



**UCLH
PARAVERTEBRAL BLOCK
(ADULTS) POLICY**

DEFINITION

A Paravertebral block is a method of providing effective analgesia using a local anaesthetic. It works by blocking nerve impulses (sensory, sympathetic and motor) that are carried out by mixed spinal nerves as they emerge from the vertebral column unilaterally into the paravertebral space (Richardson & Lonnqvist, 1998)

SUMMARY OF THE DOCUMENT

This policy documents the care of adult patients receiving paravertebral block (PVB) analgesia for the management of acute pain.

Exclusion criteria for PVB analgesia may include:

- Allergy or sensitivity to lignocaine.
- Septic conditions of the pleural space
- Inflammatory conditions of the pleural space
- Infection at entry site
- Complete heart block

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1. INTRODUCTION AND AIM

The continuous infusion of local anaesthetics into the paravertebral and extrapleural spaces to provide analgesia after thoracotomy is a well described technique (Andreas et al 1998, Karmakar 2001, Watson et al 1999). This is an advanced method of pain relief that improves patients' respiratory function by enabling coughing and deep breathing (Richardson et al, 1999). The aim of this policy is to describe the technique of paravertebral block (PVB) analgesia and the care of patients with this method of analgesia.

2. METHOD

- 2.1 Effective analgesia is established by the anaesthetist/surgeon with a local anaesthetic agent administered via the paravertebral catheter.
- 2.2 Opioid (Morphine) patient controlled analgesia (PCA) may be also commenced.
- 2.3 PVB analgesia is maintained with a continuous infusion of 1% lignocaine.
- 2.4 If the patient remains in pain following administration of the prescribed infusion rate, staff should inform the acute pain nurse or the anaesthetist.
University College Hospital – Acute Pain Team bleep 2257, Anaesthetist 4300
The Middlesex Hospital – Acute Pain Team bleep 2257, Anaesthetist 6242
The Heart Hospital- Acute Pain Team air-call MX240, Anaesthetist 2100/2258
- 2.5 Continuous PVB infusion can be continued in the post-operative period until chest drains are removed or maximum of five days (Sabanathan et al, 1998).
- 2.6 Multimodal analgesia should be commenced on the day of surgery, according to surgical protocol. Regular laxatives and anti-emetics should also be prescribed.
- 2.7 Drawing up, administering of PVB infusions and removal of the PVB catheter may be performed by the anaesthetist, the appropriate member of the surgical team, the pain management nurse or a registered nurse (level 1 or 2), who has attended a PVB teaching session.

3. PROCESS

- 3.1 The paravertebral catheter will be inserted by the surgeon in theatre.
- 3.2 The anaesthetist will notify the recovery nurse and record a paravertebral catheter insertion in the patient's notes.
- 3.3 The anaesthetist will confirm that the PVB infusion is running at the prescribed rate. The paravertebral catheter is clearly labelled with a grey sticker, patent, correctly positioned and secured.
- 3.4 The pharmacy department will provide 10ml or 20ml vials of 1% lignocaine injection, to be drawn up neat into a 50ml syringe to use in a syringe driver. The syringe should be clearly labelled stating drug concentration, date and time drawn up (see administration of drugs policy).
The anaesthetist will prescribe the hourly infusion rate on a pre-printed, grey sticker on the regular side of the drug chart, noting the patient's weight and desired dose of 0.1ml.kg.hr. The drug must be checked with 2 nurses as per UCLH policy.
- 3.5 An anti-syphon giving set must be used, clearly labelled, and must be changed every 48 hours as per the trust policy.
- 3.6 An anti-bacterial filter must be included on the end of the paravertebral catheter.

4. PATIENT OBSERVATION

The nurse must call the acute pain team or the anaesthetist if:

- the pain score is unacceptable to the patient whilst receiving prescribed PVB infusion.
- there is a sudden drop in blood pressure or heart rate.
- the PVB catheter occludes. Only an acute pain nurse or the anaesthetist may flush the PVB catheter.

4.1 RECOVERY

Observations should be made and recorded on the appropriate pain observation chart.

Frequency: ¼ hourly for first hour
 ½ hourly for second hour then check hourly if stable

Observations: T.P.R & BP
 Pain score at rest/on movement
 (including coughing and deep breathing)
 Rate of infusion
 Nausea score
 Sedation score (when used with PCA)
 PCA demands & total amount of drug given
 Paravertebral infusion site check 4 hourly

4.2 HDU / ITU

Observation should be made and recorded on the appropriate pain assessment chart.

Frequency: As for 4.1

Observations: As for 4.1
Paravertebral catheter insertion site to be checked 4 hrly

4.3 WARD

Observations should be made and recorded on the appropriate pain assessment chart.

Frequency: 4-6 hrly

Observations: As for 4.1
Paravertebral catheter insertion site to be checked 4-6hrly

Blocking of sympathetic nerves produces vasodilatation, which can result in hypotension. If the patient is hypovolaemic the hypotension would be more pronounced.

