**Canberra Hospital and Health Services**

**Operational Procedure**

**Acute Pain Management Techniques – Adult and Paediatric**

|  |
| --- |
| Contents |

[Contents 1](#_Toc499551721)

[Purpose 2](#_Toc499551722)

[Alerts 2](#_Toc499551723)

[Scope 2](#_Toc499551724)

[Section 1 - Acute Pain Service Equipment 3](#_Toc499551725)

[Section 2 - Continuous Opioid Infusion (COI)-Adult & Paediatric 4](#_Toc499551726)

[Section 3 - Epidural / Patient Controlled Epidural Analgesia (PCEA)-Adult & Paediatric 7](#_Toc499551727)

[Section 4 - Intrathecal/Epidural Morphine (IEM) Single administration- Adult 11](#_Toc499551728)

[Section 5 - Intrapartum Remifentanil Patient Controlled Analgesia –Birthing Women 12](#_Toc499551729)

[Section 6 - Ketamine Infusion for pain management (Adult) - Acute & Chronic 14](#_Toc499551730)

[Section 7 - Patient Controlled Analgesia (PCA)-Adult & Paediatric 16](#_Toc499551731)

[Section 8 - Regional Local Anaesthetic Technique (RLAT) Management-Adult and Paediatric 19](#_Toc499551732)

[Related Policies, Procedures, Guidelines and Legislation 21](#_Toc499551733)

[References 22](#_Toc499551734)

[Definition of Terms 24](#_Toc499551735)

[Search Terms 25](#_Toc499551736)

|  |
| --- |
| Purpose |

The purpose of this procedure is to provide clinicians with information on the safe and effective management of patient’s at Canberra Hospital Health Service (CHHS) with:

* Continuous Opioid Infusion
* Epidural or Patient Controlled Epidural analgesia (PCEA)
* Intrathecal epidural morphine single administration
* Intrapartum Remifentanil Patient Controlled analgesia (PCA)
* Ketamine infusion
* Patient Controlled Analgesia (PCA)
* Regional Local Anaesthetic Technique (RLAT)

This procedure provides clinicians with best practice information for assessment and management of patients with acute pain issues and for educating and supporting patients and their carers.

[*Back to Table of Contents*](#Contents)

|  |
| --- |
| Alerts |

* Acute Pain Service (APS) techniques must be prescribed by an Anaesthetic Consultant/ Registrar.
* When a patient has an Epidural insitu and for 4-hours after removal of epidural catheter do not administer any anti-coagulant or antiplatelet except prophylactic heparin or enoxaparin without consultation with the APS. .
* Do not transfer any patient from CHHS with any APS pump insitu.

[*Back to Table of Contents*](#Contents)

|  |
| --- |
| Scope |

This document applies to the following CHHS staff working within their scope of practice:

* Medical Officers
* Registered Nurses (RN), Enrolled Nurses (EN) and Registered Midwives (RM)
* Students working under supervision

[*Back to Table of Contents*](#Contents)

|  |
| --- |
| Section 1 - Acute Pain Service Equipment |

|  |  |
| --- | --- |
| Pump | Technique |
| Alaris PCAM | PCA (adult /paediatric)  Continuous opioid infusion (adult)  Ketmaine acute and chronic pain management (adult) |
| BBraun Perfusor White face | Continuous opioid infusion (paediatric)  Continuous opioid infusion (adult) – only if PCAM unavailable  Adult Ketmaine acute and chronic pain management (adult) only if PCAM unavailable |
| Hospira Sapphire _img02_v2 | Epidural /PCEA  Regional Local Anaesthetic Infusion |

* APS Pump keys are located on S8 drug keys
* If APS pump keys are misplaced, complete a Riskman report and request a new key from APS
* Pumps codes are provided in the APS workshop. Contact APS or after hours Clinical Nurse Consultant (CNC) for pump codes if required
* To obtain pumps contact central equipment pool ext 47171 or page through switch dial 9. Post Anaesthetic Care Unit (PACU) also store additional APS pumps
* Central equipment pool routinely collect pumps from the ward areas that are no longer required. If pump not collected please contact central equipment.
* Forward all faulty pumps and pumps due regular maintenance to biomedical engineering services with a completed service request form
* Further information regarding the Sapphire and BBraun pumps is available on the CHHS intranet. Search pain management unit -> home page -> acute pain service

[*Back to Table of Contents*](#Contents)

|  |
| --- |
| Section 2 - Continuous Opioid Infusion (COI)-Adult & Paediatric |

**Competency**

PCA and Continuous Opioid infusion competency is an annual 3 step process

1. Education via attendance at a PCA and COI workshop
2. Successful completion of theory test *either* on Capabiliti or a paper copy ( handed out in workshop or available from CDN, instruction on return of test to PMU written on front of test)
3. Successful completion of practical assessment by ward/area Clinical Development Nurse (CDN)/Clinical Development Midwife(CDM) or via Pain Management Unit (PMU)

Then annually, within one month of the anniversary of the initial workshop attendance, either complete:

1. Complete 3 step process as above **OR**
2. Contact your ward CDN/CDM to sign a Competency Declaration. A competency declaration can only be completed 2nd yearly

**Clinician override bolus competency**

RNs/RMs must attend specific training in the administration of clinician bolus functions via the PMU. In general, those competent in bolus doses are:

* Acute Pain Service
* Anaesthetic Consultant / Registrar
* After hours CNC
* Intensive care unit (ICU) RN (cardiac bay only)
* Post Anaesthetic Care Unit (PACU)
* CDN/CDM

**Competency exemptions**

RN/EN/RMs working **solely** in the following areas are exempt from mandatory PCA and COI competency:

* After hours hospital manager
* Antenatal clinic
* Bed management
* Canberra sexual health clinic
* Cardiac catheter laboratory
* Cardiac rehabilitation
* Central outpatient department
* Centre for nursing research
* Chronic care program
* Community care dialysis centre
* Discharge liaison nurse
* Discharge lounge
* Drug & alcohol unit
* Forensic and medical sexual assault clinic
* Fracture clinic
* Hospital in the home
* Inflammatory bowel disease services
* Mental Health
* Mid call
* Non-clinical nurses (i.e. not directly involved with patient care)
* Oncology outpatients
* Registrar review clinic
* Rehabilitation independent living unit
* Renal outpatient department
* Respiratory outpatient department
* Walk-in clinic

**PCA and COI Competency declaration**

Is where a RN/RM/EN declares:

* That I regularly care for patients who have a PCA to control their pain;
* That I am competent in the management of the:
* Patient with a PCA;
* PCAM and APS Braun pump (white face); and
* Opioid related side effects.
* The competency declaration should only be completed by RN/RM/ENs who regularly care for patients with a PCA or COI.
* The declaration can only be completed 2nd yearly. In the alternate years staff must complete the previously noted 3 step process.

