

University College London Hospitals



NHS Foundation Trust

ADULTS AND PAEDIATRIC

EPIDURAL
ANALGESIA POLICY

The Pain Management Department, UCLH

Review date: January 2007

<u>CONTENTS</u>	Page
Introduction	3
- aims	3
- key words	3
Support mechanisms	4
Patient exclusion criteria	5
Administration of policy	6
- criteria	7
- process criteria	7
Prescription Guidelines	8
Nurses responsibilities	9
Monitoring and assessment	10
Identification and management of complications	11
Epidural site care	12
Care of line and filter	13
Guidelines for the Graseby 9100 pump	14
- review programme	14
- review pump and change settings	14
Changing of epidural bag	15
Removal of epidural catheter	16
Dealing with some common alarms	17
References	18

INTRODUCTION

This policy is for the care and maintenance of epidural catheters and the safe introduction of analgesic agents via a continuous infusion. This policy applies to UCLH Trust (excluding obstetrics), and is for all patients receiving epidural analgesia.

The major reason for using an epidural analgesia is to provide optimum analgesia whilst allowing patients to mobilise.

The risks involved with insertion of the catheter and those associated with the infusion can be outweighed by the patient being able to deep breathe and cough, and ambulate in the early post-operative period. This should then reduce the potential for complications associated with prolonged bed rest and poorly treated pain, such as chest infection and deep vein thrombosis.

AIMS

The patient will have a pain score of one or less within four hours of surgery.

The patient will have a nausea score of zero within four hours of surgery.

The patient will be provided with appropriate information regarding their analgesia system preoperatively.

KEY WORDS

UCLH	University College London Hospitals
MIDDX	Middlesex Hospital
NHNN	The National Hospital for Neurology and Neurosurgery
THH	The Heart Hospital
EGA	Elizabeth Garrett Anderson Hospital
CD	Controlled Drug
NSAIDS	Non-Steroidal Anti-Inflammatory Drug
APT	Acute Pain Team
LA	Local Anaesthetic
ANTT	Antiseptic Non-Touch Technique

SUPPORT MECHANISMS

Through implementing this policy the registered nurses will be required to inform the APT during the day and the on-call anaesthetist at night. The numbers listed below are for the various sites. Please contact the Acute Pain Team during the day or the night sister or night co-ordinator prior to contacting the on-call anaesthetist.

UCH

Acute Pain Team - bleep 2257 (Mon-Fri, 9-19).

Anaesthetist - bleep 4300

The Middlesex Hospital

Acute Pain Team - bleep 2257 (Mon-Fri, 9-19).

Anaesthetist - bleep 6242

Elizabeth Garrett Anderson

Acute Pain Team - bleep 2257 (Mon-Fri, 9-19).

Anaesthetist – bleep 4300

The Heart Hospital

Acute Pain Team – air-call MX240 (Mon-Fri, 9-19)

Anaesthetist – 2100/2258

Acute Pain ward rounds will occur at THH, the Middlesex Hospital and UCH sites on a daily basis. They are performed by the Acute Pain Team on weekdays, and in the evenings and at the weekends by the anaesthetist on call.

PATIENT EXCLUSION CRITERIA

Patients with the following will not be suitable candidates for epidural use and an alternative analgesia must be prescribed (contact APT if in doubt).

- Patient refusal
- Bleeding disorders
- Infection-site of insertion / systemic
- Raised intracranial pressure
- Spinal deformity
- Surgery of head or neck
- Anti-coagulant therapy
- Allergy to proposed drugs
- Lack of medical / nursing personnel with appropriate training.

