

# SESLHD PROCEDURE COVER SHEET



**Health**  
South Eastern Sydney  
Local Health District

<b>NAME OF DOCUMENT</b>	Pain Management - Ketamine Infusions for Adult Patients with Acute and Chronic Non Cancer Pain
<b>TYPE OF DOCUMENT</b>	Procedure
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<b>FORMER REFERENCE(S)</b>	Ketamine for Adult Patients with Acute and Chronic Non Cancer Pain SESLHDPR/371
<b>EXECUTIVE SPONSOR</b>	SESLHD Clinical Stream Director – Surgery, Perioperative and Anaesthetics
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<b>FUNCTIONAL GROUP(S)</b>	Surgery, Perioperative and Anaesthetic
<b>KEY TERMS</b>	Ketamine, NMDA Receptor, Acute pain, Chronic Pain,
<b>SUMMARY</b>	This document outlines the requirements for the safe management of patients receiving a Ketamine infusion.

## **COMPLIANCE WITH THIS DOCUMENT IS MANDATORY**

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**1. POLICY STATEMENT**

This document details the management of patients receiving a ketamine infusion for the management of acute or chronic non cancer pain, enabling the patient to receive optimum pain relief safely and effectively.

**2. BACKGROUND**

Ketamine is a Schedule 8 drug under the [Poisons and Therapeutic Goods Act \(2021\)](#). It is an anaesthetic agent known to have analgesic properties in sub-anaesthetic doses. Ketamine analgesia is mediated by its effect on the N-methyl-D-aspartate (NMDA) receptor where it blocks excitatory nerve activity involved in pain transmission.

**3. DEFINITIONS**

- **Acute pain:** Pain of recent onset and probable limited duration. It usually has an identifiable cause resulting from injury or disease.
- **Chronic non-cancer pain:** Pain that commonly persists beyond the expected time of healing of an injury, or pain that may not have a clearly identifiable cause.
- **Authorised prescriber:** A medical officer, or a nurse practitioner who is practicing within their defined scope of practice.

**4. RESPONSIBILITIES****Registered Nurses will:**

- Have completed site specific education/competency assessment on approved devices used to deliver ketamine
- Prepare, administer, and discard ketamine as outlined in this document
- Attend to observations and manage adverse effects of ketamine as outlined in this document.

**Enrolled Nurses without notation will:**

- Have completed site specific education/competency assessment on approved devices used to deliver ketamine
- Prepare and discard ketamine as outlined in [SESLHDPD/160 Medication: Administration by Enrolled Nurses](#)
- Attend to observations and manage adverse effects under supervision of a Registered Nurse.

**Authorised Prescriber will:**

- Select patients as outlined in 5.1 of this document
- Prescribe ketamine on the [NSW Health Ketamine Infusion Observation Chart Adult](#)
- Manage any adverse effects.

**Pain Management Service will:**

- Review patients on ketamine infusions
- Be involved in auditing of ketamine charts using the [Agency for Clinical Innovation ketamine infusion audit tool](#)
- Be involved in review IMS+ relating to ketamine infusions.

**Pharmacist will:**

- Review patient’s medications and medication charts.

**5. PROCEDURE**

**5.1 Patient selection**

Ketamine has uses in both acute and chronic pain and may be used for:

- Patients who are poorly responsive to opioid analgesia
- Opioid sparing in patients who have had major surgery
- Reducing opioid related side effects
- Adjunctive analgesia
- Treating central sensitisation of nociception
- Facilitating reduction in opioid usage for opioid tolerant patients
- Neuropathic pain.

**5.1.1 Contraindications**

Known contraindications to ketamine include:

- Hypersensitivity to ketamine
- Any conditions where a significant elevation of blood pressure is hazardous e.g. severe cardiovascular disease, heart failure, severe or poorly controlled hypertension, recent myocardial infarction, history of stroke, cerebral trauma, intracerebral mass or haemorrhage.

**5.1.2 Precautions**

- Psychiatric disorders - psychotomimetic effects are more pronounced in the presence of schizophrenia and delirium.
- Alcoholism, increased Cerebral Spinal Fluid pressure, seizures, hepatic or renal impairment.