**Prescribing & Commencement of COI**

* Adult COI can only be prescribed by an Anaesthetic Consultant/Registrar, Intensive Care Unit Consultant/ Registrar or Emergency Department Consultant/Registrar on the Adult PCA & COI infusion chart.
* Paediatric COI can only be prescribed by an Anaesthetic Consultant /Registrar. If child is under 3-months of age a Paediatric Anaesthetist Consultant must be contacted.
* The prescribing medical officer is responsible for completing the COI chart.
* Chart & inserts relating to continuous opioid infusion (adult and paediatric) are available on the [Clinical Forms Register.](#_Hlk486496716)

| **Chart/Insert Name** | **Chart Number** |
| --- | --- |
| Continuous Opioid Infusion Chart [Adult] | 60455 |
| Continuous Opioid Infusion Chart [Adult] insert |
| Continuous Opioid Infusion Chart [Paediatric] | 60455 |
| Continuous Opioid Infusion Chart [Paediatric] insert |

* COI must be delivered in a luer lock Plastipak syringe via a PCAM pump (adult) or Braun PCA pump (paediatric) via a dedicated line with a non-return valve. Patients with a COI must be administered intravenous fluids concurrently via sideline.
* The syringe and dedicated line must be labelled according to the National Standards for User-applied Labelling of Injectable Medicines, Fluids and Lines.
* Initial program and set-up of the COI must be completed by two RN/RMs, they must be competent in the management of PCA + COI.
* Subsequent syringe changes can be two EN/RN/RM who are PCA+ COI competent, one of whom must be a RN/RMs.
* Attend baseline observations before the commencement of a COI.
* The patient may not leave the ward area without a RN/RM/EN escort and this MUST be for treatment only.

**Monitoring the patient & delivery system**

* The risk of developing sedation or respiratory depression is greater with COI than for any other delivery system. For this reason, close monitoring of a patient with a COI is required.
* Attend both patient and delivery system observations as per treatment order on the COI chart adult or COI chart paediatric.
* Parameter checks should include following the giving set line from the syringe to the pump and then the pump to the patient to ensure correct configuration of lines.
* Ensure intravenous cannula (IVC) is maintained according to Peripheral Intravenous Cannula Adults and Children Procedure.
* The sleeping patient must be woken enough to satisfy that the patient is asleep and not sedated. To minimise disturbance pain score, nausea/vomiting and itch may be omitted.
* The APS will review the patient daily. Contact APS or after hours Anaesthetic Registrar if the patient is uncomfortable at rest or if the patient states they are not satisfied with the level of analgesia and/or the patient is unable to participate in the treatment plan due to pain.

**Administration of a Clinical Override bolus dose (loading dose)-Adult**

* A clinical override bolus dose is prescribed by an Anaesthetic Consultant / Registrar usually in PACU to achieve the analgesia corridor for patient before transfer to a ward post procedure.
* An Anaesthetic Consultant / Registrar must prescribe a clinical override bolus dose.
* Clinical override bolus doses must be administered by 2 RN/RMs one of who is competent in Clinical override bolus delivery or an RN/RM who is competent in clinical overrider bolus delivery and a medical officer (MO prescribes dose i.e. Anaesthetic Registrar or SRMO under instruction from Anaesthetist or Anaesthetic Registrar.

**Administration of a Clinical Override bolus dose (loading dose)-Paediatric**

* A clinical override bolus dose is prescribed by an Anaesthetic Consultant /Registrar usually in PACU to achieve the analgesia corridor for patient before transfer to ward post procedure.
* The **white face APS Braun** pump does not allow a clinical override bolus dose to be administered- paediatric patients cannot receive loading dose.

**Alterations in rate of COI**

* The rate of the COI can be titrated within the parameter range indicated on the COI chart in accordance with patient’s pain and side effects.
* APS opioid infusions at CHHS run between 0 to 4mL/hr.
* Changes must be carried out by 2 RN/RMs who are competent in COI and must be documented on the COI chart.
* Be aware that increasing the rate without initially giving a clinician bolus can result in a long delay in achieving an effective blood concentration and therefore improved analgesia.
* An EN may not alter the parameters of any opioid infusion device, nor check any alteration including rate changes or clinical bolus doses.

**Cessation of COI**

* COI is ceased at the direction of the APS in consultation with the patient, ward staff and patient’s home team if appropriate or a patient request.
* Ensure the patient has adequate alternative analgesia prescribed and offer same regularly following cessation.
* Complete a final set of COI observations at time of cessation.
* Discard all medications in accordance with Medication Handling Policy located on the Policy Register.

[*Back to Table of Contents*](#Contents)

|  |
| --- |
| Section 3 - Epidural / Patient Controlled Epidural Analgesia (PCEA)-Adult & Paediatric |

**Competency**

Epidural competency is an annual 3 step process

1. Education attendance at an Epidural workshop
2. Completion of Epidural/PCEA theory test
3. Written paper available at PMU workshops (submitted at the workshop or sent to PMU
4. Completion of Epidural/ RLAT practical assessment with:
5. CDN or
6. PMU RN or
7. RN/RM who has worked for APS in last 2 years and has completed the PCA train the trainer workshop

## Patient Selection

* Anaesthetic Consultant/Registrar will assess the suitability of patients for an Epidural either pre-operatively for surgical patients or at the time of request for birthing women or trauma patients.
* Contra-indications
* Coagulation profile complications
* Sepsis
* Hypovolemia
* Patient refusal
* Immunodeficiency (all causes)
* History of multiple abscesses
* Patients receiving anticoagulation therapy (relative\*)
* Spinal cord/CNS disease or injury (relative\*)

\* This is a risk verse benefit assessment carried out by the Anaesthetist. Therefore consideration of case may result in the benefits being greater than the risks

**Before commencement of Epidural**

* Obtain baseline general observations and pain scores. Be aware that the patient will require close monitoring following the initial dose of Epidural medications.
* Administration of an Epidural/PCEA is via a Sapphire pump with a dedicated line. Ensure the correct administration set is used and connected to the filter. The giving set is specific to the Sapphire pump with a yellow line indicating Epidural infusion with no side ports.
* Ensure fluid for hypotension (prescribed on the reverse of the Epidural form) is available.