ADMINISTRATION OF POLICY

CRITERIA

1. All Graseby epidural pumps are stored in the recovery of main theatre at The Middx. site, recovery at the EGA site and theatres at THH site. A record of the pump numbers and the ward where the pumps are sent will be kept in recovery / theatres.
2. Patients receiving an epidural can only be cared for by registered nurses who have completed the distance learning package and have been assessed as competent. This includes agency or bank nurses.
3. Patients should only be nursed in open plan areas. Patients may be nursed in a side-room with the explicit agreement of the APT or Consultant Anaesthetist responsible for pain management. When nursed in side rooms patients must have hourly observations and have the door open at all times.
4. Monitoring as per protocol (see monitoring and assessment) of blood pressure, respiratory rate, pain score, nausea and vomiting, level of block and sedation is mandatory.
5. All acute pain patients must receive continuous oxygen therapy for the duration of the epidural unless otherwise documented by medical staff. This must be prescribed on yellow sticker.
6. All wards that accept patients with analgesia systems must have an Acute Pain Link Nurse.
7. There must be an acute pain resource folder available on the ward, which will be provided and updated by APT.
8. The anaesthetist should liaise pre-operatively with the charge nurse of the relevant ward to ensure that adequately trained staff (day/night) will be available when the patient returns to the ward (contact APT if in doubt).

PROCESS CRITERIA

1. All acute pain patients are to have intravenous access maintained for the duration of the epidural infusion and for 12 hours after the termination of the infusion.

2. Resuscitative equipment including naloxone, ephedrine and other emergency drugs should be available in the patient area.
3. Epidural analgesia will be prescribed on the appropriate yellow sticker. This sticker must be stuck onto the regular side of the drug chart, completed, signed and dated by the prescriber.
4. All adult patients in receipt of an epidural analgesia will have a white PONV sticker attached to the PRN side of the prescription chart prescribing a selection of anti-emetics to be used in accordance with PONV guidelines.
5. Additional opiates must not be used whilst epidural analgesia is in progress unless advised otherwise by APT or anaesthetist. This includes drugs such as coproxamol, dihydrocodeine and codydramol.
6. Continuous infusions must be given via the Graseby 9100 infusion pump on all wards. All connections to be luer lock. No three - way taps or other injection ports on infusion line. Bags and cassettes must be clearly labelled. Anti-bacterial filter must be included in the infusion line and secured to the patient.
7. Epidural bags to be checked and signed by 2 nurses and administered as per the UCLH drug administration policy.
9. Epidural infusions should not be discontinued without reference to the APT. It is usually appropriate to continue the technique until the patient is able to tolerate oral fluids and pain can be adequately controlled by simple oral analgesia. However, epidurals must be discontinued after 72 hours (unless authorised by a Consultant Anaesthetist and documented in patient's notes).
10. Registered nurses who have received UCLH training may remove epidural catheters providing they meet the criteria described in the scope of professional practice. See removal of catheter, pg. 15.
11. Epidural catheters must **not** be removed from patients who have abnormal clotting. For patients who are receiving prophylactic subcutaneous heparin or fragmin see removal of catheter, page 15.
12. All epidural bags will be ordered from pharmacy. No epidural bags should be made up on the ward.

PRESCRIPTION GUIDELINES

1. Within the UCLH Trust, FENTANYL is the opioid used in epidurals for post-operative pain relief. The epidural mixture contains 2mcg/ml of Fentanyl together with 0.1% Bupivacaine.

2. Occasionally a patient will receive epidural analgesia without opioid i.e. patient already taking strong opioids.
3. Standard epidural rate for adults is 5 - 20ml, depending on patient's weight and insertion level.
4. Standard epidural rate for children and adults less than 50kg is 0.1–0.4 ml/kg/hr
5. The amount of local anaesthetic will determine the number of spinal nerves which will be blocked and hence the patient will not feel pain in the corresponding dermatomes. Therefore, it is important to maintain the hourly rate of infusion at a level that will keep appropriate block. Epidural infusion **should not be titrated down.**

REGISTERED NURSES RESPONSIBILITIES

1. Record TPR, BP, pain score, sedation score, height of block, nausea score and rate of infusion on observation chart; page 10.

