

EPIDURAL ANALGESIA – (Non Maternity)

This LOP is developed to guide clinical practice at the Royal Hospital for Women. Individual patient circumstances may mean that practice diverges from this LOP.

1. AIM

Epidural analgesia is an effective modality of pain management that provides pain relief by delivering pharmacological agents, usually local anaesthetic plus an opioid, into the epidural space via an indwelling catheter.

2. PATIENT

This document details the management of post-surgical women receiving epidural analgesia via programmed intermittent epidural bolus (PIEB) and patient controlled epidural anaesthesia (PCEA) enabling the woman to receive optimum pain relief safely and effectively via the epidural route.

3. STAFF

- Acute pain service
- Anaesthetists
- Medical staff
- Midwifery and nursing staff

4. EQUIPMENT

- Dedicated epidural pain management pump specifically programmed to deliver PIEB/PCEA
- Locked box for pump
- Compatible (yellow) epidural administration set
- Premix solution as per epidural orders
- Epidural (yellow) patient label and line label

5. CLINICAL PRACTICE

Manage patients who have PIEB/PCEA prescribed in Acute Care Centre only.

- Prescribe the epidural infusions on the NSW State Epidural Analgesia Adult Chart (Not for Intrapartum use) (NH700039). (See Appendix 1 – Standard Doses).
- Label the infusion bag with an epidural (yellow) sticker including the woman's name, MRN and solution details
- Place yellow sticker on the infusion line. Both must be checked by second Midwife/RN.
- Observe that the following are correct:
 - Epidural infusion solution and pump program are consistent with the prescription.
 - Epidural (yellow) infusion set is connected to the epidural filter.

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- The infusion record must be completed by the two Midwives/RNs.
- Loading/changing the bags or changing the program must be checked by two Midwives/RNs.
- Supply written information to the woman (*See Appendix 4 – Epidural Pain Relief (Post-Operative)*)
- Explain to the woman:
 - The rationale for using epidural pain relief.
 - how long it will be used for
 - the need for ongoing observations
- Ensure the woman is familiar with the principles of PCEA and is able to activate the pump. The woman receiving the PCEA is the only person who may press the PCEA button.
- Change epidural fluids as they are completed but no longer than 72 hours.
- Do not change epidural administration sets.
- Ensure that the woman has a patent intravenous cannula with which to manage any side effects of the epidural therapy. This should remain in-situ 4 hours after the removal of the epidural.
- Perform observations as per *Appendix 2* and document on the NSW State Epidural Analgesia Adult Chart (NH700039)
- Do not administer other opioids or sedatives unless ordered by APS or Anaesthetist.
- Do not commence therapeutic anticoagulants until discussion with APS, Anaesthetist or patients team
- Refer to *Appendix 3* for Adverse Events and their Management

6. DOCUMENTATION

- NSW State Epidural Adult (Not for Intrapartum Use) Chart
- Integrated Clinical Notes
- eMEDS
- Relevant Clinical Pathway
- Consumer Information Leaflet – Epidural Pain Relief (Post-Operative)

7. EDUCATIONAL NOTES

For comprehensive notes regarding the management of epidurals please refer to Epidural Analgesia Guidelines for RHW which includes information on:

- Nurse/Midwife Education
- Indications/rational
- Different uses & dosages within RHW
- Side effects
- General management guidelines
- Removal of epidural catheter

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8. RELATED POLICIES / PROCEDURES / CLINICAL PRACTICE LOP

- Epidural analgesia – Programmed Intermittent Epidural Bolus (PIEB) and Patient Controlled Epidural Analgesia (PCEA) – Maternity Services.
- Epidural Analgesia Guidelines for RHW
- Neuraxial (intrathecal and/or epidural) opioid analgesia – single dose morphine only
- Medication administration – general principles for administration of medication
- Accreditation of staff to give drugs in specific units
- Naloxone – Use of Naloxone for the treatment of opioid induced over sedation, respiratory depression, pruritus and nausea.
- NSW Health PD2013_043 Medication Handling in NSW Public Health Facilities.
- NSW Health PD2015_029 HighRiskMedicationManagement.
- National Standard for User-Applied Labelling of Injectable Medicines, Fluids and Lines

