SESLHDMG/126
Medicine Guideline

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

Areas where Protocol/Guideline applicable	SESLHD
Authorised Prescribers:	A medical officer, or a nurse practitioner who is practicing within their defined scope of practice.
Indication for use	Management of acute or chronic non-cancer pain
Clinical condition Patient selection: Inclusion criteria (list investigations necessary and relevant results)	**Patient selection** Ketamine has uses in both acute and chronic pain and may be used for: a) Patients who have pain which is not responsive to opioid analgesia b) Opioid sparing in patients who have had major surgery c) Reducing opioid related side effects d) Adjunctive analgesia e) Treating central sensitisation f) Facilitating reduction in opioid usage for opioid tolerant patients g) Neuropathic pain
Proposed Place in Therapy State whether drug to be used as first, second or third line. When not first line, describe therapies to be used first. (Consider using algorithm)	Ketamine infusion is second line analgesic
Adjunctive Therapy If part of combination therapy, list other drugs	Use in combination of multimodal analgesia
Contra-indications	Known contraindications to ketamine include: • 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. • Hypersensitivity to ketamine
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.

Important Drug Interactions	Further information can be sought via MIMS Product Information for ketamine via CIAP
Dosage	**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. Concentration of 200 mg Ketamine in 50 mL Sodium Chloride 0.9% = concentration 4 mg/mL. **For Royal Hospital for Women only** 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. The different concentrations relate to the different route of administration. Please refer to table below for appropriate prescribing for your facility.**

Prince of Wales Hospital/ Royal Hospital for Women	**St George/Sutherland Hospital**
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

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Duration of therapy	Guided by treating clinician
Prescribing Instructions	• Patient should be informed of potential side effects of ketamine, verbal consent should be obtained. • Ketamine infusions must be prescribed by a medical officer, or a nurse practitioner who is practicing within their defined scope of practice on the NSW Health Ketamine Infusion Observation Chart Adult. 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. • Please refer to eMeds- Additional Charts order- Add, Modify or Remove eMR Reference Guide
Preparation and Administration Instructions	• Ketamine is compatible with fentanyl, morphine, oxycodone and HYDROmorphone, 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. • Wash hands and use a clean procedure during the 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 the National Standard for User-applied Labelling of Injectable Medicines, Fluids and Lines.

Monitoring requirements	**All patients**	• Observations e.g. Respiratory rate, oxygen saturation, heart rate, blood pressure, temperature, level of consciousness, and pain score, need to be performed and recorded in Between the Flags (BTF) on electronic Medical Record (eMR) as per as per NSW Ministry of Health Policy Directive PD2020_018 - Recognition and management of patients who are deteriorating. • 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/bag is being changed. • 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 NSW Ministry of Health Policy Directive PD2019_040 - Intravascular Access Devices (IVAD) – Infection Prevention and Control.
	Acute pain	• 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 or four hours as per prescription.
	Chronic non cancer pain	• Frequency of pain score at rest (R) and with movement (M) every four hours and dysphoric adverse effects present every four hours.
Management of Complications	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.	

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 PD2022_032 - Medication Handling. • 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.
Basis of Protocol/Guideline:	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. Australian Commission on Safety and Quality in Health care (2015) User-applied Labelling of Injectable Medicines, Fluids and Lines NSW Ministry of Health Policy Directive PD2022_032 - Medication Handling 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 Therapeutic Goods (Poisons Standard - February 2024) instrument 2024, Australian Government Department of Health and Aged Care: Therapeutic Goods Administration. Ketamine MIMS online - accessed 18/03/2024 Macintyre, P. & Schug, S. 2015, Acute Pain Management: A practical guide, 4th edn NSW Health Ketamine Infusion Observation Chart Adult Agency for Clinical Innovation, Ketamine Infusion Prescription and Observation Chart (adult): EXPLANATORY NOTES. March 31st 2017. Faculty of Pain Medicine and Australian and New Zealand College of Anaesthetists, Position Statement on the use of ketamine in the management of chronic non cancer pain, 2022.
Groups consulted in development of this guideline	SESLHD Pain Management Nursing and Medical Staff.

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