2. Assess patient regarding effectiveness of pain control. Adjustment of the rate of infusions within prescribed limits to maintain required level of patient comfort and safety, see Guidelines for the Graseby 9100; page 14.
3. Administer adjunctive analgesia treatment as prescribed, e.g., NSAIDs and paracetamol.
4. Maintenance of epidural catheter ensuring asepsis; page 13.
5. To observe the entry site for signs of infection (redness, pus and pyrexia); page 12.
6. To remove catheter as per guidelines; page 16.
7. To change bag as per guidelines; page 15.
8. Documentation of all medications given by nursing staff on patient's drug administration chart.
9. Observe for urinary retention during epidural and for 24 hours post-removal.
10. To prevent disconnection occurring between filter and catheter; page 13.
11. To observe patient post-removal of catheter for increasing signs of neurological deficit for up to a week post surgery.
12. To inform pain team if patient is transferred to another ward with an epidural infusion
13. To ensure adequate multimodal analgesia following cessation of the epidural infusion (see prescribing guidelines in adults postoperative pain management)

MONITORING AND ASSESSMENT

In the case of the physiological parameters differing from normal values or the patient appearing compromised, please inform (see support mechanisms). All observation should be recorded on the pain analgesia systems chart.

1. Respiratory rate, blood pressure and heart rate to be performed and recorded $\frac{1}{4}$ **hourly for one hour, $\frac{1}{2}$ hourly for 4 hours**, and then **as patients condition denotes (minimum of four hourly)**.
2. Respiratory Rate:

If respiratory rate is <10 inform.

If respiratory rate is <8 switch off machine and inform.

If respiratory rate is <6 switch off machine inform and prepare naloxone (Naloxone 400 micrograms in 3 ml of Sodium Chloride 0.9%).
3. Blood pressure should be >80 mmHg systolic unless otherwise stated. Observe for a sudden drop in blood pressure, greater than 20% of systolic. After administration of bolus the blood pressure must be observed **every 5 minutes for 30 minutes**.
4. If sedation score is 3 inform.
This must be recorded with every observation.
5. Pain score should be 2 or less. If pain score is higher than 2 ensure multimodal analgesia prescribed. Pain score must be recorded with every observation when the patient is awake.
6. The rate of infusion must be recorded with every observation.
7. A nausea score must be recorded with every observation, a score of greater than 0 needs treatment with anti-emetics.
8. Level of block must be assessed
 - on return from theatre
 - at the beginning of each shift
 - if the patient is in pain
 - after a bolus has been given
 - if the level of the block is nearing T4

If the patient is stable and pain free once per shift is sufficient.
9. Never put patient head down in cases of hypotension as this causes the infusate to migrate to the respiratory muscles, cardiac sympathetics and the brain stem. This can lead to hypoxia, bradycardia and loss of consciousness.

IDENTIFICATION AND MANAGEMENT OF COMPLICATIONS

Side Effects of Opioids

1. Respiratory depression – usually dose-related such as concurrent IM opioid analgesia, or inadvertent intrathecal administration(e.g. catheter migration);

responds well to naloxone (IV/IM/SC); airway protection; encourage patient to breathe

2. Sedation – epidural opioids may cause sedation, although less likely with fentanyl. Treated with naloxone (IV/IM/SC)
3. Nausea / Vomiting – may be due to the GA or the type of surgery rather than the epidural; treated with anti-emetics
4. Urinary retention – possibly the effects of the opioid at the spinal level; usually treated with small doses of naloxone; if severe, may need catheterisation
5. Pruritis – most common with morphine or diamorphine; can be treated with antihistamines or small doses of naloxone

