Atropine

Introduction: Atropine a naturally occurring alkaloid of "*atropa belladonna*" is a competitive antagonist of muscarinic cholinergic receptors. It is absorbed from the gastro-intestinal tract, and is excreted in the urine. Atropine undergoes hepatic metabolism and has a plasma half-life of 2-3 hours. Atropine ampoules should be stored away from light and never is frozen.

Mechanism of action: Blocks the action of acetylcholine at parasympathetic sites in smooth muscle, secretory glands and the CNS; increases cardiac output, dries secretions, antagonizes histamine and serotonin.

Pharmacology:
Onset of action: I.V.: Rapid
Absorption: Complete
Distribution: Widely throughout the body; crosses placenta; trace amounts enter breast milk; crosses blood-brain barrier
Metabolism: Hepatic
Half-life elimination: 2-3 hours
Excretion: Urine (30% to 50% as unchanged drug and metabolites)

Indication:
- As an antisialoagogue when reduction of secretions of the respiratory tract are thought to be needed; its routine use as a preanesthetic agent is discouraged,
- To blunt the increased vagal tone (decreased pulse and blood pressure) produced by intra-abdominal traction or ocular muscle traction, its routine use to prevent such events is discouraged,
- to temporarily increase heart rate or decrease AV-block until definitive intervention can take place, when bradycardias or AV-block are judged to be hemodynamically significant and thought to be due to excess vagal tone,
- As an antidote for inadvertent overdose of cholinergic drugs or for cholinesterase poisoning such as from organophosphorus insecticides,
- as an antidote for the “rapid” type of mushroom poisoning due to the presence of the alkaloid, muscarine, in certain species of fungus such as Amanita muscaria, and
- To alleviate the muscarinic side effects of anticholinesterase drugs used for reversal of neuromuscular blockade.

Dosage:
Adults: 0.4 to 0.6 mg every 4 to 6 h.
Children*:* PO Use lowest effective dose. The following doses may be exceeded in certain cases: 7 to 16 lb: 0.1 mg; 17 to 24 lb: 0.15 mg; 24 to 40 lb: 0.2 mg; 40 to 65 lb: 0.3 mg; 65 to 90 lb: 0.4 mg; over 90 lb: 0.4 mg.
Surgery *Adults**:* Subcutaneous/IM/IV 0.4 to 0.6 mg every 4 to 6 h.
Children*:* Subcutaneous/IM/IV 0.01 mg/kg to max of 0.4 mg every 4 to 6 h.

***Infants less than 5 kg**:* Subcutaneous/IM/IV 0.04 mg/kg.
Infants over 5 kg: Subcutaneous/IM/IV 0.03 mg/kg.
***Bradyarrhythmias Adults**:* Subcutaneous/IM/IV 0.4 to 2 mg every 1 to 2 h as needed.
Children: Subcutaneous/IV/IM 0.01 to 0.03 mg/kg, every 1 to 2 h as needed.

Side effects: Most of the side effects of atropine are directly related to its antimuscarinic action. Dryness of the mouth, blurred vision, photophobia and tachycardia commonly occur with chronic administration of therapeutic doses. Anhidrosis also may occur and produce heat intolerance or impair temperature regulation in persons living in a hot environment. Constipation and difficulty in micturition may occur in elderly patients. Occasional hypersensitivity reactions have been observed, especially skin rashes which in some instances progressed to exfoliation.
Adverse effects following single or repeated injections of atropine are most often the result of excessive dosage. These include palpitation, dilated pupils, difficulty in swallowing, hot dry skin, thirst, dizziness, restlessness, tremor, fatigue and ataxia. Toxic doses lead to marked palpitation, restlessness and excitement, hallucinations, delirium and coma. Depression and circulatory collapse occur only with severe intoxication. In such cases, blood pressure declines and death due to respiratory failure may ensue following paralysis and coma.

Precautions: Atropine Sulfate Injection, USP should be used with caution in all individuals over 40 years of age. Conventional systemic doses may precipitate acute glaucoma in susceptible patients, convert partial organic pyloric stenosis into complete obstruction, lead to complete urinary retention in patients with prostatic hypertrophy or cause inspissation of bronchial secretions and formation of dangerous viscid plugs in patients with chronic lung disease.
Pregnancy Category C.: Atropine should be given to a pregnant woman only if clearly needed.
***Pediatric Use*:** Safety and effectiveness in pediatric populations have not been established.
Geriatric Use: An evaluation of current literature revealed no clinical experience identifying differences in response between elderly and younger patients. In general, dose selection for an elderly patient should be cautious, usually starting at the low end of the dosing range, reflecting the greater frequency of decreased hepatic, renal, or cardiac function, and of concomitant disease or other drug therapy.

Contraindications: Atropine generally is contraindicated in patients with glaucoma, pyloric stenosis or prostatic hypertrophy, except in doses ordinarily used for preanesthetic medication.

How supplied: Customized as per request.