

Drug Name: **Atropine Sulfate**

Trade Name: **Atropine**

REVISED: November 1, 2017

Class:

- Parasympatholytic
- Anticholinergic Agent

Mechanism of Action:

- Atropine is a competitive inhibitor of acetylcholine @ muscarinic receptor sites.
- The increase of sympathetic activity seen with atropine administration is due to the drug's parasympatholytic effects.
- In the setting of symptomatic bradycardias, atropine decreases vagal effects on the heart resulting in increased chronotropy & dromotropy (with little or no inotropic effects).
- It is used in cholinergic exposures as a direct antidote for the poison.

Indications:

- Symptomatic Bradycardias
- Pre-intubation in children < one month of age
- Poisoning with:
 - Organophosphates* *Nerve gas*
 - Carbamates* *Other cholinergic*
 - Mushrooms* *agents*

Contraindications:

- In the arrest setting, there are no contraindications
- Non-arrest contraindications:**
- Myasthenia gravis
 - Closed-angle glaucoma
 - Atrial fibrillation & flutter
 - Known hypersensitivity
 - Thyrotoxicosis
 - Urinary tract obstruction

Precautions:

- Atropine may actually worsen 2nd degree Type II & 3rd degree AV blocks. *Many experts go as far as to indicate atropine is relatively contraindicated in this setting & transcutaneous pacing is preferred.*
- Cardiovascular disease including: CAD & CHF
- COPD
- HTN
- Renal/hepatic disease
- Geriatrics
- Pregnancy I
- Minimum Doses <0.5 mg in adults
 <0.1 mg in children

Smaller doses can cause a paradoxical bradycardia.

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This document is for **reference only**. Please refer to SWO's for specific indications, dosages, and applications

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Dosage:

Adults:

- Symptomatic Bradycardia: **IV**: 0.5 mg to 1 mg every 3-5 minutes.
Max dose: 0.04 mg/kg (full vagal blockade).
- Poisonings: **IV/IM/CETT/IO**: 1-2 mg as needed to decrease cholinergic symptoms.
AUTOINJECTOR (MARK 1 KIT): 2 mg

Pediatrics:

- Symptomatic Bradycardias: **IV/IO**: 0.02 mg/kg repeated every 3-5 minutes as needed.
 - Child: Minimum—0.1 mg Maximum—0.5 mg
 - Adolescent: Minimum—0.1 mg Maximum—1 mg**CETT**: 2-3 times the IV dose diluted in 3-5 ml NS
- Poisonings: **IV/IM**: 0.05 mg/kg IV every 3-5 minutes as needed to decrease cholinergic symptoms.
- Pediatric Pre-Intubation: **IV/IO**: 0.02 mg/kg

Onset:

- Rapid

Duration:

- 2-6 hours

Side Effects:

- Anticholinergic Effects: Remember the mnemonic:
 - DRY AS A BONE**—Dry mucous membranes, urinary retention, constipation
 - MAD AS A HATTER**—Restlessness, tachycardia, palpitations, HA, dizziness
 - RED AS A BEET**—Flushed, hot, & dry skin
 - BLIND AS A BAT**—Pupillary dilation (mydriasis), blurred vision (cycloplegia), photophobia
- Tachydysrhythmias, Ventricular Tachycardia/Fibrillation
- Of course...N/V

Interactions:

- Anticholinergics increase vagal blockade.
- Potential adverse effects when administered with digitalis, cholinergics, neostigmine.
- Enhanced effects are possible with antihistamines, procainamide, quinidine, antipsychotics, antidepressants, benzodiazepines, phenothiazines.
- When administered too soon after NaHCO₃ (i.e. Without allowing sufficient fluid to flush the line), a precipitate will form.

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PEARLS:

- **To recognize cholinergic poisonings remember the SLUDGE, DUMBELS, and Days of the week mnemonics.**
- **Pushing a less than the minimum dose or pushing atropine too slowly may elicit a paradoxical bradycardia.**
- **Remember most bradycardias in pediatrics are a result of hypoxia/hypoxemia rather than a primary cardiac problem. Ventilation is always preferred over pharmacological intervention.**
- **Avoid being splashed in the eyes with atropine.**
- **Be prepared, on physician order, to deliver massive amounts (10-40mg) in the setting of cholinergic poisoning.**

Mnemonics for nerve agent/organophosphate/Carbamate exposure

“S.L.U.D.G.E.”	“D.U.M.B.E.L.S.” (Muscarinic)
Salivation (excessive production of saliva)	Diarrhea
Lacrimation (excessive tearing)	Urination
Urination (uncontrolled urine production)	Miosis
Defecation (uncontrolled bowel movement)	Bradycardia/Bronchospasm/Bronchorrhea
Gastrointestinal distress (cramps)	Emesis
Emesis (excessive vomiting)	Lacrimation
“B.A.M.”	Salivation, Secretion, Sweating
Breathing Difficulty (wheezing)	Days of the Week (Nicotinic)
Arrhythmias (Bradycardia, ventr. Arrhythmias, AV Blocks.)	Mydriasis
Miosis (pinpoint pupils)	Tachycardia
“Three C’s” of CNS effects	Weakness
Confusion	Hypertension, Hyperglycemia
Convulsions	Fasciculations
Coma	

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