When checking respiratory rate please note the rhythm and depth, chest movements should remain equal on both sides.

CHECKING THE PARAVERTEBRAL CATHETER INSERTION SITE.

Check that the catheter dressing is intact and dry. The catheter is not stitched in place and can easily fall out, therefore if the dressing requires changing inform the pain team or anaesthetist. Check that the anti-bacterial filter is safely secured to prevent disconnection.

5. DISCONTINUATION OF PVB INFUSION

The infusion will be discontinued on the advice of the acute pain team or anaesthetist after the removal of chest drains or according to patient's pain score. Ensure appropriate analgesia is prescribed.

6. THE REMOVAL OF THE PARAVERTEBRAL CATHETER

The catheter may be removed by the anaesthetist or a member of the appropriate surgical team, or a registered nurse who has attended training.

- Explain the procedure to patient.
- Position the patient comfortably i.e. sitting up.
- Remove catheter without force; catheter should slide out easily.
- Check catheter to ensure tip is complete, if it is not complete inform the pain team and save the catheter.
- If there are any signs of infection such as pus or reddening at the entry site inform pain team who will decide whether to send the tip off for culture and sensitivities.
- Apply sterile dressing over the wound for 24 hours.

7. MANAGEMENT GUIDELINES

Due care by medical & nursing staff must be exercised to ensure that:

- The paravertebral catheter remains in place secured with a semi - permeable dressing e.g. Tegaderm or Opsite 2000.
- The infusate remains sterile.
- The drug syringe is clearly labelled (see administration of drugs policy).
- Only 1% lignocaine must be used. If infusion blocked, pump will alarm occlusion. It may only be flushed by acute pain team or anaesthetist using 0.9% Sodium chloride.
- The paravertebral catheter and giving set is clearly labelled at all times using grey stickers.
- All patients receiving PVB infusions are encouraged to undertake physiotherapy, including deep breathing and coughing.

8 SIDE-EFFECTS AND COMPLICATIONS

8.1 PNEUMOTHORAX

A surgeon may insert the PVB catheter during a surgical procedure as the paravertebral space can be directly viewed and the catheter placed in the desired area. However, for some patients i.e. trauma, this may not be appropriate and an anaesthetist may insert the catheter while the patient is awake using an indirect vision technique. One complication that could occur from the use of this technique is pneumothorax.

Symptoms: Severe, sharp pain, dyspnea, absence of breath sounds.

Action: Chest X-ray to determine presence and size of pneumothorax.
Record observations and take appropriate actions to minimise patient's discomfort and anxiety.
Prepare for insertion of chest drain.

8.2 HAEMORRHAGE

Symptoms: Bleeding around PVB catheter site.

Action: Apply pressure to the paravertebral catheter site.
Inform surgical team.

8.3 LOCAL ANAESTHETIC TOXICITY

Symptoms: Peri-oral tingling, light-headedness, twitching, bradycardia, arrhythmia's, and convulsions.

Action: Stop infusion and call acute pain team or anaesthetist!

8.3 LEAKAGE AROUND THE SITE OF INSERTION

Symptoms: Clear fluid leakage around PVB catheter site.

Action: Add additional dressing to prevent further leakage.
Inform acute pain team or anaesthetist.

9. REFERENCES

Andreas MK et al (1998) Prospective, randomised comparison of extrapleural versus epidural analgesia for post thoracotomy pain. **Annals of Thoracic Surgery**. 66: 367-372

Karmakar MK (2001) Thoracic Paravertebral Block. **Anaesthesiology**. 95 (3): 771-780

Richardson J., Lonnqvist PA (1998) Thoracic paravertebral block (review article). **British Journal of Anaesthesia**; 81:2, 230-238

Richardson J et al (1999) A prospective, randomised comparison of preoperative and continuous balanced epidural or paravertebral bupivacaine on post-thoracotomy pain, pulmonary function and stress responses. **British Journal of Anaesthesia**; 83:3, 387-392

Royal Brompton & Harefield (2002), Paravertebral Block Policy

Sabanathan S. et al (1998) Continuous intercostal nerve block for pain relief after thoracotomy. **The Annals of Thoracic Surgery**; 46:4, 425-426

Watson DS, Panian S, Kendall V et al (1999) Pain Control after Thoracotomy: bupivacaine versus lidocaine in continuous extrapleural intercostal nerve blockade. **Annals of Thoracic Surgery**. 69 (3): 825-828

PARAVERTEBRAL INFUSION (via syringe driver) Lignocaine 1% 50ml Rate: 0 – 10 ml/hour Patient Weight:.....kg (Recommended starting rate: 0.1ml/kg/hour)	ROUTE Paravertebral	Prescriber:
		Pharmacy:

(PRESCRIPTION STICKER)

PARAVERTEBRAL

(STICKER FOR EXTENSION SET)