

Midazolam

Indications: Procedural/maintenance sedation, Anticonvulsant, Rapid Sequence Induction, Acute behavioral emergencies, EtOH withdrawal, Uncontrolled Anxiety/Panic Attack

Contraindications: Allergy, Shock, Coma, Closed Angle Glaucoma, Pregnancy Category D

Concentration: 5 mg/mL

ADULT DOSING

Indication	Dose	Rate & Route	Note
Procedural/maintenance sedation – or – Acute psychiatric or toxicologic behavioral emergency	2.5 – 5 mg 0.5 – 1 mL	IV/IO	For IV/IO: Repeat q 3-5 minutes to effect For IM/IN: Repeat q 10-15 minutes to effect Maintain MAP > 65
	5 – 10 mg 1 – 2 mL	IM/IN	
Rapid Sequence Induction	5 – 10 mg 1 – 2 mL	IV/IO	
Anticonvulsant – or – EtOH Withdrawal	5 mg 1 mL	IV/IO	
	10mg 2 mL	IM/IN	
Uncontrolled Anxiety / Panic attack	0.5 – 1 mg 0.1 to 0.2 mL	IV/IM/IN	

ADULT DOSING

PEDIATRIC DOSING

Indication	Dose	Rate & Route	Note
Procedural/maintenance sedation	0.05 mg/kg Max dose: 5 mg	IV/IO	DO NOT ADMIN IF < 5 KG Repeat PRN to effect. Maintain SBP > 70 + (Age in years x 2) mmHg
Anticonvulsant	0.1 mg/kg Max dose: 5 mg	IV/IO/IM/IN	

PEDIATRIC DOSING

Pediatric Dosing Midazolam										
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
Sedation 0.05 mg/kg Midazolam for IV/IO Concentration = 5 mg/ml										
None	None	0.1 ml	0.1 ml	0.1 ml	0.1 ml	0.1 ml	0.2 ml	0.2 ml	0.3 ml	0.3 ml
Anticonvulsant 0.1 mg/kg Midazolam for IV/IO/IM/IN Concentration = 5 mg/ml										
None	None	0.1 ml	0.1 ml	0.2 ml	0.2 ml	0.3 ml	0.3 ml	0.4 ml	0.5 ml	0.7 ml

Precautions

Premedication with an opiate may potentiate midazolam and lead to apnea.
Reducing the dose to 50% is suggested in elderly and patients under the influence of other CNS depressants.

Adverse/Side Effects Class

Minor: N/V, Headache, Drowsiness, Lethargy, Cough, Hiccups
Major: Respiratory Depression, Apnea, Hypotension, Cardiac Arrest, Paradoxical CNS stimulation
Short-acting benzodiazepine central nervous system (CNS) depressant.

Mechanism of Action

Acts at the level of the limbic, thalamic, and hypothalamic regions of the CNS through potentiation of GABA (inhibitory neurotransmitter). Decreases neural cell activity in all regions of CNS. Anxiety is decreased by inhibiting cortical and limbic arousal. Promotes relaxation through inhibition of spinal motor reflex pathway, also depresses muscle & motor nerve function directly. As an anticonvulsant, augments presynaptic inhibitions of neurons, limiting the spread of electrical activity. However, it does not alter the electrical activity of the seizure's focus. Midazolam has twice the affinity for benzodiazepine receptors than diazepam and has more potent amnesic effects. It is short acting and roughly 3-4 times more powerful than diazepam.

Onset of Action

IV: 3 – 5 minutes
IN: ~ 10 minutes
IM: 5 – 15 minutes

Peak Effect

IV: 3 – 5 minutes
IN: ~ 15 minutes
IM: 15 – 30 minutes

Duration of Action

IV: < 2 hours (single dose)
IN: ~ 30 minutes
IM: ~ 2 hours