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

RX

Drug Name: **Atropine Sulfate**

Trade Name: **Atropine**

REVISED: **June 01, 2019**

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
  Carbamates
  Mushrooms
  Nerve gas
  Other cholinergic 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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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/ETT/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

  ETT: 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 mneumonic:
  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 $NaHCO_3$ (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)	**D**iarrhea
Lacrimation (excessive tearing)	**U**rination
Urination (uncontrolled urine production)	**M**iosis
Defecation (uncontrolled bowel movement)	**B**radycardia/Bronchospasm/Bronchorrhea
Gastrointestinal distress (cramps)	**E**mesis
Emesis (excessive vomiting)	**L**acrimation
"B.A.M."	**S**alivation, Secretion, Sweating
Breathing Difficulty (wheezing)	**Days of the Week (Nicotenic)**
Arrhythmias (Bradycardia, ventr. Arrhythmias, AV Blocks.)	**M**ydriasis
Miosis (pinpoint pupils)	**T**achycardia
"Three C's" of CNS effects	**W**eakness
Confusion	**H**ypertension, Hyperglycemia
Convulsions	**F**asciculations
Coma	

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