**5.2 Prescribing**

- Patient should be informed of potential side effects of ketamine, verbal consent should be obtained.
- Ketamine infusions must be prescribed on the [NSW Health Ketamine Infusion Observation Chart Adult](#) and all sections must be completed by the prescriber.
- Add Additional Chart Placeholder (Doctor/Nurse/Pharmacist) in eMR. These Placeholders are to be ordered so that clinicians are appropriately alerted to the existence of the paper charts.

Document additional chart	Remove additional chart
Open the relevant patient’s chart in eMR <ul style="list-style-type: none"> <li>• Click <b>Orders +ADD</b></li> </ul>	To remove Additional Chart placeholder entirely click <b>Orders</b>  The Orders page has now opened

<p>The <b>Add Order</b> window has now opened</p> <ul style="list-style-type: none"> <li>• In the search bar type in <b>additional</b></li> <li>• Click on <b>additional charts</b> (1 reminder)</li> </ul> <p>The Interaction Checking box appears</p> <ul style="list-style-type: none"> <li>• Click <b>OK</b></li> <li>• Click <b>Done</b></li> </ul> <p>The order has been added to the patient’s proposed <b>orders</b> page</p> <ul style="list-style-type: none"> <li>• Choose <b>Pain</b> from the <b>Additional Charts</b> drop down menu</li> <li>• You can document what <b>medication</b> the chart is regarding</li> <li>• Click <b>sign</b></li> <li>• Type your <b>password</b> and click <b>OK</b></li> </ul> <p>There is now a placeholder on the patient’s <b>MAR</b></p> <p>This will be in the Scheduled Medications section in alphabetical order under <b>additional charts</b></p> <p>There are no associated tasks on the MAR – placeholder only</p>	<ul style="list-style-type: none"> <li>• <b>Right click</b> on the additional charts order you wish to Cancel/ Discontinue</li> <li>• Click on <b>Cancel/ Discontinue</b></li> </ul> <p>Choose a <b>Cancel Reason</b> (Optional) from the list provided</p> <p>Click <b>Orders for Signature</b></p> <p>Click <b>Sign</b></p> <p>Type your <b>password</b> and click <b>OK</b></p>
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- Ketamine is compatible with fentanyl, morphine, oxycodone and HYDROmorphine, when administered via the same venous access device, using a triple lumen 3 valve peripheral set with an anti-reflux and anti-siphon valve but is **not** to be administered in PCA mode.
- Recommended dose varies depending on specific patient population:

**Acute Pain**

Suggested infusion rate may be started at lower doses.

- Continuous intravenous or subcutaneous infusions at doses of 0.1 to 0.2 mg/kg/hour can be used in addition to an opioid Patient Controlled Analgesia (PCA) or opioid infusion for the management of post-operative and post injury pain.

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- Concentration of 200 mg Ketamine in 50 mL Sodium Chloride 0.9% = concentration 4 mg/mL.
- **For Royal Hospital for Women only** concentration 100 mg Ketamine in 100 mL Sodium Chloride 0.9% = concentration 1 mg/mL. Starting dose of 2mg to 4mg/hour and dose range of 2mg to 12mg/hour.

### Chronic Pain

- Patients with intractable chronic pain may be admitted for subcutaneous or intravenous ketamine infusions.
- The suggested dose of 0.125 to 0.3 mg/kg/hour ketamine may be titrated by the pain management authorised prescriber using the infusion range, according to analgesic response and/or side effects.
- **SESLHD facilities use different concentrations of ketamine for patients with chronic pain. Please refer to table below for appropriate prescribing for your facility.**

Prince of Wales Hospital	St George/Sutherland Hospital	Royal Hospital for Women
Concentration of 400 mg Ketamine in 50 mL Sodium Chloride 0.9% = concentration 8 mg/mL.	Concentration of 200 mg Ketamine in 50 mL Sodium Chloride 0.9% = concentration 4 mg/mL.	Concentration of 400 mg Ketamine in 50 mL Sodium Chloride 0.9% = concentration 8 mg/mL.  Starting dose of 4mg/hour and dose range of 4mg to 24mg/hour.

