

SESLHD PROCEDURE COVER SHEET



Health
South Eastern Sydney
Local Health District

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KEY TERMS	Ketamine, NMDA Receptor, Acute pain, Chronic Pain, PACU (Post Anaesthetic Care Unit)
SUMMARY	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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Ketamine Infusions for Adult Patients with Acute and Chronic Non Malignant Pain

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1. POLICY STATEMENT

This document details the management of patients receiving a ketamine infusion for the management of acute and chronic non-malignant 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. 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 to injury or disease.
- **Chronic pain:** Is pain that commonly persists beyond the time of healing of an injury and frequently; there may not be a clear identifiable cause.
- **PACU:** Post Anaesthetic Care Unit

4. RESPONSIBILITIES

Registered Nurses will:

- Be competent with the equipment used to deliver ketamine
- Prepare, administer, and discard ketamine as outlined in policy
- Attend to observations and manage adverse effects of ketamine as outlined in the policy.

Enrolled Nurses without notation will:

- Be competent with the equipment 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.

Medical Staff will:

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

Pain Management Service will:

- Review patients on ketamine infusions daily
- Ensure regular auditing of ketamine charts using the [Agency for Clinical Innovation ketamine infusion audit tool](#)
- Review IIMS relating to ketamine infusions.

Pharmacist will:

- Review patient's medications and medication charts.

5. PROCEDURE

5.1 Patient selection

When commencing ketamine therapy the patient has either:

- a) Proven to be resistant to opioids for acceptable analgesia or
- b) Had major surgery with the expectation that the opioid requirements alone could cause significant side effects and complicate patient recovery.

Patients who are on opioids pre-operatively or who have had multiple surgeries for ongoing pathology may require less opioid if ketamine is added to their analgesic regimen. Loading doses in the Operating Theatres while under anaesthesia may be helpful and preferable over frequent boluses in recovery.

5.1.1 Contraindications

Known contraindications to ketamine are:

- 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.
- Refer to product information for further precautions.

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
- Ketamine is compatible when mixed in a syringe with fentanyl, morphine sulfate and HYDROMorphone but is **not** to be administered via 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/hr 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.
- Standardised concentration of 200 mg in 50 mL Sodium Chloride 0.9% = concentration 4 mg/mL is recommended.

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Chronic Pain

- Patients with intractable chronic pain may be admitted for administration of ketamine infusion
- The infusion range may be prescribed as a bridging dose on a chronic pain patient who is on an increasing regime of ketamine
- The suggested dose of 0.125 to 0.3 mg/kg/hr ketamine may be titrated by the pain medical officer using the infusion range, according to analgesic response and/or side effects.

5.3 Preparation

- Ketamine is a Schedule 8 drug and is required to be administered via a lockable infusion device
- Wash hands and use aseptic technique 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 1 cannula it is important to prevent migration of both drugs. This can be achieved by using **correct** back-check valves between the 3-way tap and both relevant giving sets.

5.4 Administration

- Infusion via locked delivery device can only be commenced and managed by Registered Nurses who are competent in using the specific delivery device
- 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 deemed competent in operating the delivery device
- Ketamine infusion must be clearly labelled according to [NSW Ministry of Health Policy - PD2016_058 User-applied Labelling of Injectable Medicines, Fluids and Lines](#)

5.5 Observations

All patients	<ul style="list-style-type: none"> • General observations need to be performed and recorded on the Standard Adult General Observation chart (SAGO) as per patient's condition • Ketamine specific observations to be recorded on ketamine chart • The delivery device settings to be checked at the commencement of each shift, on patient transfer and when the syringe is being changed • The cannula site (subcutaneous or intravenous) must be checked each shift for signs of redness, swelling or tenderness
Acute pain	<ul style="list-style-type: none"> • 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 • Frequency of pain score at rest (R) and with movement (M) and dysphoric adverse effects present every two hours
Chronic non-malignant pain	<ul style="list-style-type: none"> • Frequency of pain score at rest (R) and with movement (M) every four hours and dysphoric adverse effects present every four hours

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5.6 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 correct.

In the event of any other acute changes refer to [NSW Ministry of Health Policy - PD2013_049 Recognition and Management of Patients who are Clinically Deteriorating](#)

5.7 Record of ketamine administration and remaining ketamine discarded

- Date, time and two nurses signatures (one 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 by two nurses signatures (one 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
- Any remaining ketamine must be discarded using the syringe graduations provided for measurement 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](#)

6. DOCUMENTATION

- [NSW Health Ketamine Infusion Observation Chart Adult](#)
- [NSW Health PCA \(Patient Controlled Analgesia\) Adult Chart](#)
- Standardised Adult General Observation Chart (SAGO)
- 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

- Australian and New Zealand College of Anaesthetists and Faculty of Pain Medicine. Acute Pain Management: Scientific Evidence. Approved by the NHMRC. 2015.
- [NSW Ministry of Health Policy - PD2016_058 User-applied Labelling of Injectable Medicines, Fluids and Lines](#)
- [NSW Ministry of Health Policy - PD2013_043 Medication Handling in NSW Public Health Facilities](#)
- [NSW Ministry of Health Policy - PD2013_049 Recognition and Management of Patients who are Clinically Deteriorating](#)
- [SESLHDPD/160 Medication: Administration by Enrolled Nurses](#)

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- Himmelseher S. & Durieux M. 2005, Ketamine for Perioperative Pain Management, Anaesthesiology, 102(1): 211-220.
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- Taskforce on Acute Pain. Seattle, IASP Publications.
- [NSW Health Ketamine Infusion Observation Chart Adult](#)
- [Agency for Clinical Innovation, Ketamine Infusion Prescription and Observation Chart \(adult\): EXPLANATORY NOTES. October 14, 2014](#)

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