant, time-valid blood results must be available in line with requirements in section 4.

A patent 14G or 16G IV cannula must be present.

If the duty obstetric anaesthetist anticipates that they will not be able to attend the request within 30 minutes, they should co-ordinate with other available anaesthetists or the Delivery Suite Co-ordinator, who should escalate to the 4th on call anaesthetic registrar (bleep 703).

6 Assessment, Counselling & Consent

Midwives should support patients in exploring their options for labour analgesia, including providing the written Epidural Information Card (in appropriately translated or accessible format where necessary). If a patient has specific questions or there are factors such as possible additional risks or contraindications, they should be offered a preliminary discussion with an anaesthetist. Patients should be reassured that, even when making a request for epidural analgesia, the anaesthetist will still discuss the process and risks with them in detail and gain their consent before proceeding.

When responding to a request for epidural analgesia, the anaesthetist should review the patient's history (identifying suitability, contraindications) and explain the benefits, side effects, risks and alternatives. This assessment and consent should be documented on the anaesthetic chart.

Benefits: Pain relief, other relevant benefits as per indications.

Side effects: itching, shivering, hypotension, nausea & vomiting

Risks: PDPH (1:100), partial analgesia (1:8), failure requiring resite or alternative analgesia (1:20), increase risk of instrumental delivery, temporary nerve injury (1:1000), permanent nerve injury (1:13,000), epidural haematoma, epidural abscess, meningitis, permanent paralysis (1:250,000).

Where a different anaesthetist is to perform the procedure (e.g. consent obtained in advance of the patient being ready, requests close to the time of handover etc.) then the new anaesthetist should briefly reconfirm suitability and consent.

7 Insertion and Initiation Practicalities

7.1 Pre-Insertion

IV Access: Ensure a patent intravenous access and consider running IV fluids during insertion if the patient is dehydrated and/or performing a CSE technique.

Equipment: Confirm availability of a full aseptic setup, appropriate epidural kit, local anaesthetics, and emergency drugs. All epidural equipment should now be NRFit.

Baseline Monitoring: Document maternal BP, HR, RR, and ensure midwifery and/or obstetric team are satisfied with foetal heart tracing (ideally ≥20-minute baseline CTG if feasible).

Positioning: Assist the patient into a sitting or left lateral position with adequate lumbar flexion. The midwife should assist with this, as well as providing ongoing practical assistance to the anaesthetist and emotional support to the patient.

Asepsis: Don sterile gown, gloves, mask, and hair cover. Prep the insertion site with 0.5% chlorhexidine spray and allow it to dry thoroughly. Maintain strict asepsis throughout.

7.2 Epidural Procedure

Identify insertion site: Locate the lumbar vertebral interspaces by landmark and/or ultrasound, aiming for either L3/4 or L4/5 in most cases.

Needle insertion: Locate the epidural space with a 16G or 18G Tuohy needle using a loss-of-resistance to saline technique.

Catheter placement: Advance the catheter 3–5 cm into the epidural space.

Catheter checks:

- Meniscal drop
- No active aspiration of blood
- No passive backflow of blood *(aspiration may fail to detect a proportion of intravascular catheters, presumably due to venous collapse when negative pressure is applied, therefore as part of the meniscus drop test always also lower the distal end of the catheter to be 30cm below the insertion point and observe for backflow of clear fluid into the catheter)
- Flushing freely with no subcutaneous infiltration

Secure catheter: use a Lockit Plus fixation device and occlusive dressing at insertion site (often reinforced with adhesive fabric dressing) and adhesive fabric dressing to secure catheter to back.

Additional securement: consider additional dressings or adhesive strips to reinforce the connections between catheter, adaptor and filter, though ensure that connection between the filter and infusion line is accessible to be disconnected for later troubleshooting and top-ups.

Initial Top-up: The initial bolus is effectively a test dose; using 10-15 ml of the bag mix to be given slowly in increments. Other acceptable test doses include 5 ml of 0.25% Bupivacaine or 3 ml of 0.5% Bupivacaine.

PCEA setup: Prescribe epidural infusion, check and spike infusion bag, prime the infusion line & program the pump with a 5 ml bolus and a 10-minute lockout.

Observation: Remain in the room to monitor for complications for at least 10 minutes post-insertion. Aim to reassess the patient 30-60 minutes post-insertion for confirmation of adequate analgesia.

Documentation: Record insertion on anaesthetic chart, Badgernet, and service logbook.

