

EPIDURAL ANALGESIA (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

- Effective management of labour pain using a pre-set dose plus a self-administered bolus of local anaesthetic and opiate solution into the epidural space.

2. PATIENT

- Woman requiring ongoing labour analgesia once analgesia already established with an epidural or combined spinal epidural.

3. STAFF

- Medical and Midwifery and Nursing Staff

4. EQUIPMENT

- Epidural pump configured to programmed intermittent epidural bolus (PIEB) and patient controlled epidural analgesia (PCEA) standard orders (Appendix 1)
- Compatible giving set and lock box

5. CLINICAL PRACTICE

- Ensure the prescription for the infusion has been completed by the anaesthetic medical officer (MO) using the NSW Health Obstetric Epidural Analgesia Chart
- Order the PIEB medication in mL per hour and PCEA medication in mL per bolus as outlined in Appendix 1.
- Label the infusion bag with a yellow epidural sticker including the woman's name, and place a yellow line label on the epidural line. This must be checked by a second midwife and/or MO
- Ensure the following are correct:
 - PIEB or PCEA program reflects the medical orders
 - PIEB or PCEA infusion solution reflects the medical orders including the signature, date and time commenced
 - The yellow epidural infusion set ONLY is connected to the epidural filter
 - The infusion record is completed by the anaesthetic MO and a midwife loading the bags for the initial infusion. Subsequent infusion may be completed by two midwives/RNs.
- Give the woman information leaflet "Epidural Pain Relief (Maternity)" (see appendix 2)
- Explain to the woman:
 - That she is the only person to press PCEA button
 - How long it will be used for
 - How to use it
 - The need for ongoing observations
- Ensure the woman is co-loaded (during epidural insertion/initial dose) with 500mL of intravenous (IV) Hartmann's solution
- Ensure that the woman maintains a patent intravenous (IV) cannula with which to manage any side effects of the PIEB or PCEA therapy. This should be achieved by providing IV continuous fluids with a balanced salt crystalloid solution such as Hartmann's or Plasmalyte for the duration of the epidural. The fluid rate should be individualized according to the woman's hydration needs using a target rate of 50-100mL per hour as a guide. This should be adjusted accordingly if the woman has increased fluid losses, such as with hemorrhage or if the woman's oral fluid intake is reduced.
- Commence continuous electronic fetal heart rate monitoring
- Perform observations as outlined in Appendix 3 and document on the NSW Health Obstetric Epidural Analgesia Chart
- Refer to Appendix 4 for problem solving
- Maintain a patent cannula for four hours after the removal of the epidural catheter

EPIDURAL ANALGESIA (Maternity) cont'd

6. DOCUMENTATION

- NSW Heath Obstetric Epidural Analgesia Chart
- Medical record
- Epidural sticker and line labels

7. EDUCATIONAL NOTES

- The objective of PIEB and PCEA is for the woman to receive programmed intermittent boluses with the option of PCEA if analgesic requirements are not met
- A computerised delivery device is pre-set to deliver programmed doses with an additional prescribed bolus whenever the woman presses the PCEA button, within a set lockout period
- A woman who has limited comprehension may not be suitable for this epidural option
- It is important that pre-set values not be adjusted without anaesthetic consultation and only staff familiar with the delivery device make any changes

8. RELATED POLICIES / PROCEDURES / CLINICAL PRACTICE LOP

- Intrapartum fetal heart rate monitoring
- Labelling of injectable medicines fluids and lines
- Accreditation of staff to give drugs in specific units
- Naloxone - Treatment of opioid induced over-sedation, respiratory depression, pruritus and nausea

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, Ratliff JT, Sullivan JT, Scavone BM, Toledo P, McCarthy RJ. Anesth Analg. 2006 Mar; 102(3):904-9

REVISION & APPROVAL HISTORY

Reviewed and endorsed Therapeutic & Drug Committee 25/8/21 and Maternity Services LOPs group 27/7/21 : Changed name from *Epidural Analgesia Programmed Intermittent Epidural Bolus (PIEB) and Patient Controlled Epidural Analgesia (PCEA) – Delivery Suite*