9. RISK RATING

- High

10. NATIONAL STANDARD

Standard 4 – Medication Safety

11. REFERENCES

- 1 Intermittent vs continuous administration of epidural ropivacaine with fentanyl for analgesia during labour. P.D.W Fettes et al. British Journal of Anaesthesia 97 (3) 359-64 (2006)
- 2 Programmed intermittent epidural bolus versus continuous epidural infusion for labour analgesia: the effects on maternal motor function and labour outcome. A randomized double-blind study in nulliparous women. [Capogna G](#), [Camorcia M](#), [Stirparo S](#), [Farcomeni A](#). *Anesth Analg*. 2011 Oct;113(4):826-31.
- 3 A randomized comparison of programmed intermittent epidural bolus with continuous epidural infusion for labor analgesia. [Wong CA](#), [Ratliff JT](#), [Sullivan JT](#), [Scavone BM](#), [Toledo P](#), [McCarthy RJ](#). *Anesth Analg*. 2006 Mar;102(3):904-9
- 4 Programmed intermittent epidural bolus versus continuous epidural infusion for labor analgesia: the effects on maternal motor function and labor outcome. A randomized double-blind study in nulliparous women. [Capogna G](#), [Camorcia M](#), [Stirparo S](#), [Farcomeni A](#). *Anesth Analg*. 2011 Oct; 113(4):826-31
- 5 ANZCA Acute Pain Management: Scientific Evidence Fourth Edition 2015:
- 6 Sakagutchi et al. Does Adrenaline Improve Epidural Bupivacaine and Fentanyl Analgesia After Abdominal Surgery? *Anaesth Intensive Care* 2000; 28: 522-526.
- 7 Niemi G, Breivik H. The minimally effective concentration of adrenaline in a low-concentration thoracic epidural analgesic infusion of bupivacaine, fentanyl and adrenaline after major surgery. *Acta Anaesthesiol Scand* 2003; 47: 439-450

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- 8 Kjonikksen J et al. Stability of an epidural analgesic solution containing adrenaline, bupivacaine and fentanyl. *Acta Anaesthesiol Scand* 2000; 44: 864–867.
- 9 Brustugun J et al. The stability of a sulphite-free epidural analgesic solution containing fentanyl, bupivacaine, and adrenaline. *Acta Anaesthesiol Scand* 2013; 57: 1321–1327.
- 10 Priston MJ et al. Stability of an epidural analgesic admixture containing epinephrine, fentanyl and bupivacaine. *Anaesthesia* 2004; 59: 979-983.
- 11 Shen-Chih Wand et al. Comparison of three different concentrations of ropivacaine for postoperative patient-controlled thoracic epidural analgesia after upper abdominal surgery. *Acta Anaesthesiol Taiwan* 2008; 46(3):100-105
- 12 Spencer S. Liu, M.D et al. Comparison of three solutions of ropivacaine/fentanyl for postoperative patient-controlled epidural analgesia. *Anesthesiology* 1999; 90: 727-33
- 13 Whiteside R et al. Epidural ropivacaine with fentanyl following major gynaecology surgery: the effect of volume and concentration on pain relief and motor impairment. *British Journal of Anaesthesia* 84(6): 720-4 (2000)

REVISION & APPROVAL HISTORY

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Approved Quality & Patient Safety Committee 19/7/12 (titled '*Epidural Analgesia – continuous infusion adult*')
Approved Quality & patient Safety Committee 18/8/11
Endorsed Therapeutic & Drug Utilisation Committee 14/6/11
Previously titled '*Neuraxial (Intrathecal and/or Epidural) Opioid Analgesia (Procedure)*'

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APPENDIX 1

STANDARD DOSING

Lumbar Epidural for Acute Pain – Continuous Infusion

Solution	INFUSION RATE	RESCUE BOLUS DOSE
Ropivacaine 200mg (0.2%) and Fentanyl 200 mcg (2mcg/mL) in 0.9% sodium chloride 100mL (Premix)	4 – 14 mL/hr	3 - 4 mL

Lumbar Epidural for Acute Pain – PIEB/PCEA

Solution	PIEB DOSE	PCEA BOLUS	PCEA BOLUS Lockout	Hourly Limit
ropivacaine 100mg (0.1%) and fentanyl 200 mcg (2mcg/mL) in 100mL sodium chloride (Premix)	10mL/hour	5mL	15min	36mL

Thoracic Epidural for Acute Pain – PIEB/PCEA

Solution	PIEB DOSE	PCEA BOLUS	PCEA BOLUS Lockout	Hourly Limit
bupivacaine 0.1% with fentanyl 2mg/mL and adrenaline (epinephrine) 2mg/mL in (FAB)	4mL/30 mins	3mL	15min	24mL

