IM Ketamine for Acute Behavioral Agitation in VHA Emergency Departments and Urgent Care Centers

National Protocol Guidance

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VA Pharmacy Benefits Management Services, Medical Advisory Panel, VISN Pharmacist Executives, and the VHA National Emergency Medicine Office

Purpose: To provide general guidance on ensuring access to intramuscular (IM) ketamine for the treatment of acute agitation in VHA Emergency Department (ED) and Urgent Care Centers (UCC).

Disclaimer: To be consistent with the purpose of this general guidance and not to be overly proscriptive, this guidance allows facilities the flexibility to exercise modifications to the protocol as necessary to operationalize the use of IM ketamine for acute agitation.

Background

Ketamine is a glutamate N-methyl-D-aspartate (NMDA) receptor antagonist commonly used for general anesthesia, procedural sedation, pain management and treatment of acute behavioral agitation and major depressive disorder.

Acute behavioral agitation is a challenging problem in the emergency department given the risk of harm to patients and staff. Of note, there are no formal recommendations or standardization for the management of behavioral agitation. The administration of intramuscular sedatives in individuals with severe behavioral agitation is usually accomplished with benzodiazepines and/or antipsychotics[2]. The use of benzodiazepines is associated with increased risk of respiratory depression, hypoxia, unplanned airway interventions and QTc prolongation[2]. Ketamine is a noncompetitive N-methyl-D-aspartate receptor antagonist with dissociative effect at high doses and analgesia with lower doses[3-8]. Unlike benzodiazepines, ketamine has a rapid onset of action, favorable cardiovascular stability, preserves spontaneous respirations and protective airways reflexes[8-11]. Studies have demonstrated that ketamine has quicker time to resolution of behavioral agitation when compared to other agents in both pre-hospital and hospital settings, making it an ideal agent for rapid treatment of acute behavioral agitation[12-20]. Intramuscular ketamine may be particularly useful when treating individuals in whom establishing intravenous access is situationally challenging.

The American Society of Anesthesiologists and the American College of Emergency Physicians endorse that ketamine can be safely used in the emergency department and in prehospital care setting for the control of acute agitated delirium in psychotic emergencies and drug intoxications[21].

This protocol does not apply to the use of ketamine for the purposes of deep sedation, acute pain management outside of sedation, when used for the purposes of securing an endotracheal airway (e.g., rapid sequence intubation), or when used in the care of mechanically ventilated patients.

Departments Affected: Pharmacy, Nursing, Emergency Departments/Urgent Care

Pharmacokinetics

a. Onset – 5 minutes
b. Duration – Up to 60 minutes
c. Half-life – 2 to 3 hours

NOTE: IM ketamine may have significant variation in clinical effect between individuals, so caution is advised.

Patient Selection:

Inclusion Criteria

- Patients who are extremely combative and are at immediate risk of causing physical harm to medical staff, the public, or themselves
- Patients who have failed de-escalation techniques and one or more rapid tranquilization medications (e.g., benzodiazepines, droperidol, haloperidol, olanzapine, ziprasidone) or in whom ketamine is determined to be a preferred first line agent.

Indication

a. Acute behavioral agitation (non-procedural sedation)

Contraindications

a. Hypersensitivity to ketamine or any excipient

Precautions

a. Active psychosis
b. Pregnancy
c. Elevated intracranial or intraocular pressure
d. Severe cardiovascular disease: acute coronary syndrome, decompensated heart failure, severe valvular disease, active cardiac dysthymias
e. Pulmonary hypertension
f. Severe hepatic dysfunction

Dosing

a. Intramuscular: 1-3 mg/kg (Ideal Body Weight)

NOTE: If ketamine is being administered shortly after receipt of another sedating agent, it is recommended to dose ketamine at the lower end of the dosing range.

Location of Administration, Monitoring , Equipment and Personnel Requirements

- Each facility will be responsible for developing and operationalizing a procedure to administer IM ketamine in the ED/UCC for the management of acute behavioral agitation.
- The facility is responsible for monitoring the patient during and after the injection(s).
- Be capable of administering oxygen, medication and/or restraints to manage potentially dangerous behavioral symptoms.

- Bag Mask Valve (BVM) device and airway rescue equipment must be available immediately to the provider.
- The facility must have a plan to rapidly address any sustained alterations in cardiovascular function including advanced cardiac life support or transfer to a hospital capable of caring for acute cardiovascular events.
- A Licensed Independent Practitioner (LIP) with at least Out of Operating Room Airway Management (OOORAM) Level 2 privileges must be available to be at the bedside immediately.
- The patient should be directly observed by an appropriate member of the clinical staff for at least 30 minutes after receiving IM ketamine.
- Non-invasive blood pressure monitoring, cardiac monitoring, continuous pulse oximetry and respiratory rate monitoring is recommended, as practical, in the environment of care.
- The ED/UCC LIP is responsible for ensuring that the patient is appropriate to receive ketamine for treatment of acute behavioral agitation, documenting risk and benefits and alternatives in the medical record.
- The ED/UCC RN is responsible for patient monitoring activities and may administer the medication under an appropriate order from an ED/UCC LIP consistent with applicable state licensure requirements.
- Facilities using ketamine for acute behavioral agitation will participate in an ongoing VA MedSAFE Medication Use Evaluation (MUE).

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