Addition of Appendix 2 July 2019

Reviewed and endorsed Maternity Services LOPs 8/3/19

Approved Quality & Patient Safety Committee 20/2/198

Minor amendment March 2016

Approved Quality & patient Safety Committee 21/5/15

Approved Quality & patient Safety Committee 20/9/12

Changed name from *Epidural Analgesia Patient Controlled – Delivery Suite*

Endorsed Maternity Services Division LOPs group 11/9/12

FOR REVIEW: SEPTEMBER 2023

APPENDIX 1

STANDARD ORDERS – DOSE PIEB/PCEA

SOLUTION	PIEB DOSE	PIEB LOCKOUT INTERVAL	PIEB DELAY TO FIRST DOSE	PCEA BOLUS	PCEA BOLUS LOCKOUT	PIEB + PCEA HOURLY LIMIT
ropivacaine 0.1% with fentanyl (2mcg per mL) in 250mL sodium chloride (Premix)	10mL/hr	60 minutes	30 minutes	5mL	10 minutes	25mL

APPENDIX 2

Epidural Pain Relief (Maternity)

Even if an epidural is not part of your birth plan, it is worthwhile learning some facts about this method of pain relief.

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 uterus and the surrounding muscles. These are the source of the pain felt during contractions in labour. Other methods of pain relief include spinal or combined spinal/epidural which are more often used for caesarean section.

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 and anaesthetists-in-training, known as registrars. You may choose to have the anaesthetic specialist attend to you, this however, will incur an additional cost.

Insertion of an epidural:

You will be asked 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 – a small tube is inserted into the 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 always keep still during the insertion. Once the epidural catheter is in place and local anaesthetic solution is injected, pain relief usually takes approximately 15 minutes, sometimes longer. The epidural catheter remains in place throughout the labour. The insertion success rate should be over 90%. In the event that the epidural is not working, and you continue to feel uncomfortable, the first epidural catheter may need to be removed and a second one will be inserted.

Potential complications:

Minor

- Your blood pressure might fall which can be treated with intravenous fluids
- Your legs may 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 the bruising from the needle. There is no association with long-term back pain and epidurals.

Serious

- Headache: This 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 80% of these women will have a headache within 1 day to 1 week if they have suffered a dural puncture.

- A “spinal block” which may result in a fall in your blood pressure, drowsiness, and difficulty breathing. To avoid this, the anaesthetist will give a test dose to ensure the epidural catheter is in the right position
- Nerve damage: This affects 1 in 3,000 women (with or without an epidural) with temporary nerve damage after childbirth resulting in some leg weakness and/or a patch of numbness. Virtually all cases heal spontaneously within 4-5 weeks. Permanent nerve damage is rare.
- Abscess/Haematoma: This is a collection of pus or blood in the epidural space that can cause nerve damage. This is very rare affecting about one in 100,000 women
- Paraplegia: The incidence of paraplegia in modern practice is now very rare and is less than 1 in a million

What is the effect of an epidural on the progress and outcome of labour?

Many studies have looked at this question. Epidurals do not increase the need for caesarean section. Epidurals may be associated with a lengthening of both the first and/or second (pushing) stage of labour (by minutes). Epidurals may be associated with an increase in the need for an assisted birth with either vacuum cup or forceps. Epidurals early in labour do not appear to prolong labour any more than one placed later.

Epidural effects on the baby:

A complication free epidural should have no effect on your baby. The midwives in attendance will monitor your blood pressure and your baby’s heart rate closely.

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 compulsory nor will one be performed on you in labour without your agreement.

