Patient Controlled Analgesia (PCA)

Description: Patient Controlled Analgesia (PCA) – pain relief technique where the patient can, when discomfort is felt, self administer a pre-set bolus dose of narcotic analgesic by pressing a button connected to a special ‘PCA’ pump. The ‘PCA’ pump can be set to deliver a specific dose, a specific lock-out period, and if required a ceiling on the number of doses over each hour. In addition, a constant rate infusion may be provided as background analgesia.

Special Precautions:
1. PCA solutions must be administered via:
   a) a dedicated line; or
   b) the side arm of an IV line with a non-return valve on the main IV line to prevent narcotic solution reflux up the main line if the catheter or main line become obstructed.
   c) Solutions to be made up in Terumo Syringe Luer lock 60mls

2. Regulation of Bolus Dose, Rate, and/or Lock Out Period:
   - Refer Hospital Clinical Manual (Intranet): Drugs – Schedule 8 – Intravenous Administration of S8 Drugs.
   - Changes in the preset dose and/or lock out period can ONLY be varied according to the prescription on the Analgesia Infusion Treatment Sheet.

Prescribing Information:
Currently approved standard solutions:

1. **Fentanyl** 1000 mcg in 50 mL = 20 mcg/mL
   Usual Preset Bolus Dose = 20 to 30 mcg

2. **Morphine** 100 mg in 50 mL = 2 mg/mL
   Usual Preset Bolus Dose = 1.0 mg but may range from 0.5 to 2.0 mg

3. **Hydromorphone** 5 mg in 50 mL = 0.1 mg/mL
   Usual Preset Bolus Dose = 0.2 mg
   **Acute Pain Service or Palliative Care** prescription only

4. **Oxycodone** 100 mg in 50 mL = 2 mg/mL
   Usual preset bolus dose = 1mg
   **Acute Pain Service** prescription only

Order should be written on the **Analgesia Infusion Treatment Sheet (SV 754)**.
Patient Controlled Analgesia (PCA)

Preparation of PCA Solution:

<table>
<thead>
<tr>
<th>Drug</th>
<th>Concentration</th>
<th>Amount in Syringe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fentanyl 1000 mcg/50 mL</td>
<td>(2 x 500mcg/10mL)</td>
<td>2 amp added</td>
</tr>
<tr>
<td>Morphine 100 mg/50 mL</td>
<td>(3 x 30mg/mL) + (1 x 10mg/mL)</td>
<td>1 amp added</td>
</tr>
<tr>
<td>Oxycodone 100 mg/50 mL</td>
<td>(2 x 50mg/mL)</td>
<td>2 amp added</td>
</tr>
<tr>
<td>Hydromorphone 5 mg/50 mL</td>
<td>(0.5 x 10mg/mL)</td>
<td>0.5 amp added</td>
</tr>
</tbody>
</table>

MIX CONTENTS THOROUGHLY by gently shaking the syringe end to end.

The narcotic syringe is prepared by either two Registered Nurses (Division 1), or a Medical Officer and Registered Nurse (Division 1), and an appropriate entry made in Drug of Addiction Register.

Administration:

An infusion pump specifically designed for PCA administration must be used (e.g. Alaris). Such pumps can be programmed, have lockable controls, a secure compartment for the PCA IV solution and a button for patient to trigger doses.

Nursing Observations/Actions:

1. Refer to the **Special Analgesia Observation Chart (SV 167)**.
2. Do NOT give additional opioids/narcotics unless ordered by the Acute Pain Service or unit registrar. Tramadol can be given ‘prn’ if ordered.
3. The PCA drug orders and settings of the PCA pump should be verified:
   - at each change of shift.
   - when syringe is replaced.

Ceasing a PCA:

The following criterion provides staff with the knowledge to confidently identify when a patient is ready to have their intravenous PCA ceased. These patients must reach certain criteria in order for nurses to initiate cessation of the PCA and change to oral analgesia.