7.3 Combined Spinal-Epidural (CSE)

- **Indications**: Rapid onset analgesia in advanced labour or complex maternal conditions; may help to confirm successful midline epidural placement in patients with raised BMI.
- **Cautions:** May precipitate more hypotension than epidural alone. Suggested higher risk of uterine hyperstimulation and foetal bradycardia if performed during augmented labour.
- **Technique**:
  - Needle-through-needle (using dedicated kits or long spinal needle) or separate punctures.
  - Aseptically draw up and administer 2.5 - 4ml of bag mixture intrathecally.
  - Note this is off-label use of the epidural drug, but accepted practice.

7.4 Insertion issues

Difficulty locating epidural space: Optimise patient positioning and non-epidural analgesia. Reattempt at a different interspace. Seek assistance from more senior anaesthetist (4th On or consultant). If abandoning, consider alternative analgesia to be offered e.g. remifentanil PCA.

Dural puncture: In most circumstances, the procedure should be abandoned without threading a catheter and reattempted at a different interspace. It may occasionally be justified to pass an intrathecal catheter (e.g. during dural puncture using Tuohy needle as guide for difficult spinal in emergency theatre case) however it should be clearly labelled as such, drugs only administered by an anaesthetist confident in this practice, and removed as soon as it is no longer needed.

Blood in needle: Remove needle and reattempt at a different interspace. If it occurs for a second time, abandon and discuss with a consultant.

Blood in catheter: Withdraw catheter in 0.5cm increments (to a minimum of 3cm in the epidural space), flush with saline and repeat all catheter checks to assess whether it has been pulled out of the vessel. Do not rely on a pharmacological test dose to decide upon whether to retain a catheter. If any doubts about possible intravascular placement, remove the catheter and reattempt at a different interspace. If it occurs for a second time, abandon and discuss with a consultant.

Paraesthesia with needle: Withdraw needle and confirm complete resolution of paraesthesia prior to reattempting with adjustment to trajectory.

Paraesthesia with catheter: Withdraw catheter in 0.5cm increments (to a minimum of 3cm in the epidural space) whilst confirming for resolution of paraesthesia. If complete resolution of paraesthesia upon withdrawing the catheter and repeated catheter checks are ok, gently flush with saline to ensure this does not elicit further paraesthesia. If any doubts, remove the catheter and reattempt. If it occurs for a second time, abandon and discuss with a consultant.

Any insertion issues or complications should be accurately documented and handed over to guide vigilance at follow-up visits. The patient should be informed of any procedural complications and possible increased risks associated with this (e.g. PDPH) and provided relevant safety-netting.

8 Maintenance

Epidurals are maintained with a standard “Bag Mix” of **0.1% (levo)bupivacaine + 2 micrograms/ml fentanyl** run as patient controlled epidural analgesia (PCEA) with 5 ml bolus and 10-minute lockout.

Educate the patient on how to use the PCEA handset for self-administering boluses.

8.3 Bag Changes

Responsibility: The midwife should identify when the infusion is near its end and either change the bag if trained to do so, or call the duty anaesthetist to perform the change.

8.4 Nutrition

Patients with epidurals may continue to have a light diet, unless they are deemed high risk for surgical intervention under general anaesthesia. They should also be encouraged to drink water or isotonic fluids.

8.5 Positioning and Mobilisation

Once pain relief has been established, encourage patients with epidurals to adopt whatever position they find comfortable throughout labour, except lying flat on their back.

If they have sufficient leg strength and sensation, they can mobilise with assistance but advise that their legs may feel heavier than usual.

9 Monitoring and Troubleshooting

9.1 Immediate Monitoring

Check maternal blood pressure, heart rate, respiratory rate, conscious level (AVPU) and pain score every 5 mins for the first 30 minutes (longer if any haemodynamic instability)

Continuous CTG monitoring for 30 mins

Document block height to cold bilaterally at 20 minutes

Midwife to remain in patient room

9.2 Ongoing Monitoring

Vital Signs:

Hourly maternal BP, HR, RR, and sedation level.

Continuous or frequent fetal monitoring (CTG) as indicated in Fetal Monitoring -Intrapartum.

First 10 Minutes post-Insertion: Remain in the room continuously to observe for immediate complications.

For 15 Minutes post-Insertion and following a top-up: Measure BP and HR every 5 minutes; ensure continuous CTG monitoring.