Lumbar Epidural for Cx. Brachytherapy – PIEB/PCEA

Solution	PIEB DOSE	PCEA BOLUS	PCEA BOLUS Lockout	Hourly Limit
ropivacaine 220mg (0.2%) and fentanyl 220 mcg (2mcg/mL) in 110mL sodium chloride (Premix)	12 mL/hour	5mL	15min	28mL

APPENDIX 2

OBSERVATIONS

OBSERVATIONS	FREQUENCY
Vital Signs and Pain Scores	Hourly for the first six (6) hours and while the patient is unstable then 2 nd hourly thereafter
After Manual Rescue Bolus (Blood Pressure and Pulse)	Every 10 minutes for 30 minutes and then one hour post bolus.
Motor Block (Use Bromage Scale)	Every two (2) hours and prior to mobilisation.
Sensory Block (Dermatome Level)	Every four (4) hours, prior to mobilisation and one (1) hour after a manual bolus dose.
Epidural catheter insertion site	Once per shift - preferably at shift change check for: Catheter position, signs of leakage, infection or bleeding.
Infusion pump settings	Commencement of each shift, on patient transfer and when bag is changed
Bladder function check	Once per shift patient should have indwelling urinary catheter if local anaesthetic infused via epidural.

APPENDIX 3

ADVERSE EVENTS AND THEIR MANAGEMENT

(Summary – Refer to Epidural Management Guidelines for comprehensive information)

ADVERSE EVENT	MANAGEMENT
Inadequate analgesia	<ul style="list-style-type: none"> • Check that pump is working • Check that tubing not kinked or leaking • Check epidural site for leaking • Encourage patient to use PCEA (if prescribed) • If analgesia is inadequate after 2nd bolus notify APS or Anaesthetist.
Sedation or Respiratory Depression	<ul style="list-style-type: none"> • If sedation score 2 or RR 6-10 per minute activate a <i>Clinical Review</i> • If sedation score 3 (responsive but unable to stay awake) activate a <i>Rapid Response</i> • If sedation score 3 (unresponsive) or RR ≤ 5 per minute activate a Code Blue • Stop infusion • Give supplemental oxygen at 15 litres/minute and support airway • Give Naloxone. Refer to Naloxone LOP. • Contact APS or Anaesthetist.
Motor/Sensory Block	<ul style="list-style-type: none"> • If Bromage Scale 1, 2, or 3 DO NOT ambulate patient and active a <i>Clinical Review</i> • If High Block >T7 activate a <i>Clinical Review</i> • If High Block > T4 activate a <i>Rapid Response</i> • Give supplemental oxygen • Sit the women up • Check height of the block every 30 minutes and follow management plan of the Rapid Response team.
Spinal Cord Compression	<ul style="list-style-type: none"> • Observe for signs such as back pain, increasing motor block, bladder and bowel incontinence, numbness or tingling in lower legs. • Call APS or Anaesthetist for urgent review.
Hypotension	<ul style="list-style-type: none"> • If SBP 90-100 activate a <i>Clinical Review</i> • If SBP ≤ 90 activate a <i>Rapid Response</i>

	<ul style="list-style-type: none"> • Stop infusion • Lie patient flat with legs elevated • Prepare to give fluid bolus +/- ephedrine (as ordered by Doctor)
Bradycardia	<ul style="list-style-type: none"> • If heart rate 40-50 activate a <i>Clinical Review</i> • If heart rate \leq 50 activate a <i>Rapid Response</i> • Stop infusion • Ensure Atropine available in the clinical area.
Nausea and vomiting	<ul style="list-style-type: none"> • Administer antiemetic's as prescribed • Call APS or Anaesthetist if not effective.
Pruritus	<ul style="list-style-type: none"> • Consider low dose Naloxone. Refer to Naloxone LOP • Use sedative antihistamine with caution • Call APS or Anaesthetist if not effective.
Urinary retention	<ul style="list-style-type: none"> • Contact patient's primary care team for review. • Consider catheterisation
Epidural Catheter Disconnection	<ul style="list-style-type: none"> • If epidural catheter disconnected at the filter, do not reconnect. • Stop infusion. • Cover catheter end with sterile gauze. • Call APS or Anaesthetist.
Dressing Detached or Lifting	<ul style="list-style-type: none"> • Reinforce only if catheter insertion site is NOT exposed • Call APS or Anaesthetist if insertion site exposed.