**CEASED CRITERIA**

- **C** = Current or planned activity produces mild pain in relation to FAS (Functional Activity Score)
- **E** = Evidence of gut function/motility
- **A** = Analgesic use is low, < 40mg IV PCA morphine equivalent per 24hrs. For other opioids, consult medical staff/pharmacist for morphine dose equivalent.
- **S** = Step down analgesia is charted
- **E** = Exception for nurse cessation is presence of: Chronic pain, opioid tolerance, history of substance abuse, adjuvants such as ketamine or nurse unsure.
- **D** = Discuss changes with patient and report uncontrolled pain.
HOSPITAL DRUG ADMINISTRATION PROTOCOLS

St. Vincent’s Hospital Melbourne

Patient Controlled Analgesia (PCA)

Process for CEASING a PCA:
• Patients can be identified as appropriate for ceasing their PCA by nursing staff using the CEASED criteria during the patient assessment
• All criteria must be met before nursing staff can discuss ceasing the PCA with medical staff. The prescriber can then chart the appropriate step down analgesia.
• Discuss plan to change to step down analgesia with the patient. Inform them the PCA will be ceased and they will be prescribed oral analgesia for pain.
• Administer oral opioid approximately 1 hour prior to stopping PCA.
• Cease PCA and continue with oral regime as charted.
• Continue evaluation and documentation of pain scores on Adult Observation and Response Chart (SV 978)
• Enrolled nurses and graduate nurses need to seek endorsement by a senior nurse or nurse in charge if they believe a patient is suitable for CEASED.

Step down Analgesia: Patients that have had small PCA requirements* or short term use* may not need slow release (SR) medication (i.e.: Oxycontin®, Targin®) charted. Immediate release (IR) PRN medications (i.e.: Oxycodone) may be sufficient with regular Paracetamol.

*Examples of small PCA requirements are:
Morphine PCA < 25mg in 24 hour period
Fentanyl PCA < 300mcg in 24 hour period

*Example of short term use is <36 hours

Prescribing of slow release medications should have a ‘stop date’ or ‘review date’.

Registered Nurses Responsibility:
• Follow the CEASED criteria.
• Ensure that Medical staff have ordered step down analgesia on the patient’s Medication Chart.
• Ensure that Pain scores continue to be recorded and any deterioration reported to the Parent Unit or APS.
• Nursing staff should document in the progress notes when a patient meets CEASED criteria and when the PCA is ceased.
• Identify patients whose CEASED criteria have changed and notify APS.
Patient Controlled Analgesia (PCA)

Regional Infusions: If a regional infusion is in progress in addition to intravenous PCA, the catheter and the PCA will remain under the care of the APS.

Exceptions to CEASING PCA:
- The patient has chronic pain
- The patient is opioid tolerant
- There is a history of substance abuse
- The patient has a ketamine infusion in progress
- The nursing staff are unsure
- The patient refuses

After PCA is discontinued:
- IV access should remain in place for 3 hours.
- Patient can have subcutaneous narcotics after 1 hour if required.

Additives to PCA Opioid (Narcotic) Solutions:
Addition of other drugs are not permitted to an opioid (narcotic) PCA unless authorised by a Department of Anaesthesia protocol.

Co-Administration of Blood and Opioids (Narcotics):
Narcotics and blood can be co-administered, when necessary, if the following conditions are observed:

a) The blood must be administered through a line with a non-return valve to prevent reflux of the narcotic solution into the blood line.
b) The narcotic infusion is made up in sodium chloride 0.9% (Normal Saline) and infused through the side arm with a luer lock.

* Solutions other than sodium chloride 0.9% (Normal Saline) may cause haemolysis or aggregation of blood/blood products.

Authorship:

<table>
<thead>
<tr>
<th>Contributor(s):</th>
<th>Position, Department:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kim Choate</td>
<td>Acute Pain Nurse</td>
</tr>
<tr>
<td>Wendy Mcdonald</td>
<td>Acute Pain Nurse</td>
</tr>
<tr>
<td>Dr Andrew Stewart</td>
<td>Director of Acute Pain Service</td>
</tr>
<tr>
<td>Dr Simon Scharf</td>
<td>Consultant Anaesthetist</td>
</tr>
<tr>
<td>Daniel Lim</td>
<td>Senior Pharmacist</td>
</tr>
</tbody>
</table>