EPIDURAL ANALGESIA PROGRAMMED INTERMITTENT EPIDURAL BOLUS (PIEB) AND PATIENT CONTROLLED EPIDURAL ANALGESIA (PCEA) – DELIVERY SUITE

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 self administered and preset bolus of local anaesthetic and opiate solution

2. **PATIENT**
   - Woman in labour with an epidural

3. **STAFF**
   - Medical and Midwifery 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
   - Premix solution as per PIEB and PCEA standard orders (Appendix 1)

5. **CLINICAL PRACTICE**
   - Ensure the prescription for the infusion has been completed by the Prescribing Medical Officer on the PIEB and PCEA order form - SESLHD Epidural/Intrathecal (Spinal)/Regional Infusions/PCEA chart - as per Appendix 1
   - Order the PIEB medication in mls per hour and PCEA medication in mls per bolus and specify the route as epidural
   - Label the infusion bag with a yellow epidural sticker including the patient’s name, and place yellow sticker on the Epidural Line. This must be checked by second midwife and/or medical officer
   - Observe that the following are correct:
     - PIEB or PCEA program against the medical orders
     - PIEB or PCEA infusion solution against the medical orders including the signature, date and time hung
     - Only the yellow epidural infusion set is connected to the epidural filter
     - The infusion record must be completed by the two Midwives or Medical Officers loading the bags for each infusion
   - Explain to the patient:
     - Patient is the only person to press PCEA button
     - How long it will be used for
     - How to use it
     - Need for ongoing observations
   - Change all PIEB and PCEA fluids every 24 hours to comply with infection control standards
   - Ensure that the patient has a patent intravenous cannula with which to manage any side effects of the PIEB or PCEA therapy. This should remain in situ 4 hours after the removal of the epidural
   - Commence continuous electronic fetal heart rate monitoring
   - Perform observations as per Appendix 2 and document on the SESLHD Epidural/Intrathecal (Spinal)/Regional Infusions/PCEA chart
   - Refer to Appendix 3 for problem solving
Epidural Analgesia Programmed Intermittent Epidural Bolus (PIEB) and Patient Controlled Epidural Analgesia (PCEA) – Delivery Suite

6. DOCUMENTATION
   - Epidural/Intrathecal (Spinal)/Regional Infusions/PCEA form
   - Partogram
   - Integrated clinical notes
   - Epidural stickers
   - Fluid balance charts

7. EDUCATIONAL NOTES
   - The objective of PIEB and PCEA is that the patient receives programmed intermittent boluses with the option of PCEA if analgesic requirements are not met
   - A computerised delivery device is pre-set to deliver programmed boluses with an additional prescribed dose whenever the patient presses the PCEA button, within a set lockout period
   - Patients who have limited comprehension may not be suitable for this epidural option
   - It is important that pre-set values (on PCEA dosages only) not be adjusted without anaesthetic consultation and only staff familiar with the delivery device make said changes

8. RELATED POLICIES / PROCEDURES / CLINICAL PRACTICE LOP
   - Epidural analgesia – continuous infusion adult
   - Neuraxial (intrathecal and/or epidural) opioid analgesia (procedure)
   - Medication: administration – general principles for administration of medication
   - Intrapartum fetal heart rate monitoring
   - Labelling of injectable medicines fluids and lines
   - Accreditation of staff to give drugs in specific units
   - Sedation – respiratory depression
   - User applied labelling of injectable medicines fluids and lines. PD 2012_007
   - Naloxone - guidelines for use of naloxone hcl for the treatment of respiratory depression and over-sedation following opiate use

9. RISK RATING

10. REFERENCES
## APPENDIX 1

### Doses

<table>
<thead>
<tr>
<th>Patient Standard Programmed Intermittent Epidural Bolus and Patient Controlled Epidural Analgesia: Route Epidural</th>
<th>Programmed Intermittent Epidural Bolus</th>
<th>PCEA Dose</th>
<th>Hourly Limit</th>
<th>Lockout Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ropivacaine 0.1% with Fentanyl 2mcg/ml premix 250ml bag</td>
<td>10mL/hr</td>
<td>5mL</td>
<td>25mL</td>
<td>10 minutes</td>
</tr>
</tbody>
</table>

