

## POLICY

Ketamine is an anesthetic with analgesic, sedative, amnesic and dissociative properties. The analgesic effect is thought to be related to antagonism of the N-methyl-d-aspartate (NMDA) receptors in the dorsal horn of the spinal cord and enhancement of endogenous pain inhibitory neurotransmitters. This medication is used to treat patients with severe neuropathic and somatic pain that responds poorly to opioid analgesics and may reduce tolerance to opioids and reverse opioid induced hyperalgesia in some situations. Additional central nervous system effects include inhibition of dopamine and serotonin reuptake and elevation of epinephrine and norepinephrine.

Ketamine infusion (IV or SQ) may be considered as an adjunctive analgesic for patients with intractable pain that is not controlled with current analgesic regimen as determined by a pain management physicians /anesthesiologist or palliative care physician.

- 1) Consultation and recommendations by the Anesthesia Pain Service and/or Palliative Care Service are required to ensure that all other pain management measures have been considered, and for guidance in the process.
- 2) The patient must be admitted to a nursing unit that is designated by the institution as an acceptable site (e.g., critical care, hospice or palliative care) for the administration of IV ketamine for intractable pain.
- 3) The patient must provide verbal or written consent prior to initiation of treatment. If the patient lacks capacity, the decision would be made in a manner consistent with decisions to withhold or withdraw care for a patient who lacks capacity (see SMH Policy 9.3.3).
- 4) When IV ketamine is ordered, it must be administered by a qualified RN. A qualified RN must meet the following requirements:
  - a) Successful completion of the URMIC-designated training covering the pharmacology, administration, side effects, and complications of these drugs; including contraindications and signs and symptoms of untoward effects of their use.
  - b) Successful completion and current training in basic airway management as provided by a URMIC-designated basic life support training program, and this training is maintained on a biennial basis.
  - c) Competency evaluation must be documented annually in the personnel file of the RN providing this care. This competency documentation will include evidence of completion of the URMIC designated training for anesthetic drugs annually, and basic airway management biennially.
- 5) Two RNs shall independently verify orders and program the infusion pump.
- 6) The ketamine infusion must be administered using an infusion pump and appropriate guardrail settings.
- 7) Prior to initiation of the ketamine infusion, all long acting oral narcotic agents will be held.
- 8) Prior to initiation of the ketamine infusion, an anti-anxiety agent (e.g. midazolam) and anti-emetic agent (e.g. ondansetron) will be available for management of patient systems as deemed appropriate by the Palliative care of Anesthesia Pain Service attending physician or provider designee.
- 9) All patients receiving IV ketamine infusions require continuous pulse oximetry monitoring.
  - a) Exception: Exceptions to continuous pulse oximetry monitoring will be considered for the imminently dying patient with anticipated life expectancy of hours to days. These patients **MUST** have DNR (Do Not Resuscitate) and DNI (Do Not Intubate) orders with a completed MOLST (Medical Orders for Life Sustaining Treatment) form. For administration without continuous pulse oximetry, the patient must be admitted to The Palliative Care Unit (e.g. 4-1200) and be care for by a qualified RN as defined above)

- 10) An Anesthesia Pain Service or Palliative Care Service Attending or their provider designee must be present at the initiation of infusion and be at the bedside for at least the first 30 minutes of the infusion and for all dose increases until the patient exhibits signs of stable pain control.
- 11) All ketamine orders should include clear goals for pain and sedation agitation scale (SAS) scores as well as additional parameters for contacting the provider as necessary.
- 12) Once pain control is achieved, the following will be assessed every four hours:
  - a) Sedation or agitation score via Sedation Agitation Scale.
  - b) Pain score
  - c) Vital signs

**Sedation Agitation Scale**

<b>7</b>	<b>Dangerous agitation</b>	<b>Pulling at endotracheal tube, trying to remove catheters, climbing over bedrails, striking at staff, thrashing side to side</b>
<b>6</b>	<b>Very agitated</b>	<b>Does not calm despite frequent verbal reminders of limits, requires physical restraints, bites endotracheal tube</b>
<b>5</b>	<b>Agitated</b>	<b>Anxious or mildly agitated, attempts to sit up, calms down with verbal instructions</b>
<b>4</b>	<b>Calm and cooperative</b>	<b>Calm, awakens easily, follows commands</b>
<b>3</b>	<b>Sedated</b>	<b>Difficult to arouse, awakens to verbal stimuli or gentle shaking but drifts off again, follows simple commands</b>
<b>2</b>	<b>Very sedated</b>	<b>Arouses to physical stimuli but does not communicate or follow commands, may move spontaneously</b>
<b>1</b>	<b>Unarousable</b>	<b>Minimal or no response to noxious stimuli, does not communicate or follow commands</b>

- 13) The following conditions must be reported to the medical provider:
  - a) Ineffective pain or symptom relief
  - b) Persistent nausea or vomiting
  - c) Seizures
  - d) Agitation or restlessness
  - e) Family distress
  - f) Unexpected change in vital signs or condition
- 14) The following documentation must be completed:
  - a) Record medications on the **Medication Administration Record (MAR)**
  - b) Record pain and sedations levels electronically or on appropriate flowsheet.
  - c) Document control of previously intractable symptoms in the **Progress notes (written or electronic).**

**References:**

Bell, R. Ketamine for chronic non-cancer pain. Pain 2009;141:210-214.  
 Fitzgibbon, E., Hall, P., Schroder, C., Seely, J., Viola, R. Low Dose Ketamine as an Analgesic Adjuvant in Difficult Pain Syndromes: A Strategy for Conversion from Parenteral to Oral Ketamine. Journal of Pain and Symptom Management 2002;23 (2):165-170.

Mercadante, S. Arcuri, E., Tirelli, W., Casuccio, A. [Analgesic Effect of Intravenous ketamine in Cancer Patients on Morphine Therapy: A Randomized, Controlled, Double-Blind, Crossover, Double-Dose Study.](#) Journal of Pain and Symptom Management 2000;20 (4): 246-252.

Okon, T. [Ketamine: An Introduction for the Pain and Palliative Medicine Physician.](#) Pain Physician 2007;10:493-500.

Clinical Practice Guideline: [Sedation to Unconsciousness for Management of Intractable Symptoms Imminently Dying Patients](#)

**History:**

2/10 Drafted by Department of Pharmacy, Acute Pain Service and Department of Nursing

3/10 Approved by the URM C Therapeutics Committee

5/10 Reviewed and Approved by Clinical Council