Hourly Monitoring:

- Record maternal BP, HR, RR, sedation level, and pain score.
- Assess sensory block level using CoolStick.
- Perform motor block assessment using the Bromage score or Straight Leg Raise (SLR).
- Document total volume infused.
- Monitor for urinary retention and offer intermittent or indwelling urinary catheterisation as appropriate.
- Check patient pressure areas every 2 hours

Block Assessment:

Sensory Level: Use CoolStick from toe to chest to assess sensory aiming for T10-T8. Ethyl chloride spray is available as a second line only in case of language barrier or uncooperative patient.

Motor Block:

Straight Leg Raise (SLR): Assess ability to raise the heel off the bed against gravity.

Bromage Score:

0: Full movement of knees and feet.

1: Able to flex knees; feet move freely.

2: Unable to move knees; feet move normally.

3: Complete block; unable to move feet or knees.

Procedure: Perform SLR hourly as part of routine observations.

Escalation: If unable, immediately **bleep the anaesthetist** for assessment.

The anaesthetist will assess and determine the need for further actions.

Document the outcome and actions taken in the patient's records.

Pressure Areas

Check pressure areas every 2 hours if mobilisation is impaired and encourage a change of position. If patient can mobilise, this should be encouraged as much as safely possible.

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

9.3 Common Issues

Inadequate Analgesia:

Midwife:

- If the patient is in pain 30 minutes after the initiation of epidural analgesia, recall the anaesthetist
- If the block height is below the umbilicus, administer a PCEA bolus
- If there is a one-sided block, position the patient on their side with the unblocked side lower and administer a PCEA bolus.

Anaesthetist:

- Verify block level and administer additional top-ups as needed.
- Consider Clinician bolus of 10 ml of bag mix, or 10 ml (in two divided doses 5 mins apart) 0.25% bupivacaine.
- Consider adjusting epidural catheter (withdraw 1–2 cm if unilateral).
- Inadequate block density is common and experienced as rectal pressure with an occipito-posterior presentation. Consider top-up with 10 ml (in divided doses) of 0.25% bupivacaine in the sitting position. Consider an epidural bolus of Fentanyl bolus 50-100 micrograms.
- Re-site the epidural if repeated top-ups fail.
- Consider CSE as a rescue technique if re-siting.

Maternal Hypotension (SBP <90 mmHg):

- Place the patient in a left lateral position.
- Remove PCEA button from patient to prevent further epidural doses
- Ensure obstetric team also aware of situation.
- Administer an IV bolus of 250–500 ml crystalloid.
- Consider administration vasopressors if BP remains low.
- Consider oxygen supplementation
- Rule out haemorrhage or other causes of hypotension.

High Block or Total Spinal:

- Immediately stop epidural infusion.
- Maintain airway, breathing, and circulation.
- Call for additional support. Dial 2222 for obstetric emergency.
- Administer vasopressors and oxygen as needed.
- Prepare for potential intubation if respiratory compromise occurs.

Accidental Dural Puncture:

- Re-site the epidural at a different interspace or thread an intrathecal catheter (only if experienced).
- Intrathecal catheters should be clearly labelled, capped off and only dosed by anaesthetists.
- Inform the patient of the complication and document discussions.
- Postnatally, monitor for PDPH and complete PDPH follow up which is available under key documents.

Local Anaesthetic Toxicity:
Recognise early signs: perioral numbness, tinnitus, metallic taste, confusion.

- Seizures and arrhythmias may occur in severe cases.
- Stop epidural administration.
- Administer **Intralipid** 20% if severe systemic toxicity is suspected.
- Seek immediate senior assistance.

Accidental disconnection

The midwife should try to protect any exposed parts from further contamination by applying a clean bung, hanging the infusion line up away from the bed, wrapping the part in sterile gauze, etc., and escalate to the duty obstetric anaesthetist for a decision regarding suitability for reconnection.

A disconnection **between the pump and the filter** may be reconnected in most circumstances unless concerns about significant contamination (e.g. a disconnection amongst visibly soiled bed sheets). A new filter and infusion line should be used as a precaution.

A disconnection **between the patient and the filter** will invariably lead to the infusion not being reconnected and the epidural catheter removed (due to risk of infection). Seek advice from a senior anaesthetist, who may be happy to disinfect, cut ≥2cm with sterile scissors and reconnect (based upon historical studies of the limited bacterial migration). This decision will need to be made on a case-by-case basis taking into account the individual circumstances and risk/benefit balance of resiting the epidural or providing alternative analgesia.

