

Atropine Sulfate (Cardiac Agent)

Class

Anticholinergic, Vagolytic, Belladonna Alkaloid, Cycloplegic Mydriatic

Pharmacologic properties

Atropine is a potent parasympatholytic anticholinergic. It inhibits muscarinic receptor activity in the parasympathetic sites in smooth muscle, central nervous system, cardiac and secretory tissue. This reduces vagal tone, increases automaticity of the SA node and increases AV conductions, thus increasing heart rate. Additional effects include drying secretions and slowing motility in the gastrointestinal tract.

Indications

- Bradydysrhythmias (rate < 50) accompanied by hemodynamic compromise, i.e. hypotension (systolic less than 90 mmHg), shock, pulmonary edema, altered level of consciousness [Protocol 9](#)
- Pediatric Bradycardia (HR < 100 in an infant, HR < 60 in a child) despite adequate oxygenation, ventilation, chest compressions, **and refractory to epinephrine** [Protocol 9P](#).
- RSI in pediatrics [Protocol 7P](#).
- Beta-blocker or calcium channel blocker overdose [Protocol 15](#), [Protocol 15P](#).

Contraindications

- Atropine has no effect in patients with transplanted hearts
- 3rd degree AV block in the setting of an acute MI, especially an anterior wall MI

Precautions

- If normal dose pushed too slowly, or if too small a dose (< 0.5 mg) is given, heart rate may initially slow down
- Atropine is potentiated by antihistamines and antidepressants
- Cautious use in Type II AV block and 3rd degree block with wide QRS complexes

Side Effects/Adverse Reactions

- Restlessness, Agitation, Confusion, Pupil dilation, Blurred vision, Headache, Increased myocardial oxygen demand, Ventricular fibrillation, Dry mouth, Difficulty swallowing, Urinary retention, Paradoxical bradycardia when pushed too slowly or when given at low doses.



Dosage and Administration

Adult

- 1 mg IV/IO bolus for symptomatic bradycardia.
 - May be repeated every 3-5 minutes until a maximum total dose of 3 mg or 0.04 mg/kg is reached.

Pediatric

- 0.02 mg/kg IV/IO bolus (MAX 0.5 mg) for symptomatic bradycardia. (Refractory to epinephrine)
 - Minimum individual dose is 0.1 mg (1 mL) and maximum individual dose is 0.5 mg (5 mL).
 - May be repeated every 3-5 minutes not to exceed a maximum total dose of 3 mg or 0.04 mg/kg is reached.

Atropine Sulfate (Antidote for Poisoning)

Class

Anticholinergic, Vagolytic, Belladonna Alkaloid, Cycloplegic Mydriatic

Pharmacologic properties

Atropine is a potent parasympatholytic anticholinergic. It inhibits muscarinic receptor activity in the parasympathetic sites on smooth muscle and the central nervous system, as well as cardiac and secretory tissue. This reduces vagal tone, increases automaticity of the SA node and increases AV conductions, thus increasing heart rate. Additional effects include drying secretions and slowing motility in the gastrointestinal tract.

Indications

- Organophosphate Poisoning (i.e. parathion, malathion, rid-a-bug) and carbamate (Baygon, sevin, and many common roach and ant sprays) [Protocol 25](#).
 - Poisoning signs affecting muscarinic receptor sites:
 - **DUMBBELLS**
 - Diarrhea
 - Urination
 - Miosis
 - Bronchorrhea, Bradycardia
 - Bronchospasms
 - Emesis
 - Lacrimation
 - Lethargy
 - Salivations

Contraindications

- None when used in the management of severe organophosphate poisoning

Precautions

- It is important that the patient be adequately oxygenated and ventilated prior to using atropine, as atropine may precipitate ventricular fibrillation in a poorly oxygenated patient.
- Do not rely upon pupillary constriction to discontinue or to titrate medications.



Side Effects/Adverse Reactions

- Victims of organophosphate poisoning can tolerate large doses (1000 mg) of atropine.
- Signs of atropinization (flushing, pupil dilation, dry mouth, tachycardia) are likely to occur.

Dosage and Administration

Adult

- 2 mg IV/IO/IM
 - May repeat 2 mg IV/IO/IM every 5 minutes as necessary.
 - Titrate until respiratory secretions/distress begins to decrease (atropinization).

Pediatric

- 0.02 mg/kg IV/IO/IM
 - May repeat 0.02 mg/kg every 5 minutes as necessary.
 - Titrate until respiratory secretions/distress begins to decrease (atropinization).