



Management Of Epidural Complications Procedure

Procedure Number

CHC-PE-0005

Version Nos:

3

1. Purpose

This Procedure is performed as a means of managing complications associated with the administration of an Epidural by West Coast District Health Board (WCDHB) clinical staff.

2. Application

This Procedure is to be followed by all staff working with epidurals throughout WCDHB.

3. Definitions

There are no definitions associated with this Procedure.

4. Staff Authorised To Perform Procedure

This Procedure shall be performed by a MIV and Epidural Certified Registered Nurse/Midwives/Anaesthetic Technicians.

5. Resources Required

This Procedure requires no specific resources.

6. Process

1.00 Administration Error

1.01 Ensure the following:

- Dedicated Pain Management Provider (PMP) Volumetric pump to be used.
- Correct colour coded tubing is being used.
- No ports in tubing.
- Epidural filter is labelled at chest securement.
- Secure on the opposite side of patients neck to any central lines.
- Two RN's must check the drugs to be administered and the correct programming of the Epidural pump. (one must be epidural certified)
- Only medications prescribed in the Epidural Prescription Sheet are to be administered via the Epidural line.

2.00 Respiratory Depression & Sedation

- Dependent on dose and volume of opioids used.
- No other opioids are to be given concurrently unless ordered by anaesthetist.
- Risk of respiratory depression increases with higher thoracic catheter placement.
- Ensure patient has a patent IV luer insitu for the administration of reversal drug, if required.
- It is recommended that oxygen at 2 litres via nasal prongs is prescribed by a medical officer for 24 hours for all Epidural patients.
- Recordings are per Epidural procedure.
- If sedation score = 3 **or** respiratory rate less than 8/min **and** sedation score = 2-3 **Stimulate the patient to breath.** If not effective give Naloxone in 100 mcg increments IV to a maximum of 400 mcg as prescribed on epidural prescription.



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- If respiratory rate < 8 cease epidural infusion. Call anaesthetist and house surgeon.

Note: Naloxone is an analgesic antagonist, therefore severity of pain may be exacerbated.

3.00 Hypotension

3.01 A transient drop in blood pressure is to be expected as the sympathetic blockage produces vasodilation. This is usually compensated for by an increase in cardiac output. If the sympathetic blockage should reach T4 level, where the sympathetic chain to the heart leaves the spinal column the compensatory mechanism is blocked preventing increase in heart rate. This can result in profound hypotension, bradycardia, thready pulse or anxiety. A common problem as Epidurals tend to unmask the patients volume status.

3.02 Be aware of you patients fluid balance state. Hypovolemic patients are more prone to major drops in blood pressure. Check urine output.

3.03 Monitor level of segmental block. If block is a T6 or higher, **STOP** infusion and notify Anaesthetist, and be prepared to treat profound hypotension.

3.04 If patient has a profound drop in blood pressure, ie Supine Systolic BP <90 .

- Stop the infusion.
- Do not leave patient unsupervised – explanation.
- Have House Surgeon and Anaesthetist notified.
- Lie patient flat in bed and elevate feet if possible with pillow. (**NO** head down position).
- Administer oxygen as per prescription sheet.
- Increase Intravenous fluids. Give a 500ml bolus of 0.9% Na Cl. If no response to this, repeat and give ephedrine 3mg increments titrating to effect.
- Monitor/record BP closely.
- Document in patient records.

4.00 Epidural Haematoma

- Rare (although incidence is increasing).
- May occur on insertion or removal of catheter.
- The ideal time for removal of Epidural catheter following authorisation from Anaesthetist for patients on anti-coagulants is 20 hours from the last dose, ie four hours before next dose. (See also Procedure for Epidural Catheter removal).
- Neurological injury may result secondary to Epidural bleeding.
- Monitor 4 hrly for signs of nerve compression in the spinal cord – Severe back pain, swelling at epidural site, burning, extreme weakness or paralysis, urinary retention or new motor block.
- Inform Anaesthetist **immediately** if any of the above symptoms are present, as a neurological consultation is urgent. Time is of the essence if permanent sequelae are to be prevented.



5.00 Epidural Catheter Migration (e.g. through the dura into CSF/blood vessel)

5.01 It is very uncommon for complication of epidural analgesia to result in patient death. When it has occurred it has been due to inadvertent spinal injection that has been undetected and untreated. This can occur if the tip of the epidural catheter erodes through the dura mater and medication is then injected directly into CSF. When a spinal Anaesthetic is given usually **no more than 3 mls of local anaesthetic** is used. So if the total amount intended for epidural analgesia is injected into the CSF there will be an extremely extensive nerve block.