SIGNATURE _____

OBSERVATIONS REQUIRED WITH PIEB/PCEA

TIME OF OBSERVATIONS	OBSERVATIONS
After initial bolus given by anaesthetic MO on insertion and after any clinician bolus	Record blood pressure (BP) and heart rate (HR) <ul style="list-style-type: none"> • 5 minutely for 20 minutes • then at 30 minutes • then every 30 minutes provided the woman is stable
Hourly	<ul style="list-style-type: none"> • Record number of PIEB doses • Record number of PCEA boluses • Record number of clinician boluses delivered • Record cumulative dose in mL
Hourly for two hours after insertion then two hourly unless there is: <ul style="list-style-type: none"> - a change in program - increasing pain - hypotension (a drop in systolic BP greater than 15mmHg) 	<ul style="list-style-type: none"> • Height of block (dermatome level) • Motor block (Bromage scale) • Respiratory rate (RR) • Sedation score • Oxygen (O²) saturation
Each shift clinician to check	<ul style="list-style-type: none"> • Epidural insertion site and dressing • Epidural filter • PIEB/PCEA infusion lines • PIEB/PCEA program against the orders (two clinicians to sign)
If any of the following occur: <ul style="list-style-type: none"> • Fetal bradycardia • Hypotension • Poor analgesia • Change in infusion or bolus 	<ul style="list-style-type: none"> • Follow CERS escalation and delivery suite protocols • Increase the frequency of observations for BP, HR, height of block, O² saturations as per initial bolus observations

PROBLEM SOLVING FOR PIEB/PCEA

Inadequate analgesia	<p>Education: Repeat education. Identify poor comprehension by excessive attempts versus successful delivery of PCEA doses</p> <p>Bolus dose: Any woman requiring three bolus doses per hour for more than two hours requires review by the anaesthetic team. An increase in the bolus dose must be done cautiously and the lockout period reviewed.</p> <p>If woman is distressed with breakthrough pain, please contact anaesthetic MO.</p>
High block > T4	<ul style="list-style-type: none"> • Activate a CERS Rapid Response • Give the woman supplemental oxygen • Remove the PCEA button from the woman • Pause PIEB/PCEA pump until medical review • Sit the woman up • Check the height of the block every 30 minutes • Follow the revised management plan from the anaesthetic team
High block > T7 with inadequate analgesia	<ul style="list-style-type: none"> • Remove the PCEA button from the woman • Call anaesthetic team for review within 30 minutes • Pause PIEB/PCEA pump until anaesthetic medical review
Increased Sedation	<p>Sedation Score 2 (Constantly drowsy, unable to stay awake)</p> <ul style="list-style-type: none"> • Cease administration of all opioids. • Give oxygen • Check respiratory rate frequently • Observations in YELLOW ZONE - Activate a CERS Clinical Review <p>Sedation Score 3 (Difficult to rouse)</p> <ul style="list-style-type: none"> • Cease administration of all opioids • Give oxygen • Check respiratory rate • Observations in RED ZONE - Activate a CERS Rapid Response • Administer naloxone as prescribed OR as per naloxone LOP <p>Sedation Score 3 (Unresponsive)</p> <ul style="list-style-type: none"> • Cease administration of all opioids • Give oxygen • Check respiratory rate • Observations in RED ZONE - Activate a CODE BLUE • Administer naloxone as prescribed OR as per naloxone LOP
Respiratory Depression	<p>If RR is between 6-10 respirations per minute (rpm)</p> <ul style="list-style-type: none"> • Cease administration of all opioids. • Give oxygen via mask and support airway if necessary • Assess sedation level and if possible encourage woman to breathe deeply • Observations in YELLOW ZONE - Activate a CERS Clinical Review <p>If RR ≤ 5 rpm</p> <ul style="list-style-type: none"> • Cease administration of all opioids including PCA • Give oxygen at 10L/min via Hudson mask and support airway if necessary • Observations in RED ZONE - Activate a CERS Rapid Response/CODE BLUE • Administer naloxone as prescribed OR as outlined in naloxone LOP
Hypotension (systolic BP <85mmHg)	<ul style="list-style-type: none"> • Activate CERS Rapid Response • Remove the PCEA button from the woman • Pause PIEB/PCEA pump until anaesthetic MO review
Poor comprehension	<p>In general, a woman with limited comprehension is less suited to PCEA analgesia.</p>