

# Ketamine

**Indications:** Pain, Severe bronchospasm, Procedural sedation, Rapid sequence induction, Excited delirium, Lifesaving procedure

**Contraindications:** Uncontrolled Hypertension, Hypersensitivity.

Be cautious administering to older adults and elderly.

**Concentration: 100 mg/mL**

## ADULT DOSING

Indication	Dose	Rate & Route	Note
Pain – or – Severe bronchospasm	10 mg <b>0.1 mL</b>	IV/IO infusion over 10 minutes	If the patient is hemodynamically unstable defined as MAP < 65 and/or respiratory failure, then ketamine may be used first for pain.  If the patient is hemodynamically stable defined as MAP ≥ 65 and no respiratory failure, then the appropriate total amount of fentanyl (≥ 100 mcg) should be administered first; then ketamine can be administered x1 10 minutes later if no relief in pain occurred.
	25 – 50 mg <b>0.25 – 0.5 mL</b>	IM	For IV/IO infusion, 10 mg (0.1 mL) mixed in 100 mL isotonic then administer with 60 gtts wide open; may repeat x1 at 20 minutes.  May repeat IM every 30 minutes titrated to pain management or presence of nystagmus.
Procedural sedation	100 mg <b>1 mL</b>	IV/IO push over 1 minute	May repeat IV/IO push every 10 - 20 minutes titrated to effect.
Rapid Sequence Induction	200 mg <b>2 mL</b>		
Violent Excited delirium – or – Lifesaving procedure	400 mg <b>4 mL</b>	IM	May repeat IM every 30 minutes titrated to effect. Lifesaving procedure when IV/IO access cannot be obtained.

## ADULT DOSING

## PEDIATRIC DOSING

Indication	Dose	Rate & Route	Note
Pain	0.2 mg/kg Max dose: 10 mg	IV/IO infusion over 10 minutes	<b>OLMC Required.</b>  Must be $\geq$ 3 months old and see pediatric dosing chart for patient weight minimums.
	0.4 mg/kg Max dose: 25 mg	IM	
Procedural sedation - or - Lifesaving procedure	1 mg/kg Max dose: 100mg	IVP/IO push over 1 minute	For IV/IO infusion, correct weight-based dose is mixed in 100 mL isotonic then administer with 60 gtts wide open; may repeat x1 at 20 minutes.
	4 mg/kg Max dose: 400 mg	IM	
Rapid Sequence Induction	2 mg/kg Max dose: 200 mg	IV/IO push over 1 minute	

## PEDIATRIC DOSING

**Precautions**

Laryngospasms and other forms of airway obstruction have occurred. Use with caution in patients with history of Schizophrenia. Be aware that in lower dosing some patients may experience partial disassociation.

**Adverse/Side Effects**

Respiratory depression may occur, Laryngospasms, Hypertension, Emergence Reactions (Hallucinations, Delirium), dizziness, nausea, vomiting

**Class**

Ketamine hydrochloride is a rapid-acting dissociative anesthetic.

**Mechanism of Action**

The anesthetic state produced by ketamine hydrochloride has been termed "dissociative anesthesia" in that it appears to selectively interrupt association pathways of the brain before producing somesthetic sensory blockade. It may selectively depress the thalamoneocortical system before significantly obtunding the more ancient cerebral centers and pathways (reticular-activating and limbic systems).

<b>Onset of Action</b>	$<$ 30 seconds (IV) 3 – 15 minutes (IM)	<b>Peak Effect</b>	Fast (IV) 5 – 30 minutes (IM)	<b>Duration of Action</b>	IV Anesthetic: 5 – 10 minutes IM Anesthetic: 12 – 25 minutes Analgesia: 15 – 30 minutes
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**Pediatric Dosing Ketamine**  
**OLMC Required**

3 kgs	4kgs	5 kgs	6-7 kgs	8-9 kgs	10-11 kgs	12-14 kgs	15-18 kgs	19-23 kgs	24-29 kgs	30-36 kgs
6.6 lbs	8.8 lbs	11 lbs	13-15 lbs	17-20 lbs	22-24 lbs	26-30 lbs	33-40 lbs	42-50 lbs	53-64 lbs	66-80 lbs
in18.25-20.25	in20.25-21.5	in21.5-23.25	in23.25-26.25	in26.25-29.25	in29.25-33	in33-37.5	in37.5-42.5	in42.5-47.75	in47.75-51.25	in51.25-56.25

**Pain 0.2 mg/kg ≤ 10 mg IV/IO Infusion**  
Concentration = 100 mg/ml

None	None	None	None	None	None	None	None	None	0.1 mL	0.1 mL
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**Pain 0.4 mg/kg ≤ 25 mg IM**  
Concentration = 100 mg/ml

None	None	None	None	None	None	0.1 mL	0.1 mL	0.1 mL	0.1 mL	0.1 mL
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**Procedural sedation 1 mg/kg ≤ 100 mg IV/IO**  
Concentration = 100 mg/ml

None	None	None	None	None	0.1 mL	0.2 mL	0.2 mL	0.2 mL	0.3 mL	0.4 mL
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**Procedural sedation 4 mg/kg ≤ 400 mg IM**  
Concentration = 100 mg/ml

None	None	None	None	None	0.4 mL	0.5 mL	0.7 mL	0.8 mL	1.1 mL	1.3 mL
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**Rapid Sequence Induction 2 mg/kg ≤ 200 mg IV/IO**  
Concentration = 100 mg/ml

None	None	None	None	None	0.2 mL	0.4 mL	0.4 mL	0.4 mL	0.6 mL	0.7 mL
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