5.02 Rare

5.03 Symptoms include:

- Rapid ascending wide block
- Vital signs may indicate a ↓ in BP, P and Resps

5.04 The above signs and symptoms may develop very rapidly, and become a life threatening emergency.

5.05 Treatment includes:

- STOP epidural infusion immediately
- Do not leave patient
- Obtain assistance, ring emergency bell
- Notify Anaesthetist and Medical Staff
- Lie patient flat, but raise legs
- Increase Intravenous infusion rate to maximum as prescribed by Medical Staff
- Administer oxygen (high flow rate) via ambu-bag
- Follow basic resuscitation. (**A**-irway, **B**-reathing, **C**-irculation)
- Document in patient's clinical record

5.06 If the medication is given intravenously the amount of LA or narcotic may produce an overdose.

5.07 Symptoms (these symptoms may not occur in this order)

Local Anaesthetics

- Lightheadedness
- Cardiovascular depression – hypotension, bradycardia
- Circumoral tingling (tingling around lips)
- May act disorientated
- Decreasing level of consciousness
- Seizure
- Respiratory depression
- Cardiac arrest

Narcotics

- Decreasing level of consciousness
- Respiratory depression
- Hypotension



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5.08 Treatment includes:

- As above
- Contact anaesthetist as reversal agents may be required.
- Naloxone for narcotic symptoms

6.00 Epidural Abscess

- Rare, incidence 1:10,000.
- Usually caused by skin bacteria flora (staphylococci) tracking up the catheter.
- High risk patients are those who are/have been:
 - immunocompromised
 - on steroids
 - diabetic
- Symptoms:
 - Back pain (exquisite to palpitation)
 - Radiating radicular pain from the spine to the chest
 - Pus at site and/or pyrexia
 - Loss of bowel or bladder function (late symptom)
 - Loss of motor power (late symptom)
 - May not present for 5-6 weeks after removal of Epidural catheter.
- Immediately Contact anaesthetist if any of the above signs and symptoms are present.
- Diagnosis is made through history and physical examination.
- Definitive diagnosis is made by MRI scan.
- Treatment – massive antibiotic therapy and/or surgical decompression of spine.
- Mortality – 10-30% with 50-60% left with permanent neurological damage.

7.00 Infection at Epidural Site

- Incidence risk rises after three days of therapy.
- Exposure of site to air will usually result in infection within 24-36 hours, site must be redressed using chlorhexidine and alcohol swabs.
- After consultation with anaesthetist, remove catheter if infection noticed at site. If pus is present, swab the site and send Epidural catheter tip to pathology for culture. (Clexane dose timing may be a factor regarding removal).
- Observe site for 3-4 days to ensure healing is occurring.
- Document in clinical notes.

7.01 Preventative measures include:

- Window dressing over site
- Use of a semi-permeable dressings reinforced with mexif.
- Chlorhexidine and alcohol swabs.
- Do not disconnect/reconnect tubing.
- Three day therapy time frame (usually).
- Aseptic technique when preparing and connecting infusion into Epidural catheter.
- Monitor insertion site every 8 hours for redness, oozing, swelling or pain.

7.02 Treatment includes:

- Notify appropriate medical staff and Infection Control Nurse regarding signs of infection.
- Document in patient records.



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8.00 High Block

(Anything above the dermatome level prescribed on the prescription sheet).

- Vital signs/dermatome recordings as per protocol.
- Anaesthetist should document acceptable block height on prescription sheet.

9.01 High block is characterised by exaggerated effects of hypotension and respiratory depression. This may necessitate basic A.B.C. resuscitation. The patient can lose the ability to talk, ie they will whisper as a result of the phrenic nerve becoming paralysed. This may be the first warning sign.

9.02 Treatment includes:

- Contact anaesthetist regarding orders to decrease or possibly cease the infusion.
- Sit patient up as this may drop the block level to some degree (may worsen hypotension).
- Monitor BP.

10.00 Breakthrough Pain

- Pain scores rest/activity.
- Check integrity of the system.
- Unless contraindicated recommendation is that all adult patients on Epidural infusions have Paracetamol 4gms/24 hours administered as prescribed for 72 hrs.
- Duty anaesthetist to be contacted to assess the patient and administer bolus of infusion, if required.
- Increase infusion rate as prescribed (recommend increase by 2mls only).
- Patient Controlled Epidural Analgesia (PCEA) may be an option, if not already prescribed.
- Turn patient onto side that is sore (this may help to spread the block over to the area that is not covered well).