**Prescribing & Commencement of Epidural/ PCEA therapy**

* The Anaesthetic Consultant/Registrar will administer the initial dose of Epidural medication and then prescribe a dose on the Epidural Analgesia Chart adult and paediatric.
* Birthing has an area specific PCEA chart for women in labour.
* Attend general observations and escalation of care where applicable in accordance with vital signs and early warning scoring procedure located on the policy register.
* Two RN/RMs commence the Epidural and are required to load, program, adjust the rate and give loading doses as required.
* The patient may not leave the ward area without an RN/RM/EN escort and this **MUST** be for treatment only. Patients with Epidural/PCEA insitu may not be transferred from CHHS. In rare circumstance transfer is essential the proposed transfer must be discussed with an Anaesthetic Consultant regarding management of Epidural/PCEA and pain management i.e. Epidural/PCEA removed before transfer.
* Chart & inserts relating to Epidural / PCEA are available on the [Clinical Forms Register.](#_Hlk486496716)

|  |  |
| --- | --- |
| **Chart/Insert Name** | **Chart Number** |
| Epidural Analgesia Chart adult and paediatric | 06460 |
| Epidural Analgesia Chart adult and paediatric insert | 06460 |
| Delivery Suite Epidural Chart | 04670 |

* Patients with Epidural infusions must have concurrent intravenous fluids administered as per prescription.
* Ensure the epidural catheter and infusion are labelled according to the National Standards for User-applied Labelling of Injectable Medicines, Fluids and Lines.

**Monitoring the patient & delivery system**

* Adhere to the Epidural/PCEA observation regime documented on the Epidural Infusion chart.
* The APS will review patients with Epidural’s daily. If a patient has not been reviewed please contact the APS within business hours or duty Anaesthetic Registrar after hours via switch.
* The sleeping patient must be woken enough to satisfy that the patient is asleep and not sedated. To minimise disturbance, pain score and vomiting may be omitted. All other observations must be completed as per treatment orders on Epidural Analgesia Chart adult and paediatric.
* Ensure the patient (and parents of paediatric patients) are aware that assistance will be required the first time the patient ambulates with an Epidural/PCEA insitu. Assist the patient into a sitting position and attend general observations. If there is no postural decrease in blood pressure continue to standing position.
* If the patient is uncomfortable or is experiencing altered sensation of limbs, complete a sensory block assessment to identify Epidural blockade.
* Inspect the Epidural catheter insertion site 4th hourly to ensure:
* Dressing is intact
* Catheter is not kinked
* Tubing is secure
* Bacterial filter is secured to the patient
* Notify the APS or Anaesthetic Registrar out of hours via switch if:
* Dislodgement occurs or if the filter becomes disconnected
* The site is uncovered or unsatisfactory
* The sapphire pump states ‘air in the line’ – **DO NOT DISCONNECT THE LINE**

**Administration of Epidural loading/bolus doses (excludes birthing)**

* Loading doses are prescribed by the Anaesthetic Consultant/ Registrar on the Epidural chart.
* A maximum of two loading doses can be administered by two competent RN/RMs in any one hour provided vital signs remain stable.
* Assess and record general observations before administering the loading dose then every five minutes for twenty minutes after loading dose delivery. General observations should be recorded one hour post administration of the loading dose.
* Document the time and amount of loading dose in the comments section of the Epidural chart AND on the medication chart under ‘once only’ drugs.
* Contact APS if pain persists beyond 30 minutes following a loading dose.

**Administration of PCEA loading/bolus doses (birthing only)**

* Loading doses are prescribed and administered by the Anaesthetic Consultant / Registrar on the Epidural chart.
* Assess and record general observations before administering the loading dose then every five minutes for thirty minutes after delivery. General observation should be recorded one hour post administration of the loading dose.
* Contact Anaesthetic Consultant/Registrar if pain persists beyond 30 minutes following a loading dose

**Titration of Epidural infusion**

* The rate of an Epidural infusion may be titrated within the parameters set by the Anaesthetic Consultant/Registrar on the front of the Epidural chart provided a full pain assessment has been attended.
* Document the change of infusion rate in the comments section of the chart.
* Increasing the rate of an Epidural without initially giving a loading dose can result in a long delay in achieving effective analgesia.
* Contact the APS if the change in rate of infusion does not improve patient comfort.

**Patient Controlled Epidural Analgesia**

* Suitability for PCEA includes:
* Pain from surgical site that is an area greater than four dermatome distribution
* Childbirth
* Advise patients to use the PCEA pre-emptively when a painful stimulus is anticipated and as need to remain comfortable.

**Cessation of Epidural/PCEA**

* Epidural infusions are ceased at the direction of the APS in consultation with the patient, ward staff and patient’s home team if appropriate.
* Aseptic technique should be used for Epidural catheter removal.
* Never use an alcohol based cleaning solution on the epidural site.
* After removal inspect the epidural catheter tip. A witness is required to sight the tip of the catheter which is blue. If the catheter blue tip is not visible, notify the APS or Anaesthetic Registrar out of hours.
* Signature and time of removal is to be documented on the epidural chart and in patient progress notes.
* Complete a final set of observations at time of cessation of the epidural.
* Discard all medications in accordance with Medication Handling Policy located on the Policy Register.
* Ensure patient has adequate alternative analgesia prescribed and offer same regularly following cessation of the epidural.
* Ensure the patient receives a ‘Discharge advice following Epidural or spinal analgesia’ card and sign on the Epidural Analgesia Chart that card has been given.
* Record motor block second hourly for 24 hours after Epidural removal.
* Patent IVC must be maintained for 12 hours post cessation of the epidural.
* Contact APS if patient reports any of the following:
* Signs of urinary retention
* Signs of infection including:
* Presence of pain at insertion site
* Increasing generalised back pain that was not present prior to Epidural insertion
* Decreasing sensation in legs

[*Back to Table of Contents*](#Contents)

|  |
| --- |
| Section 4 - Intrathecal/Epidural Morphine (IEM) Single administration- Adult |

**Competency**

Competency is achieved and maintained by annual passing of e-learning Intrathecal/epidural morphine single dose administration.

**General information**

Morphine may be used in an intrathecal or epidural form to provide high quality, prolonged analgesia following caesarean section and/or to carefully selected patients post surgery.