Epidural Pain Relief (Post-Operative)

What is an epidural?

An epidural is an injection of local anaesthetic or pain-relieving drugs (or both) into the lower back to block the nerves that come from the abdomen and the surrounding organs and muscles.

An Anaesthetist:

An anaesthetist will insert your epidural. An anaesthetist is a medical doctor who requires an additional 5-7 years of post-graduate training and exams to qualify as a “specialist anaesthetist”. The RHW has both specialist anaesthetists anaesthetist in training, known as a registrars. You may choose to have the anaesthetic specialist to attend you, this however will incur an additional cost.

Insertion of an epidural:

Before the operation, while you are in the anaesthetic bay, your anaesthetist will ask you to sit up or lie on your side. An intravenous “drip” will be inserted into your arm which is necessary for hydration. The anaesthetist will explain the procedure to you. A small amount of local anaesthetic is injected under the skin on your lower back, then the epidural catheter is placed into your lower back via a needle. The needle is then removed and the epidural catheter is left in the lower back and is taped to your back. It is important to keep still at all times during the insertion.

How we use an epidural:

The choice of anaesthetic will be decided by you and your anaesthetist based on your individual needs. The technique will be fully explained to you prior to the procedure.

You may be offered a general anaesthetic (GA) where you will be asleep for the whole procedure or you may be offered neuraxial anaesthesia (e.g. spinal or epidural) where you will be awake and relaxed but be completely numb and pain free in the lower abdomen, legs and feet, for the whole procedure. Sometimes an anaesthetist will insert an epidural prior to a GA. In this case the intention of the epidural is for post-operative pain relief.

After your anaesthetic you will need ongoing pain relief. There are many ways we can achieve this. For the purposes of this fact sheet we will focus on the use of epidural for ongoing pain relief.

If you have had a general anaesthetic (plus insertion of an epidural) or neuraxial anaesthesia you may be given the option of epidural pain relief. There are two different ways we can achieve this:

- 1. Continuous epidural infusion:** after the operation pain relieving drugs will be administered through the epidural catheter which may continue from a few hours to several days. Whilst you are receiving the epidural pain relief you will be closely monitored by registered nurse/midwife to ensure you are receiving adequate pain relief and are being observed for any complications.

- 2. Single injection of an opioid medication (e.g. morphine or fentanyl):** toward the end of the procedure your anaesthetist will inject a small amount of opioid into the epidural space. In Recovery the nurse will remove the epidural catheter. The opioid medication will start to work soon after and will provide pain relief for up to 24 hours. You will be closely monitored by the registered nurse to ensure you are receiving adequate pain relief and are being observed for any complications.

Potential complications:

Minor

- A decrease in blood pressure which can be treated with intravenous fluids
- Legs that feel heavy, weak and numb. This means you will have to remain in bed following insertion of the epidural and until you have gained full feeling in your legs
- You will require a bladder catheter as you will find it difficult to pass urine
- Shivering
- Itching
- Backache – for a day or two afterwards due to bruising from the needle. There is no association with long-term back pain from epidurals

Serious

- Headache – may be seen in about 1 in 100 women with an epidural following an accidental dural puncture (puncture of sac of fluid around the spinal cord). Approximately 48% of the women will have a headache from day 1 to 1 week if they have suffered a dural puncture.
- “Spinal block” resulting in a fall in blood pressure, a decreased level of consciousness and difficulty breathing may be seen. To avoid this the anaesthetist will give a test dose to ensure the epidural catheter is in the right position.
- Nerve damage – affects 1 in 3,000 women (with or without an epidural) with temporary nerve damage resulting in some leg weakness and /or a patch of numbness. Virtually all of these cases heal spontaneously within 4-5 weeks. Permanent nerve damage is rare.
- Abscess/Haematoma – is a collection of pus or blood in the epidural space that can cause nerve damage. This is very rare affecting about 1 in 100,000 women.
- Paraplegia – the incidence of paraplegia in modern practice is now so rare and would be less than 1 in a million.

TALK TO AN ANAESTHETIST AND ASK QUESTIONS

You may write down any questions you have at the end of this page.

I _____ have read this information and I understand what an epidural entails.

Please note: Signing this form does not make an epidural block compulsory nor will one be performed on you without your agreement.

SIGNATURE _____

Endorsed 20/07/2017. Reviewed by consumers in development stage February 2017. Should you wish to discuss any aspect of this information please send an email

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