11.00 Urinary Retention

- Refer to Medical Officer, as may require catheterisation with appropriate antibiotics
- Be aware, may cause pain, tachycardia or hypertension.

12.00 Nausea & Vomiting

- Nausea tends to be constant.
- Antiemetics as prescribed on EIPS
- Notify anaesthetist if ineffective.
- Be sure that the nausea is related to the Epidural.
- Monitor BP and Respiration closely (Nausea may be due to hypotension).
- Anaesthetist may order removal of Fentanyl. The tubing will need to be purged. **Remember** to disconnect the tubing from the patient before purging. The tubing is to be reconnected after purging.

13.00 Pruritiis

- Caused by opioid in the infusion solution, may be mild or severe.
- Especially of face and neck, particularly with Morphine.
- Most adults will not admit to it unless asked directly if they are experiencing itchiness.



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13.01 Treatment includes:

- Administer Naloxone as per Prescription sheet.
- Apply Calamine Lotion.
- Keep patient cool.
- Notify anaesthetist if ineffective.
- Remove opioid from infusion.
- Anaesthetist may order removal of Fentanyl. The tubing will need to be purged.

Remember to disconnect the tubing from the patient before purging. The tubing is to be reconnected after purging.

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14.00 Sensory/Motor Block

- Usually depends on level of catheter placement (catheter should be placed about the centre of the corresponding wound).
- Bromage scale recordings (motor power of hip flexion).
- Ensure good pressure area care, especially for the heels, which are prone to pressure sores.
- Watch temperature of extremities (no wheatbags are to be used).
- Patients receiving epidural analgesia may sit up post-operatively and mobilise with two nurses present.
- The patient should be pain free and have sensation in the legs. **Legs should not be numb and paralysed, and patients should be able to move them.**
- Patients may have a degree of numbness but **must** be able to move and feel their legs – **(if unable then notify anaesthetist, and turn infusion rate down).**
- New motor block – call anaesthetist urgently to review patient (? Epidural haematoma).

15.00 Leakage at Site

- If not sore and dressing patent, observe site, report and document leakage in clinical record.
- May be an early sign of Epidural failure.

16.00 Local Anaesthetic Toxicity

16.01 This should not occur using the dilute anaesthetic solutions. If local anaesthetic solutions are used, staff should be aware of the signs and symptoms of toxicity that may result from mistaken doses being administered or inadvertent intramuscular administration, ie if the Epidural catheter has moved out of position.

16.02 If a patient develops any of the following signs and symptoms, contact Anaesthetist:

- Tinnitus
- Lightheadedness
- Visual disturbances
- Muscular twitching
- Convulsions
- Decreased level of consciousness



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17.00 Headache – Post Dural Puncture Headache (PDPH)

- This can occur when, during insertion of the epidural, the needle has protruded past the epidural space and punctured the dura. The hole that has been made in the dura can cause a significant leaking of cerebrospinal fluid. It is the leaking of this buffering fluid that can result in the patient experiencing a severe headache made worse by sitting or standing up.
- The hole made in the dura will in most cases heal spontaneously over a period of a few days. Some will persist longer than this with 99% spontaneously healing within 1-2 weeks.

17.01 Nursing Actions include:

- If PDPH suspected, lie patient flat.
- Notify anaesthetist immediately.
- Give analgesia (not aspirin) and possibly caffeine tablets. (Caffeine tablets not available from pharmacy but they will get them in if required. Usually prescribed as 300mg 3-4 hrly prn until the headache subsides. Strong coffee or Coca Cola may be as effective).
- Increase oral/IV fluids as ordered as CSF production is decreased if patient becomes dehydrated.
- Anaesthetist may use a “blood patch” into the Epidural space. Patients, whose headache is slow to subside or are finding the convalescence restricting, can undergo a “blood patch”. This involves the taking of a sterile sample of approximately 20mls of the patients own blood and injecting it into the epidural space at the same level as the previous epidural injection. This then creates a patch over the hole in the dura and in the majority of cases eliminates the headache.
- After Epidural blood patch, patient lies flat for 2 hour’s then may mobilise.
- Stool softeners to prevent straining/valsalva manoeuvre for 48 hours, which may dislodge blood patch.

7. Precautions And Considerations

- ➔ All complications are to be managed as soon as they are detected
- ➔ Patient’s doctor is to be informed immediately
- ➔ Complications, actions taken, and patient response are to be documented in patient’ s medical record

8. References

Acute Pain Management Service – Christchurch Hospital

Canterbury Health Policy & Procedure Manual

Canterbury Health Fluid & Medication Manual

9. Related Documents

WCDHB Epidural Standard



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