**Patient selection**

Contra-indications

* Patient refusal
* Spinal anaesthesia contraindication
* Morphine allergy/sensitivity
* Morbid obesity (BMI >35)
* Sleep apnoea
* Opioid dependent patients
* Herpes simplex infection within the preceding 12 weeks (Caesarean section only)

**Prescribing, administration & concurrent therapy**

* An Anaesthetic Consultant/Registrar will administer the intrathecal/epidural morphine intra-operatively
* Post procedure observations remain the responsibility of the RN/RM/EN
* A low dose **PCA** may be prescribed concurrently with IEM. In this event, PCA observations must be attended hourly for duration of IEM. Consideration must be given to opioid toxicity risk factors such as age, co-morbidities, respiratory compromise etc.
* If a concurrent PCA is required consider reduced PCA bolus dose i.e. half to quarter normal dose. PCA parameters will need to be reviewed within 24 hours of the IEM administration.
* **Oral** sustained or immediately released opioid may be prescribed concurrently with IEM. The front of the IEM chart states when concurrent oral opioid may be administered.
* Ensure the patient does not receive other systemic opioid or sedative medications unless prescribed by the Acute Pain Service or Anaesthetic Consultant/Registrar.

**Monitoring the patient**

* Ensure a patient who has had intrathecal/epidural morphine does not leave the ward area without being escorted by a competent RN/RM/EN in the first 18 hours post operatively for general surgery and 12 hours post caesarean section delivery.
* The Intrathecal/Epidural Morphine Chart is available on the [Clinical Forms Register.](#_Hlk486496716)

|  |  |
| --- | --- |
| **Chart/Insert Name** | **Chart Number** |
| Intrathecal / epidural Morphine Analgesia [Adult] single administration | 60471 |

* Ensure that the IEM sticker has been placed in the patient’s progress notes and on the medication chart.
* IVC access must be maintained for 24 hours after the administration time.
* Monitor and document insertion site 8th hourly for 24 hours for any signs of infection, inflammation or tenderness.
* The APS will review patients with intrathecal/epidural morphine daily. If a patient has not been reviewed please contact the APS within business hours or duty Anaesthetic Registrar after hours via switch.
* The sleeping patient must be woken enough to satisfy that the patient is asleep and not sedated. To minimise disturbance, pain score and vomiting may be omitted.
* Ensure every patient who has received intrathecal/epidural morphine is given a ‘Discharge advice following epidural or spinal analgesia’ card prior to discharge.
* 24-hours after morphine dose ensure patient has adequate alternative analgesia prescribed and offer same regularly. Document effectiveness of analgesia.

[*Back to Table of Contents*](#Contents)

|  |
| --- |
| Section 5 - Intrapartum Remifentanil Patient Controlled Analgesia –Birthing Women |

**Competency**

Prerequisite Patient Controlled Analgesia and Continuous Opioid Infusion competency.

Before caring for a woman on Intrapartum Remifentanil PCA, the RM must have completed the e-learning: Intrapartum Remifentanil PCA (annually).

**General information**

Remifentanil PCA is not as effective as, and is not intended as a replacement for epidural analgesia but as an alternative for women for whom epidural analgesia is not possible. Women experiencing a foetal death in utero or mid-trimester termination of pregnancy may benefit from a Remifentanil PCA.

**Note:**

Notify the attending Neonatal Registrar of the use of a Remifentanil PCA. A Neonatal Consultant/Registrar must be in attendance for a viable birth.

**Prescribing & Commencement of Remifentanil PCA**

* A Remifentanil PCA will be prescribed by an Anaesthetic Consultant /Registrar on the Remifentanil PCA form and is to be commenced in Birthing Suite.
* Chart & inserts relating to Intrapartum Remifentanil PCA are available on the [Clinical Forms Register.](#_Hlk486496716)
* Remifentanil PCA must be delivered in a Luer lock Plastipack syringe via a PCAM pump with a dedicated line and non-return valve. Patients with a Remifentanil PCA must be administered intravenous fluids concurrently via sideline.
* The syringe and dedicated line must be labelled according to the National Standards for User-applied Labelling of Injectable Medicines, Fluids and Lines.
* 2 competent RMs can commence the infusion. Any alteration of parameters must also be completed by two competent RN/RMs
* Clinician over ride doses are only administered by an RN/RM competent in this technique.
* Ensure the woman receiving Remifentanil PCA does NOT receive other opioids or sedative drugs except as prescribed by the APS or Anaesthetic Consultant/Registrar.
* Attend baseline observations prior to commencement of Remifentanil PCA.

**Administration of a Clinical Override bolus dose (loading dose)**

* An Anaesthetic Consultant / Registrar will prescribe a clinical override bolus dose.
* A clinical override bolus dose must be administered by 2 RN/RMs one of who is competent in clinical override bolus delivery and a Medical Officer.

**Monitoring the patient & delivery system**

* Attend both patient and delivery system observations as per treatment orders Intrapartum Remifentanil PCA chart.
* Chart & inserts relating to Intrapartum Remifentanil PCA are available on the [Clinical Forms Register.](#_Hlk486496716)

|  |  |
| --- | --- |
| **Chart/Insert Name** | **Chart Number** |
| Intrapartum Remifentanil Patient Controlled Analgesia (PCA) Chart (Adult) | 60465 |
| Intrapartum Remifentanil Patient Controlled Analgesia (PCA) Observation Insert (Adult) |

* The patient may not leave the ward area without an EN/RN/RM escort and this must be for treatment purposes ONLY.
* Ensure IVC is maintained according to Peripheral Intravenous Cannula Adults and Children Procedure.
* Commencement and cessation of Remifentanil (class s8) must be performed in accordance with Medication Handling Policy.
* Continuous cardiotocography (CTG) is to be performed for viable pregnancies.
* Observations revert to 5 minutely for 20 minutes after any changes in parameters.
* Attend observations between contractions wherever possible as this is when opioid side effects will be most apparent.
* Parameter checks are required at syringe change, shift change, transfer of care and parameter alterations.
* The sleeping patient must be woken to establish sedation score, oxygen saturation and respiratory rate. Pain score, vomiting & pruritus may be omitted to minimise disturbance.

**Cessation of Remifentanil PCA**

* Remifentanil PCA is ceased at the direction of the APS in consultation with the patient, ward staff and patient’s home team if appropriate.
* Complete a final set of observations at time of cessation.
* Discard all medications in accordance with Medication Handling Policy located on the Policy Register.
* Ensure patient has adequate alternative analgesia prescribed and offer same regularly following cessation. Document effectiveness of analgesia.