Side Effects of Local Anaesthetic

1. Hypotension – due to the blockade of the sympathetic nerves (from T1-L2) by the local anaesthetic; this causes loss of vascular tone and inability of the sympathetic nervous system to provide peripheral vasoconstriction; responds well to volume expanding fluids i.e. Gelofusine; may also require vasopressors such as ephedrine (IV/IM); always consider other causes e.g. bleeding, hypovolaemia from surgery.
2. Bradycardia – due to the blockade of the cardiac sympathetic nerves (from T1-T5); will not respond to atropine, requires ephedrine; position patient upright to prevent block from upward movement; regular dermatome assessment
3. Local Anaesthetic toxicity – due to overdose of LA or inadvertent venous administration; early signs include numbness around mouth, light-headedness, tinnitus, twitching; later signs- fitting, bradycardia and cardiac arrest
4. Urinary retention – may occur if the local anaesthetic block is in the lumbar region
5. Pressure areas – due to the block causing paraesthesia; ensure regular pressure area care, encourage movement and remind patient to move regularly

EPIDURAL SITE CARE

Aims

To maintain the security and sterility of the system and to prevent entry of bacteria into the epidural space that may cause abscess formation that leads to pressure on the spinal cord and possible paralysis.

Dressings on exit site to be changed only when necessary by APT or anaesthetist.

Equipment

Dressing pack, Tegaderm or Opsite dressing, sodium chloride 0.9%, Mefix.

Procedure

1. Explain the procedure to the patient.
2. Remove the old dressing very carefully and observe the site for signs of local infection or leakage of cerebrospinal fluid. Ensure that the catheter does not fall out.
3. Clean the site with sodium chloride 0.9% (solutions containing alcohol should be avoided even small amounts introduced into the epidural space can cause irritation).
4. Cover site with sterile occlusive dressing.
5. The epidural catheter should be secured with Mefix the full length of the patient's back to ensure the catheter remains securely in place.
6. The filter should be fixed as described in Line and Filter Care, page 13.

CARE OF LINE AND FILTER

Aim

To prevent disconnection of the filter from the catheter and maintain the integrity of the system.

Equipment

Gauze, Opsite.

Procedure

Fold gauze and place under filter.
Place gauze and filter on patient's shoulder.
Cover all of filter and top of catheter with Opsite.
Observe filter for signs of cracking once per shift.

Rational

To prevent pulling of the connection between the filter and the catheter, as disconnection at this point necessitates discontinuation of the epidural analgesia infusion.

The line and filter do not need to be changed.
In the case of disconnection the end of the catheter should be wrapped in gauze and the team called.

GUIDELINES FOR THE GRASEBY 9100 PUMP

These are the only pumps that can be used for administration of epidural analgesia infusions in the Trust.

There are four screens:	Explanation
“Cassette volume”	Amount of fluid left in bag.
“Continuous”	Rate of infusion
“Since reset”	Amount of fluid infused into patient
“Press down to reset”	Resets value of volume infused (only present if a volume is present)

“Start” and “Stop”

These buttons turn the infusion on and off. Flashing triangles indicate that the pump is running. To stop the infusion press the stop button and hold for several seconds.

To review programme

Whilst the pump is running press “Enter” to see amount infused and amount that is left in the bag. The screen will revert to the flashing triangles if left for a few seconds.

To review pump and change settings

Press stop and hold. Use the “Enter” button to move through the screens. Press “Up” or “Down” arrow to change value on the appropriate screen.

To change bag

Press “stop” and hold for several seconds.
Increase “Cassette Volume” screen to the volume in the new bag.
Press enter until “Press down to reset totals” is on screen.
Then press the down arrow.
Then press start to run.

CHANGING THE EPIDURAL BAG **USING THE GRASEBY 9100 PUMP**

Aims

The safe changing of epidural infusion by registered nurses who have received epidural training.

Procedure

1. Record the date and time that a new bag is commenced on the drug chart. Two nurses to check and sign.
2. Wash hands.
3. Stop old infusion (hold down stop button until flashing triangles have disappeared).
4. Change bag using ANTT technique
5. Increase “cassette volume” screen to the volume of the new cassette or bag by using the up and down arrows.
6. Clear infused totals by zeroing the “since reset” screen, this is achieved by “press down to reset totals” on the next screen.
7. Recommence the “continuous” infusion at the required rate, this should be checked with two nurses, ensure that triangles are flashing.