## APPENDIX 2

### Observations

<table>
<thead>
<tr>
<th>Time of Observations</th>
<th>Patient Observations</th>
</tr>
</thead>
</table>
| **After initial bolus** given by anaesthetist on insertion and after any clinician bolus: | Record BP and HR  
  • 5 minutely for 20 minutes  
  • then at 30 minutes  
  • then every 30 minutes provided the patient is stable |
| **Hourly** | • Record number of PIEB doses  
  • Record Number of PCEA boluses attempted  
  • Record Number of boluses delivered (injections)  
  • Record Cumulative dose in mls |
| **Hourly for 2 hours after insertion then 2 hourly** unless there is a change in program, increasing pain or hypotension (a drop in systolic BP greater than 15mmhg) | • Height of block (dermatome level)  
  • Motor block (bromage scale)  
  • Respiratory rate  
  • Sedation score  
  • Oxygen saturation |
| **Each shift clinician to check** | • Epidural insertion site and dressing  
  • Epidural filter  
  • PIEB/PCEA infusion lines  
  • PIEB/PCEA program against the orders (2 clinicians to sign) |
| **If any of the following occur:**  
  • Fetal Bradycardia  
  • Hypotension  
  • Poor analgesia  
  • Change in infusion or bolus | • Follow PACE, escalation and Delivery Suite protocols  
  • Increase the frequency of observations for BP, HR, Height of block, O2 saturation as per initial bolus observations |
## APPENDIX 3

### PROBLEM SOLVING

<table>
<thead>
<tr>
<th>Inadequate analgesia</th>
<th><strong>Education</strong>: Repeat patient education, identify poor comprehension by excessive attempts versus successful delivery of PCEA doses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Bolus dose</strong>: Any patient requiring 3 bolus doses per hour for more than 2 hours requires review by the anaesthetic team. An increase in the bolus dose must be done cautiously and the lockout period reviewed.</td>
</tr>
<tr>
<td>High block &gt; T4</td>
<td>• Call PACE Tier 2</td>
</tr>
<tr>
<td></td>
<td>• Give the woman supplemental oxygen</td>
</tr>
<tr>
<td></td>
<td>• Remove the PCEA button from the woman</td>
</tr>
<tr>
<td></td>
<td>• Sit the woman up</td>
</tr>
<tr>
<td></td>
<td>• Check the height of the block half hourly, then follow the revised management plan from the Team</td>
</tr>
<tr>
<td></td>
<td>• Cease background PCEA infusion until medical review (turn off pump)</td>
</tr>
</tbody>
</table>

High block > T7 with inadequate analgesia

<table>
<thead>
<tr>
<th>Sedation and respiratory depression</th>
<th>Sedation score of 2 or respiratory rate less than 10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Call PACE Tier 1</td>
</tr>
<tr>
<td></td>
<td>• Give the woman supplemental oxygen</td>
</tr>
<tr>
<td></td>
<td>• Remove the PCEA button from the woman</td>
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<tr>
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<table>
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<tr>
<th>Sedation and respiratory depression</th>
<th>Respiratory rate remains less than 8 despite stimulation</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>• Call PACE Tier 2</td>
</tr>
<tr>
<td></td>
<td>• Give the woman supplemental oxygen</td>
</tr>
<tr>
<td></td>
<td>• Remove the PCEA button from the woman</td>
</tr>
<tr>
<td></td>
<td>• Give Naloxone</td>
</tr>
<tr>
<td></td>
<td>• Stay with the patient</td>
</tr>
<tr>
<td></td>
<td>• Cease background PCEA infusion until medical review (turn off pump)</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Hypotension (Systolic Blood Pressure &lt;85mmHg)</th>
<th>• Call PACE Tier 2</th>
</tr>
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<tr>
<td></td>
<td>• Remove the PCEA button from the woman</td>
</tr>
<tr>
<td></td>
<td>• Cease background PCEA infusion until medical review (turn off pump)</td>
</tr>
</tbody>
</table>

| Poor comprehension | In general, patients with limited comprehension are less suited to PCEA analgesia. |