[*Back to Table of Contents*](#Contents)

|  |
| --- |
| Section 6 - Ketamine Infusion for pain management (Adult) - Acute & Chronic |

**Competency**

* Pre-requisite PCA and COI competency completed annually
* Annual completion of Ketamine Infusion for pain management e-learning course

**General information**

Ketamine:

* Produces dissociative anaesthesia by antagonising NMDA receptors
* Is a short acting general anaesthetic agent used as an adjuvant in acute & chronic pain management
* Can be considered for conditions including allodynia, hyperalgesia, central sensitisation and opioid tolerance
* Provides acute and chronic pain management of opioid tolerance and amelioration of opioid withdrawal symptoms

## Prescribing & Commencement of Ketamine infusion

* An **Acute** Pain ketamine continuous infusion is prescribed by an Anaesthetic Consultant /Registrar on the Ketamine Infusion Chart Adult (Acute Pain Management only).
* A **Chronic** Pain ketamine continuous infusion is prescribed by a Chronic Pain Consultant / Registrar on the Ketamine Infusion Chart Adult (Chronic Pain Management only).
* Two competent RN/RMs commence the infusion. Any alteration of parameters must also be completed by two competent RN/RMs.
* Administration of a ketamine infusion is via an Alaris PCAM syringe pump using the ketamine protocol.
* The syringe must be labelled according to the National Standards for User-applied Labelling of Injectable Medicines, Fluids and Lines.
* Ketamine needs to be protected from light. Protect the syringe with a black plastic bag available from pharmacy.
* Chart & inserts relating to ketamine infusions are available on the [Clinical Forms Register.](#_Hlk486496716)

|  |  |
| --- | --- |
| **Chart/Insert Name** | **Chart Number** |
| Ketamine Infusion Chart Adult (Acute Pain Management only) | 60456 |
| Ketamine Infusion Chart Adult (Acute Pain Management only) insert |
| Ketamine Infusion Chart Adult (Chronic Pain Management only) | 60457 |
| Ketamine Infusion Chart Adult (Chronic Pain Management only) insert |

* Patients receiving Ketamine will usually (but not always) have additional analgesia via PCA or oral routes.
* The patient may not leave the ward area without an RN/RM/EN escort and this MUST be for treatment only.

**Monitoring the patient & delivery system**

* Document baseline general observations before commencement of infusion.
* Adhere to the Ketamine specific observation regime documented on the Ketamine Infusion Chart Adult.
* The APS will review patients with Ketamine infusions daily. If a patient has not been reviewed please contact the APS within business hours or duty Anaesthetic Registrar afterhours via switch.
* Ensure IVC is maintained according to Peripheral Intravenous Cannula Adults and Children Procedure.
* Observations of both patient and infusion should be attended according to the Ketamine Infusion chart.
* The sleeping patient must be woken enough to satisfy that the patient is asleep and not sedated. To minimise disturbance, pain score and vomiting may be omitted. All other observation must be completed as per treatment orders on Ketamine Infusion Chart adult.
* Patients at greatest risk of developing psychomimetic effect are those with psychotic traits, evidence of personality disorders and those who dream vividly and frequently.
* Naloxone will only reverse opioid administered concurrently with the ketamine infusion and not the ketamine itself.

**Cessation of infusion**

* **Acute** Pain Ketamine infusions are ceased at the direction of the APS in consultation with the patient, ward staff and patient’s home team.
* **Chronic** Pain Ketamine infusions are ceased at the direction of the Chronic Pain Service or APS in consultation with the patient, ward staff and patient’s home team if appropriate.
* Complete and document final set of observations at the time of cessation.
* Ketamine half-life is 2-3 hours. The effect of the NMDA may persist for 4-6 hours after cessation of the infusion.
* Discard all medications in accordance with Medication Handling Policy located on the Policy Register.

[*Back to Table of Contents*](#Contents)

|  |
| --- |
| Section 7 - Patient Controlled Analgesia (PCA)-Adult & Paediatric |

**Competency**

Annual competency for care of a patient with a PCA is a three step process

1. Attend PCA education workshop
2. Complete the PCA & COI theory test
3. Written paper available from PMU/workshops and submitted at workshop or via internal mail
4. Online via Capabiliti
5. Complete the PCA & COI practical test with a:
6. CDN
7. PMU RN
8. RN who has worked for APS in last 2 years and has completed the PCA train the trainer workshop

This process is to be attended yearly however EN/RN/RMs who frequently care for patients with a PCA are able to complete and sign a competency declaration second yearly. The alternate years the RN/RM/EN must complete a PCA & COI workshop (either initial or refresher), theory and practical tests.

RN/RM/EN who work **solely** in the following areas are exempt from PCA Competency

* After hours hospital manager
* Antenatal clinic
* Bed management
* Canberra sexual health clinic
* Cardiac catheter laboratory
* Cardiac rehabilitation
* Central outpatient department
* Centre for nursing research
* Chronic care program
* Community care dialysis centre
* Discharge liaison nurse
* Discharge Lounge
* Drug and alcohol unit
* Forensic and medical sexual assault clinic
* Fracture clinic
* Hospital in the home
* Inflammatory bowel disease services
* Mental health
* Mid call
* Non-clinical nurses (not directly involved with patient care)
* Oncology outpatients
* Registrar review clinic
* Rehabilitation independent living unit
* Renal outpatient department
* Respiratory outpatient department
* Walk in centre

**Clinician over-ride competency**

RN/RMs must attend specific training in the administration of the clinician over ride function through the APS to be able to administer clinician over ride doses. In general, those competent in clinician over ride administration are:

* APS
* After hours CNC
* ICU
* PACU
* CDN/CDMs

**Prescribing & Commencement**

* **Adult** PCA will be prescribed by an Anaesthetic Consultant/Registrar, ICU Consultant/ Registrar or Emergency Department Consultant/Registrar.
* **Paediatric** PCA will be prescribed by an Anaesthetic Consultant/Registrar.
* Be aware there are variances between Paediatric PCA (Clinical form number 60435) and Adult PCA (Clinical form number 60450).
* Charts and insert related to PCA’s are available on the [Clinical Forms Register.](#_Hlk486496716)

| **Chart/Insert Name** | **Chart Number** |
| --- | --- |
| Patient controlled Analgesia (PCA) Chart (Adult) | 60450 |
| Patient controlled Analgesia (PCA) Chart (Adult) insert |
| Patient controlled Analgesia (PCA) Chart (Paediatric) | 60435 |
| Patient controlled Analgesia (PCA) Chart (Paediatric) insert |