### 5.3 Preparation and administration

- Wash hands and use a clean procedure during filling procedure.
- Use ketamine 200 mg in 2 mL ampoule and dilute as prescribed.
- When opioid (e.g. PCA) and ketamine are delivered via single access device it is important to prevent migration of both drugs. This can be achieved by using a triple-lumen three-valve peripheral set with an anti-reflux and anti-siphon valve.
- Ketamine is a Schedule 8 drug and should be administered via a lockable infusion device.
- Infusion via locked delivery device can only be commenced and managed by Registered Nurses who have completed site specific education/competency assessment in the management of patients receiving ketamine infusions.
- Any rate or concentration changes must be documented on the [NSW Health Ketamine Infusion Observation Chart Adult](#) and signed by two Registered Nurses who are educated in the delivery device.
- Ketamine infusion must be clearly labelled according to [NSW Ministry of Health Policy Directive PD2016\\_058 - User-applied Labelling of Injectible Medicines, Fluids and Lines](#).

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### 5.4 Observations

<p><b>All patients</b></p>	<ul style="list-style-type: none"> <li>• Observations e.g. Respiratory rate, oxygen saturation, heart rate, blood pressure, temperature, level of consciousness, new onset of confusion or behaviour change, and pain score, need to be performed and recorded in Between the Flags (BTF) on electronic Medical Record (eMR) as per as per <a href="#">NSW Ministry of Health Policy Directive PD2020 018 - Recognition and Management of Patients who are Clinically Deteriorating.</a></li> <li>• Ketamine specific observations to be recorded on ketamine chart.</li> <li>• The delivery device settings to be checked at the commencement of each shift, on patient transfer and when the syringe/bag is being changed.</li> <li>• The cannula site (subcutaneous or intravenous) must be checked each shift. Using the Visual Infusion Phlebitis (VIP) score, check intravenous cannula for any signs of infection according to <a href="#">NSW Ministry of Health Policy Directive PD2019 040 - Intravascular Access Devices (IVAD) – Infection Prevention and Control.</a></li> </ul>
<p><b>Acute pain</b></p>	<ul style="list-style-type: none"> <li>• If the patient is on Patient Controlled Analgesia (PCA) concurrently with ketamine infusion, the pain scores may be recorded on the PCA chart only, to avoid duplication.</li> <li>• Frequency of pain score at rest (R) and with movement (M) and dysphoric adverse effects present every two or four hours as per prescription.</li> </ul>
<p><b>Chronic non cancer pain</b></p>	<ul style="list-style-type: none"> <li>• Frequency of pain score at rest (R) and with movement (M) every four hours and dysphoric adverse effects present every four hours.</li> </ul>

### 5.5 Management of Adverse Effects

Managing dysphoric effects such as hallucinations, unpleasant dreams or visual disturbances:

- Contact the relevant pain service or equivalent medical officer. A dose reduction of the ketamine infusion may be indicated
- Check drug and prescription and ensure pump program and infusion rate is as prescribed.

In the event of any other acute changes refer to [NSW Ministry of Health Policy Directive PD2020 018 - Recognition and management of patients who are deteriorating.](#)

### 5.6 Record of ketamine administration and remaining ketamine discarded

- Date, time and two nurses signatures (one of whom is a Registered Nurse) for administration of ketamine must be recorded on the [NSW Health Ketamine Infusion Observation Chart Adult.](#)
- Ketamine must be discarded and signed for by two nurses (one of whom is a Registered Nurse) in a safe manner that renders the drug unrecoverable e.g. pour remaining ketamine onto absorbent paper then discard into clinical waste bin as per

[NSW Ministry of Health Policy Directive PD2013\\_043 - Medication Handling in NSW Public Health Facilities.](#)

- Any remaining ketamine must be discarded using the syringe graduations provided for measurement, or the remaining volume on device screen if using bags, and record total amount discarded (in mg), date, time, and two signatures in the space provided on the [NSW Health Ketamine Infusion Observation Chart Adult](#).
- After cessation of ketamine the patient should be observed in hospital for a period of four hours prior to discharge.

## 6. DOCUMENTATION

- [NSW Health Ketamine Infusion Observation Chart Adult](#)
- [NSW Health PCA \(Patient Controlled Analgesia\) Adult Chart](#)
- BTF in eMR
- Patient Health Care Record
- Drugs of Addiction Register

## 7. AUDIT

Regular auditing of ketamine charts using the [Agency for Clinical Innovation ketamine infusion audit tool](#).