9.4 Emergency Management

- **Resuscitation Equipment**: Ensure availability and functionality on Delivery Suite at all times.
- **Cardiorespiratory Arrest**:
  - Follow the **'4-minute rule'** for perimortem caesarean section if there is no return of spontaneous circulation within 4 minutes.
  - Involve the full obstetric crash team immediately.

10 Removal

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
- Any other concerns

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

Follow any specific guidance documented on the reverse side of the anaesthetic chart regarding observations, investigations and thromboprophylaxis timing.

Do not administer any LMWH (or other thromboprophylaxis / anticoagulant) within 4 hours following the removal the epidural catheter.

Responsibility: Midwife providing postnatal care.

Procedure: Instruct the patient to perform an SLR.

Escalation: If unable, immediately **bleep the anaesthetist** for assessment. The anaesthetist will assess and determine the need for further actions.

10.1 Neurological monitoring at 4 hours post-removal

An inability to perform a straight-leg raise at 4 hours post-removal should prompt immediate escalation to an anaesthetist for assessment and determination of the need for further actions to exclude pathology such as epidural haematoma (which may include urgent MRI scan).

This should always be checked and documented by the postnatal midwife.The patient should also be encouraged to engage in their own patient-led check and alert staff to any concerns.

Patient-led (alert wristband):

Following epidural removal, patients are given a personalised ***Regional Anaesthesia Alert Bracelet*** with their '4 hour time' and instructions to check their straight leg raise at this time. For full details, *see policy / guideline X*. There may occasionally be circumstances where the patient is unable to follow these instructions to engage with this, in which case there should be plans for additional vigilance from staff.

Midwife-led:

The postnatal midwife is responsible for ensuring this check has been completed and escalating any concerns as necessary. If they notice a postnatal patient to still have an alert wristband in place, they should check the '4 hour time' and prompt a check if this has already passed.

11 Special Populations

11.1 Obesity

- **Increased Risks**:
    - Higher incidence of obstetric and medical complications.
    - Increased risk of epidural haematoma and infection.
- **Management Strategies**:
    - **Anaesthetic Review**: Schedule an antenatal review with a senior anaesthetist for patients with BMI >45.

- **Equipment**: Ensure availability of longer needles, operating table supports & restraints, etc.
- **Technique:** If familiar, lumbar ultrasound may facilitate location and depth of interspaces.

11.2 Patients Under 18 Years

- **Care Protocols**:

  Comply with relevant legislation and best practice guidance (consent, safeguarding, etc.).

- **Safeguarding**:

  Anaesthetists must complete at least level 2 training in safeguarding and child protection.

11.3 Patients Requiring Specialist Services

- **Referral Systems**:
  - Maternal medicine network, etc. etc.
  - Early identification and management of patients requiring specialist or tertiary services

12 References and Further Reading

National Institute for Health and Care Excellence (NICE):

National Guideline NG235: *Intrapartum care.*

Obstetric Anaesthetists' Association (OAA):

Epidural Information Card and *LabourPains.com* resources.*OAA Best Practice Guidelines for Obstetric Anaesthesia*.

Royal College of Anaesthetists (RCoA):

Guidelines for the Provision of Anaesthesia Services: Chapter 9 – Obstetric Practice.

Association of Anaesthetists of Great Britain and Ireland (AAGBI):

Regional Anaesthesia and Patients with Abnormalities of Coagulation.*Safety Guidelines: Neurological Monitoring Associated with Obstetric Neuraxial Block (2020)*.

The Faculty of Pain Medicine of the Royal College of Anaesthetists

Best Practice in the Management of Epidural Analgesia in the Hospital Setting (2020)

Monitoring

Page/ Section of Key Document	Key control:	Checks to be carried out to confirm compliance with the Policy:	How often the check will be carried out:	Responsible for carrying out the check:	Results of check reported to: *(Responsible for also ensuring actions are developed to address any areas of non-compliance)*	Frequency of reporting:
	WHAT?	**HOW?**	**WHEN?**	**WHO?**	**WHERE?**	**WHEN?**
	Epidural Rates, Delays and Complications	Audit	Bi-annually	Anaesthetic Team	Anaesthetic Audit Meeting	Bi-annually

Contribution List

This key document has been circulated to the following individuals for consultation;

Designation
Maternity Governance Meeting
Maternity Guidelines Committee

This key document has been circulated to the chair(s) of the following committee's / groups for comments;

Committee
Maternity Quality Governance Meeting