* PCA must be delivered in a Luer lock Plastipak syringe via a PCAM pump with a dedicated line and non-return valve. Patients with a PCA must be administered intravenous fluids concurrently via sideline.
* The syringe must be labelled according to the National Standards for User-applied Labelling of Injectable Medicines, Fluids and Lines.
* 2 competent RN/RMs can commence the infusion. Any alteration of parameters must also be completed by two registered & competent RN/RMs.
* Clinician over ride doses are only administered by an RN/RM competent in this technique.
* Ensure the patient with a PCA does NOT receive other opioids or sedative drugs except as prescribed by the APS or Anaesthetic Consultant/Registrar.
* Attend baseline observations prior to commencement of PCA.
* The patient may not leave the ward area without an RN/RM/EN escort and this must be for treatment purposes ONLY.

**Administration of a Clinical Override bolus dose (loading dose) (Adult or Paediatric)**

* A clinical override bolus dose is prescribed by an Anaesthetic Consultant/Registrar, usually in PACU to achieve the analgesia corridor for patient before transfer to ward post procedure.
* Clinical override bolus dose must be administered by 2 RN/RMs one of who is competent in Clinical override bolus delivery or a RN/RM who is competent in clinical override bolus delivery and a Medical Officer.

**Monitoring the patient & delivery system**

* Attend PCA observations as per chart treatment orders.
* Commencement and cessation of PCA must be performed in accordance with Medication Handling Policy located on the Policy Register.
* PCA, Ketamine and IV fluids can utilise the same IVC provided all drugs are compatible. Refer to the IV compatibility book available in ward medication rooms. PCA remains the primary line with ketamine secondary and IVT third in this instance.
* Ensure IVC is maintained according to Peripheral Intravenous Cannula Adults and Children Procedure.
* The APS will review patients with PCA’s daily. If a patient has not been reviewed please contact the APS within business hours or duty Anaesthetic Registrar after hours via switch.
* Parameter checks are required at syringe change, shift change, transfer of care and parameter alterations.
* The sleeping patient must be woken to establish patient is asleep and not sedation. Once patient sedation assessed as mild pain score, vomiting & pruritus may be omitted to minimise disturbance.
* Ensure the use of appropriate scoring tools for pain given patients cognitive and chronological age.

**Cessation of PCA**

* PCA is ceased at the direction of the APS in consultation with the patient, ward staff and patient’s home team if appropriate. APS will document the plan regarding analgesia in progress notes.
* If a patient requests their PCA to be ceased please ensure oral medication is prescribed.
* RN/RMs are able to cease PCA therapy on Short stay patients following the Short Stay Patient APS PCA Cessation flow chart
* Complete a final set of PCA observations at time of cessation.
* Discard all medications in accordance with Medication Handling Policy located on the Policy Register.
* Ensure patient has adequate alternative analgesia prescribed.
* Continue to assess and manage pain. Offer analgesia regularly following PCA cessation. Document effectiveness of analgesia.

[*Back to Table of Contents*](#Contents)

|  |
| --- |
| Section 8 - Regional Local Anaesthetic Technique (RLAT) Management-Adult and Paediatric |

## Competency

RLAT competency is an annual 2 step process

1. Complete e-learning RLAT
2. Completion of Epidural/ Regional Local Anaesthetic Technique (RLAT) practical assessment with
3. CDN
4. PMU RN
5. RN who has worked for APS in last 2 years and has completed the PCA train the trainer workshop

**General information**

* Regional local anaesthetic techniques include:
* Continuous wound infiltration
* Fascia Iliaca Compartment block (FIB)
* Intercostal block
* Interpleural block
* Paravertebral block
* Transverses Abdominus Plane (TAP) block
* Catheters used for RLAT are inserted by surgical teams (i.e. paravertebral/intercostal blocks inserted by cardiothoracic surgeons) and remain the responsibility of that team for all management issues. This includes infusions via the Sapphire pump and elastomeric infusion pumps (i.e. Pain Buster).
* Emergency Department Consultants/Registrars who have been trained may insert a FIB for fractured neck of femur patients. Check all patients transferred from emergency with fractured neck of femur for RLAT catheters.
* Duration of RLAT is generally 48 – 96 hours
* Infusion may be continuous, patient controlled or intermittent or a combination of continuous and patient controlled.

**Patient selection**

* Contra-indications:
* Local or generalised sepsis
* Patient refusal
* Allergy to local anaesthetic agent

**Prescribing & Commencement of RLAT**

* Catheter is inserted by an Anaesthetic Consultant/Registrar, Emergency Department Consultant/Registrar or Surgical Consultant/Registrar. The Medical Officer who inserts the catheter is responsible for completion the RLAT chart.
* Post procedural observation regime is the responsibility of the RN/RM/EN caring for the patient.
* Chart & inserts relating to Regional Local Anaesthetic Technique [RLAT] adult and paediatric are available on the [Clinical Forms Register.](#_Hlk486496716)

|  |  |
| --- | --- |
| **Chart/Insert Name** | **Chart Number** |
| Regional Local Anaesthetic Technique [RLAT] adult and paediatric | 60461 |

* Two competent RN/RMs commence a RLAT infusion via the Sapphire pump.
* Ensure the correct administration set is used and connected to the filter. The giving set is Sapphire specific with a yellow line indicating Epidural/RLAT infusion with no side ports.
* Obtain baseline general observations before commencement of infusion.
* RLAT may provide an incomplete block. Ensure regular assessment of pain is attended and additional and adjuvant analgesia is administered as required.

**Monitoring the patient**

* The RLAT chart treatment order provides specific observation guidelines & denotes their frequency.
* Standing orders for complications/side effects are on the back of the RLAT chart.
* The APS will review patients with RLAT’s daily. If a patient has not been reviewed please contact the APS within business hours or duty anaesthetic registrar after hours via switch.
* Two competent RN/RM’s must complete any alteration of the rate of a RLAT.
* Monitor the patient and manage vital signs and early warning score as per procedure.
* Modify motor block observations appropriately for upper limbs depending upon nerve innovated by block placement.
* Motor block observations are not required for continuous wound infiltration or TAP blocks.
* Record the effectiveness of RLAT and any adverse effects in the patient’s clinical progress notes.