## 8. REFERENCES

- Schug SA, Scott DA, Mott JF, Halliwell R, Palmer GM, Alcock M; APM:SE Working Group of the Australian and New Zealand College of Anaesthetists and Faculty of Pain Medicine (2020), [Acute Pain Management: Scientific Evidence \(5th edition\)](#), ANZCA & FPM, Melbourne.
- [NSW Ministry of Health Policy Directive PD2016\\_058 - User-applied Labelling of Injectable Medicines, Fluids and Lines](#)
- [NSW Ministry of Health Policy Directive PD2013\\_043 - Medication Handling in NSW Public Health Facilities](#)
- [NSW Ministry of Health Policy Directive PD2020\\_018 - Recognition and Management of Patients who are Deteriorating](#)
- [NSW Ministry of Health Policy Directive PD2019\\_040 - Intravascular Access Devices \(IVAD\) –Infection Prevention and Control](#)
- [SESLHDPD/160 - Medication: Administration by Enrolled Nurses](#)
- [Poisons Standard 2021](#), Australian Government Department Of Health: Therapeutic Goods Administration.
- Himmelseher S. & Durieux M. 2005, Ketamine for Perioperative Pain Management, *Anesthesiology*, 102(1): 211-220.
- Ketamine [MIMS online](#)- accessed 21/08/20
- Macintyre, P. & Schug, S. 2015, *Acute Pain Management: A practical guide*, 4<sup>th</sup> edn
- Hocking, G. & Cousins, M. 2003. *Ketamine in Chronic Pain Management: An Evidence Based Review*, 97, pp.1730-1739. Taskforce on Acute Pain. Seattle, IASP Publications.
- [NSW Health Ketamine Infusion Observation Chart Adult](#)

## Ketamine Infusions for Adult Patients with Acute and Chronic Non Cancer Pain

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- [Agency for Clinical Innovation, Ketamine Infusion Prescription and Observation Chart \(adult\): EXPLANATORY NOTES. March 31<sup>st</sup> 2017.](#)
- Faculty of Pain Medicine and Australian and New Zealand College of Anaesthetists, Proposal for practice guideline: Low dose ketamine infusion in the management of chronic non cancer pain, November 2016.

### 9. REVISION AND APPROVAL HISTORY

Date	Revision No.	Author and Approval
Dec 2000	0	CARNES – included in Nursing Procedures Manual
Sept 2005	1	NERU – included in Nursing Procedures Manual.
April 2007	2	Updated and reformatted to new policy template by Grazyna Jastrzab, CNC Pain Management. Approved by POWH Policy & Procedure Committee for inclusion in the Clinical Procedures Manual.
July 2010	3	Sonia Markocic in consultation with SESIAHS Senior Pain Management Nursing and Medical Staff
August 2010	3	Approved by Area Drug Committee
December 2010	3	Endorsed by Area Patient Safety @ Clinical Quality Committee Noted by Area Clinical Council
March 2011	4	Minor revision. Clinical Nurse Consultant, Pain Management. Approved by Director of Nursing for distribution.
June 2011	4	Approved by POW Drug and Therapeutics Committee for distribution.
November 2014	5	Updated by Bernadette Bugeja, Clinical Nurse Consultant, Department of Pain Management, Prince of Wales Hospital, in consultation with SESLHD Pain Management Nursing and Medical Staff.
February 2015	5	Endorsed by SESLHD Drug and Quality Use of Medicine Committee
May 2015	6	Minor update – endorsed by Executive Sponsor
January 2017	7	Minor update – endorsed by Executive Sponsor
March 2017	7	Endorsed by SESLHD Drugs and Quality Use of Medicine Committee
April 2021	8	Minor review. Updated by Bernadette Bugeja, Clinical Nurse Consultant, Rebecca Mallam, Registered Nurse Department of Pain Management, Prince of Wales Hospital, in consultation with SESLHD Pain Management Nursing and Medical Staff. Instructions included on how to add an 'Additional chart' into EMR. Reworking of patient selection for Ketamine infusions. Specific concentrations and ranges for ketamine infusions added. The inclusion of working of 'site specific education/competency'. Approved by Executive Sponsor. To be tabled at Quality Use of Medicines approval.



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May 2021	8	Approved at Quality Use of Medicines Committee meeting.
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