REMOVAL OF EPIDURAL CATHETER

Aim

Safe removal of the catheter without pain, shearing or risk of epidural haematoma.

For patients who are receiving subcutaneous low molecular weight heparin or unfractionated heparin, an interval of twelve hours should elapse between the subcutaneous injection and catheter removal. A period of four hours should elapse prior to administration of the next dose (Tryba 1998).

The patient's coagulation status must be assessed by the medical staff prior to removal of catheter. If the patient's clotting is abnormal call APT or anaesthetist.

Equipment

A small air strip and gloves.

Procedure

1. Explain the procedure to patient.
2. Position the patient comfortably on side (Boey & Carrie, 1994) with spine flexed (flexion opens the intervertebral spaces, thus releasing the catheter from vertebral compression).
3. Remove the catheter slowly. Observe the site for leakage of cerebrospinal fluid or signs of infection.
4. Check catheter to ensure tip is complete, if it is not complete inform the pain team and save catheter.
5. Clean with sodium chloride 0.9% (only if necessary) and apply an occlusive dressing (e.g., small air strip).

NB Always remove the catheter in the morning before 12.00 if possible (contact APT if in doubt).

Do not use force in removing the catheter. If catheter is hard to remove inform.

Ensure the whole length of the catheter has been removed. The catheter's are of varying lengths but the first mark from the distal end is always 5 cm from the tip, which has a rounded blue end. If there is any doubt inform the APT or anaesthetist.

If there are any signs of infections such as pus or reddening at the entry site inform APT.

DEALING WITH SOME COMMON ALARMS

Bag empty

- Change epidural bag (see pg. 15)

Air in line

- Stop pump
- Disconnect at filter using ANTT (ensuring filter attached to patient's end of epidural catheter)
- Press purge button twice, ensuring the second time you keep pressing until the air is expelled from the line
- Reconnect & restart the pump

Occlusion

- Check epidural line is not kinked (and that it is secured with dressing intact)
- Disconnect line at filter (ensuring filter attached to patient's end of epidural catheter)
- Purge line-pressing purge button twice, the second time keep pressing until line purged, then reconnect & restart infusion.
- Consider changing batteries
- Contact APT / On-call anaesthetist for patient review. If the alarm is persistent despite taking appropriate action, always contact APT for review.

Low Battery

- Change batteries (size AAA). These should be stocked on the ward. All values will be stored on the machine when batteries are changed.

REFERENCES

These can be found in the ward Acute Pain resource folder, or ask Acute Pain Team.

BOEY K, CARRIE L.

Withdrawal forces during removal of lumbar extradural catheters. *British Journal of Anaesthesia* 1994;73:833-835.

TRYBA M.

European Practice guidelines: Thromboembolism Prophylaxis and Regional Anesthesia. *Regional Anesthesia and Pain Medicine* 23(6) Suppl 2: 178-182, 1998

Nursing and Midwifery Council (2002) code of Professional Conduct.

BIBLIOGRAPHY

ARMSTRONG RF, ADDY V, BREIVIK H.

Epidural and spinal anaesthesia and the use of anticoagulants (review). *Hospital Medicine*, July 1999, Vol 60, No7

BRAGG, CORDELL.

Practical aspects of epidural and intrathecal narcotic analgesia in the intensive care setting. *Heart and Lung*, 1985 Nov, Vol 18, No 6.

FREED ROSEN H, McCUTCHEON CALIO M.

An epidural analgesia program: balancing risks and benefits. *Critical Care Nurse* Vol 10, No 8.

LIB RA, HURTIG JB.

Epidural and intrathecal narcotics for pain management. *Heart and Lung*, March 1985 March, Vol 4, No 2.

SONI NEIL.

Regional nerve block techniques. *Anaesthesia and Intensive Care*. 1989.