**Cessation of the infusion**

* The decision to cease a RLAT will be made by the APS or surgical team in conjunction with the patient, RN/RM and medical teams.
* Ensure adequate analgesia is ordered before the cessation of the RLAT.
* Maintain IVC patency for four hours post cessation.
* Ensure the catheter is not sutured; visually inspect insertion site & documentation of insertion for advice of same.
* Remove the catheter using an aseptic technique and place a dressing over site. Remove dressing after 24 hours.
* Inspect catheter tip. A witness is required to sight the tip of the catheter which is blue. If blue tip is not identified, notify the APS or Anaesthetist Registrar after hours.
* Document date and time of removal in the appropriate space on the front of the RLAT chart and the patient progress notes.
* Catheter tips are not routinely sent for pathology, however if the site shows signs of infection the tip can be sent for culture.
* Advise the APS or Anaesthetic Registrar after hours if the catheter is inadvertently dislodged or removed and place a dressing over the site.
* Discard all medications in accordance with Medication Handling Policy located on the Policy Register.

[*Back to Table of Contents*](#Contents)

|  |
| --- |
| Related Policies, Procedures, Guidelines and Legislation |

## Policies

* Medication Handling Policy

## Procedures

* Central Venous Access Device (CVAD) Management – Children, Adolescents and Adults (not Neonates)
* Peripheral Intravenous Cannula, Adults and Children (Not neonates)
* Clinical Handover Procedure
* Health-care Associated Infections Procedure
* Nursing and Midwifery Continuing Competence
* Vital Signs and Early Warning Scores Procedure

**National Standards**

* National Standard for User-applied Labelling of Injectable Medicines, Fluids and Lines

**ACT Legislation**

* *Drugs of Dependence Act* 1989 A1989-11 Republication No 29 Effective: 10 December 2013

[*Back to Table of Contents*](#Contents)

|  |
| --- |
| References |

1. Acute Pain Service PCA Canberra Hospital Protocol (1993) Revised August (1996) Revised (2005). Revised (2008)
2. Alaris® Medical systems IVAC® P5000 MKII Directions for Use 5001FAOPT71 Issue 12
3. Argiriadou H, Papagiannopoulou P, Foroulis C N, Anastasiadis K, Thomaidou E and Papakonstantinou Himmelseher (2011) Intraoperative Infusion of S (+)-Ketamine Enhances Post-thoracotomy Pain control compared with Perioperative Parecoxib When used in conjunction with thoracic Paravertebral Ropivacaine Infusion
4. Australian Capital Territory Drug of Dependence Act 1989 No11 Republication No 12 effective 28 March 2003
5. Brooks K (1997) Reducing Epidural catheter infections Nursing 97 May 1997
6. Casagrande A M (2006) Propofol for Office Oral and Maxillofacial Anesthesia: The Case Against Low-dose Ketamine Journal of Oral and Maxillofacial Surgery Volume 64, Issue 4 April 2006 pages 693 to 695.
7. Correll G E, Maleki J, Gracely E J, Muir J J and Harbut R E (2004) Subanesthetic Ketamine Infusion Therapy: A Retrospective Analysis of a Novel Therapeutic Approach to complex Regional Pain Syndrome Pain Medicine Volume 5 Number 3 2004 page 263 to 275
8. doi:10.1093/bja/ael006 Advance Access publication January 23, 2006
9. Elvir-Lazo O L & White P F (2010) The role of multimodal analgesia in pain management after ambulatory surgery Current Opinion Anaesthesiology 2010 23:697-703
10. Green S M and Krauss B (2011) The Taming of Ketamine – 40 Years Later Annals of Emergency Medicine Volume 57, No 2 Feb 2011 pg 115-116
11. Jarzyna D, Jungquist C R, Pasero C, Willens JS, Nisbet A, Oakes L Dempsey SJ, Santangelo D, Polomano RC(2011) American society for Pain Management Nursing Guidelines on Monitoring Opioid-Induced Sedation and Respiratory Depression Pain Management Nursing 2011;12(3):118-145
12. Jarzyna D, Jungquist C R, Pasero C, Willens JS, Nisbet A, Oakes L Dempsey SJ, Santangelo D, Polomano RC(2011) American society for Pain Management Nursing Guidelines on Monitoring Opioid-Induced Sedation and Respiratory Depression Pain Management Nursing 2011;12(3):118-145
13. Jungquist C R, Karan S and Perlis (2011) Risk Factors for Opioid-Induced Excessive Respiratory Depression Pain Management Nursing Vol12, No 3 (September) 2011: 180-187
14. Lah Frank M D, 2000 Draft: Proposed Guidelines for PCEA. Department Anaesthesia and Pain Management, the Canberra Hospital
15. Lamon M A & Habib A S (2016) Managing anesthesia for caesarean section in obese patients: current perspectives Local and Regional Anesthesia 2016 9:45-57
16. M Sawartjes, Morariu A Niesters Aarts L Dahan A (2011) Nonselective and NR2B-selective N-methyl-D-aspartic acid Receptor Antagonists Procedure Antinociception and long term relief of Allodynia in Acute and neuropathic pain Anaesthesiology V 115 No1 July 2011 pg 165-174
17. Macintyre P & Schug S A (2007) Acute Pain Management – A Practical Guide, 3rd Edition, Saunders Elsevier
18. Macintyre P & Schug S A (2015) Acute Pain Management – A Practical Guide, 4th Edition, CRC Press Taylor & Francis Group
19. McKenna L & Mirkov S editors (2010) Australian New Zealand Nursing & Midwifery Drug Handbook fifth edition Wolters Kluwer, Lippincott Williams & Wilkins Sydney
20. McKenna L & Mirkov S editors (2012) Australian New Zealand Nursing & Midwifery Drug Handbook sixth edition Wolters Kluwer, Lippincott Williams & Wilkins Sydney
21. Merkel S et al (1997) FLACC: A behavioural scale for scoring postoperative pain in young children, by S Merkel and others, 1997, Pediatr Nurse 23(3), p. 293-297.
22. Mims on Line (assessed 30th March 2010) [Mims on line](https://www.mimsonline.com.au/Search/FullPI.aspx?ModuleName=Product%20Info&searchKeyword=Ketamine+hydrochloride&PreviousPage=~/Search/QuickSearch.aspx&SearchType=&ID=19050001_2) ketamine hydrochloride
23. Mims on Line. hcn.net.au/ifmx-nsapi/mims\_data
24. Nagels A, Kirner\_Veselinovic A, Krach S and Kircher T (2011) Neural correlates of S-Ketamine induced psychosis during overt continuous verbal fluency NeuoImage 54 (2011) 1307-1314
25. National Health and Medical Research Council (NHMRC) (2010) Acute Pain Management Scientific Evidence 3rd edition Australian Government Victoria
26. National Health and Medical Research Council (NHMRC), (2015) Acute Pain Management: Scientific Evidence fourth edition 2015, Commonwealth of Australia, Canberra, ACT.
27. P. SENDI1,2, T. BREGENZER3 and W. ZIMMERLI1 (2008) Spinal Epidural abscess in clinical practice Q J Med 2008; 101:1–12
28. Pasero C & McCaffery M (2011) Pain Assessment and Pharmacologic Management Elsevier Mosby chapter 15
29. S. Grewal1\*, G. Hocking1 and J. A. W. Wildsmith2 (2006) Epidural abscesses Br. J. Anaesth. (March 2006) 96 (3): 292-302. doi: 10.1093/bja/ael006 British Journal of Anaesthesia 96 (3): 292–302 (2006)
30. Shahzad K, Svec A, Al-koussayer O, Harris M and Fulford S (2011) Analgesic ketamine use leading to cystectomy: A case report British Journal of Medical and Surgical Urology (2011) doi:10.1016/j.bjmsu.2001.06.005
31. Society of Hospital Pharmacists of Australia (2011) Australian Injectable Drugs Handbook fifth edition Society of Hospital Pharmacists of Australia Collingwood Australia
32. Swartjes M, Morariu A, Niesters M, Aarts L and Dahan A (2011) Nonselective and NR2B-Selective N-methyl-D-aspartic Acid Receptor Antagonists Produce Antinociception and Long-term Relief of Allodynia in Acute and Neuropathic Pain Anaesthesiology V 115 No1 p 165-74
33. Therapeutic Guidelines (2007) Therapeutic Guidelines Analgesic version 5 Therapeutic Guidelines Limited Melbourne
34. Trujillo K A, Zamora J Jand Warmoth K P (2008) Increase response of Ketamine following treatment at long intervals: implications for intermittent Use Biol Psychiatry 2008;63:178-183
35. Wall.P, Melzack.R : Textbook of Pain. (1999) 4th Edition: Churchill Livingstone: New York
36. Wenk M & Schuhg S A (2011) Preioperative pain management after thoracotomy Current Opinion Anaesthesiology 2011 24:8-12
37. Wilcock A and Twycross R (2011) Therapeutic Reviews Ketamine Journal of Pain and Symptom Management Vol 41 No 3 March 2011 p640-649
38. Willens J S (2011) Are we monitoring what we think we are monitoring? Pain Management Nursing Vol 12 No 3 (September) 2011 p177 (editorial)

