

# KetAMINE

## Classification

 **HIGH ALERT MEDICATION**

**CONTROLLED AND TARGETED SUBSTANCE**

Sedative

Analgesic

General anesthetic

## Indications

■ PCP: Analgesia

Adult Patients with:

- Moderate to severe pain associated with fractures and dislocations
- Moderate to severe pain associated with burns or soft tissue trauma including crush injuries
- Moderate to severe pain associated with multisystem trauma
- Palliative Patients Requiring Analgesia for pain (See Associated Palliative CPG)

CliniCall can authorize PCPs to administer IN ketamine for:

- Moderate to severe pain in pediatric patients (Aged 5 - 12 years old) due to trauma, fractures, burns or soft tissue injury
- Moderate to severe non-traumatic back pain
- Moderate to severe pain associated with abdominal pain and renal colic
- Moderate to severe obstetrical or gynecological associated pain unrelieved by nitrous oxide

■ ACP: Analgesia

■ ACP: Induction of sedation prior to intubation

■ ACP: Procedural sedation

■ ACP: Severe agitation or excited delirium syndrome

## Contraindications

- Ketamine is contraindicated for the purpose of sedation at the PCP level
- Hypersensitivity or allergy to ketAMINE
- Unable to manage the adverse effects of ketAMINE
- Conditions where elevated blood pressure may be harmful
- ACP: Age < 6 months
- PCP: Age < 5 years

## Adult dosages

■ PCP: Analgesia

**REQUIRES ADDITIONAL TRAINING AND ENDORSEMENT**

- Intranasal
  - 0.75 mg/kg ([see intranasal ketamine dosing chart](#))
  - May repeat 0.5 mg/kg after 20 minutes
  - Maximum single dose 100 mg

- Contact CliniCall for additional dosing instructions
- See [PR11: Intranasal Medication Administration](#) procedure

#### ■ ACP: Analgesia

- Intravenous/Intraosseous
  - 0.3 mg/kg slow push
  - May repeat 0.15 mg/kg after 5 minutes
  - Maximum cumulative dose 0.6 mg/kg in 45 minutes
- Intramuscular
  - 0.5 mg/kg
  - May repeat 0.3 mg/kg after 45 minutes

#### ■ ACP: Procedural Sedation

- Intravenous/Intraosseous
  - 0.1 - 0.5 mg/kg slow push every 60 seconds to effect
  - Consider starting at 0.5 mg/kg; use subsequent doses of 0.25 mg/kg or less as needed
  - Titrate to effect

#### ■ ACP: Anesthesia Induction

- Intravenous/Intraosseous: 2 mg/kg if shock index < 1
- Intravenous/Intraosseous: 1 mg/kg if shock index ≥ 1

#### ■ ACP: Maintenance of Anesthesia

- ½ of required induction dose every 10-15 minutes as required

#### ■ ACP: Excited Delirium

- Intramuscular
  - 4-5 mg/kg bolus
  - Maximum single/cumulative dose 500 mg. If appropriate sedation is not achieved, a call to Clinica11 is required.
  - Maximum volume of administration:
    - Deltoid: 2 mL
    - Lateral thigh: 4-5 mL
    - Gluteal: 5 mL

## Pediatric Considerations And Dosing

[Follow weight-based dosing \(Page for Age\)](#)

#### ■ PCP: Analgesia (Aged 5 - 12 years)

#### ■ ACP: Analgesia (Aged > 6 months)

- Intravenous/Intraosseous
  - 0.3 mg/kg slow push
  - Maximum single dose 20 mg
  - Repeat every 2-3 minutes to a total cumulative dose of 0.6 mg/kg
- Intramuscular
  - 0.5 mg/kg
  - May repeat 0.3 mg/kg after 45 minutes
- Intranasal
  - 1.5 mg/kg
  - May repeat 1 mg/kg at 20 minutes
  - Maximum single dose of 100 mg

- See [PR11: Intranasal Medication Administration](#) procedure

#### ■ ACP: Procedural Sedation

- See adult dosing guidelines. **Follow weight-based dosing regimen.**

#### ■ ACP: Excited Delirium

- **CLINICAL CONSULT REQUIRED FOR ANY PATIENT UNDER 12 YEARS OF AGE**
- See adult dosing guidelines above

## Mechanism Of Action

Ketamine is a non-competitive NMDA receptor antagonist that blocks glutamate. Low doses produce analgesia and modulate central sensitization, hyperalgesia, and opioid tolerance. Reduces polysynaptic spinal reflexes.

## Pharmacokinetics

Onset:

- Intravenous/Intraosseous: anesthetic effects within 30 seconds
- Intramuscular: anesthetic effects within 3-4 minutes
- Intranasal: analgesic effects within 5-10 minutes

Duration:

- Intravenous/Intraosseous: 5-10 minutes, recovery 1-2 hours
- Intramuscular: 12-15 minutes, recovery 3-4 hours
- Intranasal: up to 60 minutes of analgesic effects

## Adverse Effects

- Emergence phenomenon: confusion, delirium, excitement, hallucinations
- Tachycardia and hypertension (> 10%)
- Laryngospasm (< 1%)
- Bradycardia and hypotension (1-10%)
- Anaphylaxis (< 1%)
- Hypersalivation (< 1%)
- Extreme muscle rigidity or tone (< 1%)
- Nystagmus, increased intraocular pressure
- Apnea and respiratory depression (rare; transient reaction with rapid IV bolus dose)
- Erythema, morbilliform rash, rash at injection site
- Laryngospasm is a known and rare complication of ketAMINE administration, and, when it occurs, is usually transient.

## Warning And Precautions

Use with caution in:

- Severe hypertension (systolic BP > 180 mmHg)
- Subarachnoid hemorrhage or epidural hematoma with severe hypertension
- Myocardial ischemia or cardiac arrhythmias