[*Back to Table of Contents*](#Contents)

|  |
| --- |
| Definition of Terms |

**Continuous wound infiltration**

Catheter/s are placed by either surgeon or anaesthetist usually at the end of the procedure to provide non-opioid post-operative pain relief with a continuous infusion of local anaesthetic into the bed of a wound.

**Elastomeric Infusion Pump i.e. Pain Buster**

A single use device that provides continuous infusion of local anaesthetic directly into the patient’s surgical site for effective, non-opioid post-operative pain.

**Epidural space**

The space immediately surrounding the dura mater of the brain and spinal cord beneath the periosteuym of the cranium and spinal cord.

**Fascia Iliaca Compartment Block (FIB)**

The introduction of local anaesthetic into the ‘virtual’ fascia iliaca compartment with upward migration of the anaesthetic blocking the femoral and lateral femoral cutaneous nerves.

**Intercostal and Interpleural blocks**

The intercostal space is the space between two ribs and the interpleural space is the potential space of the mediastinum between the two pleural linings that contains serous fluid (interpleural space). These blocks involve introduction of local anaesthetic, either in a single dose or via infusion into these spaces.

**Intrathecal/Epidural Morphine (IEM)**

The single injection of morphine into the intrathecal (or subarachnoid) space, or into the epidural space, in order to provide pain control for selected patients. Intrathecal/epidural morphine is more commonly given as a single dose at the conclusion of epidural/spinal anaesthesia. The duration of action is up to 24 hours for morphine and 3-4 hours for local anaesthetic.

**Ketamine**

A short acting general anaesthetic agent used in acute and chronic pain management because of its receptor antagonist (NMDA inhibitor) effects. The NMDA receptor plays a role in the development of opioid tolerance

**Paravertebral block**

The blocking of transmission of somatic impulse by the spinal nerves through injection or infusion of a local anaesthetic solution near the point of their emergence or blocking of the paravertebral sympathic chain of nerves anterolaterally to the vertebral bodies.

**Pruritus**

Itch, unpleasant sensation of the skin that provokes the urge to scratch.

**Transverses Abdominus Plane (TAP) block**

The blocking of transmission of somatic impulse by the spinal nerves by injection or infusion of a local anaesthetic solution into the virtual space within the transverses abdominus plane of the abdomen.

[*Back to Table of Contents*](#Contents)

|  |
| --- |
| Search Terms |

Ketamine, PCAM, Braun, Pain, Epidural, RLAT, Regional local anaesthetic, APS, analgesia, PCA, PCEA, acute pain, opioid, COI

**Disclaimer**: *This document has been developed by ACT Health, Canberra Hospital and Health Services specifically for its own use. Use of this document and any reliance on the information contained therein by any third party is at his or her own risk and Health Directorate assumes no responsibility whatsoever.*

*Policy Team ONLY to complete the following:*

|  |  |  |  |
| --- | --- | --- | --- |
| *Date Amended* | *Section Amended* | *Divisional Approval* | *Final Approval* |
| *20 Sept 2017* | *Complete Review and Consolidation* | *Daniel Wood, A/g ED SOH* | *CHHS Policy Committee* |
|  |  |  |  |

*This document supersedes the following:*

|  |  |
| --- | --- |
| *Document Number* | *Document Name* |
| *CHHS13/028* | *PCA (adult and paediatric)* |
| *CHHS13/436* | *RLAT* |
| *CHHS15/144* | *Epidural* |
| *CHHS13/593* | *Remifentanil Patient Controlled Analgesia* |
| *CHHS13/437* | *Continuous Opioid Infusion* |
| *CHHS13/027* | *Ketamine Acute Pain Management* |
| *CHHS15/144* | *Intrathecal Epidural Morphine Single Administration* |