atr**opine** (at-ro-peen)

**Classification**
Therapeutic: antiarrhythmics, antimuscarinics

**Pregnancy Category C**

**Indications**
IM: Given preoperatively to decrease oral and respiratory secretions.
IV: Treatment of sinus bradycardia and heart block.
IV: Reversal of adverse muscarinic effects of anticholinesterase agents (neostigmine, physostigmine, or pyridostigmine).

**Action**
Blocks the action of acetylcholine at postganglionic sites located in: Smooth muscle, Secretory glands, CNS (antimuscarinic activity). Low doses decrease: Sweating, Salivation, Respiratory secretions. Intermediate doses produce: Miosis (pupil dilation), Cycloplegia (loss of visual accommodation), Increased heart rate. GI and GU tract motility are decreased at larger doses.

**Therapeutic Effects:**
Increased heart rate. Decreased GI and respiratory secretions. Reversal of muscarinic effects. May have a spasmolytic action on the biliary and genitourinary tracts.

**Pharmacokinetics**
**Absorption:** Well absorbed following subcut or IM administration. 
**Distribution:** Readily crosses the blood-brain barrier. Crosses the placenta and enters breast milk.
**Metabolism and Excretion:** Mostly metabolized by the liver; 30–50% excreted unchanged by the kidneys.
**Half-life:** 
- Children 2 yr: 4–10 hr
- Children ≥ 2 yr: 1.5–3.5 hr
- Adults: 4–5 hr

**TIME/ACTION PROFILE (inhibition of salivation)**

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<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
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<tr>
<td>IM</td>
<td>rapid</td>
<td>15–50 min</td>
<td>4–6 hr</td>
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<td>Subcut</td>
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**Contraindications/Precautions**
Contraindicated in: Hypersensitivity, Angle-closure glaucoma, Acute hemorrhage, Tachycardia secondary to cardiac insufficiency or tachyarrhythmias, (Hemorrhagic disease of the GI tract.

**Use Cautiously:** in intra-abdominal infections, Prostatic hypertrophy (Chronic renal, hepatic, pulmonary, or cardiac disease). OB: Lactation: Safety not established; IV administration may produce fetal tachycardia; Precaution: Infantile Down syndrome have increased sensitivity to cardiac effects and mydriasis. Children may have increased susceptibility to adverse reactions. Exercise care when prescribing in children with spastic paralysis or brain damage. Geri: Increased susceptibility to adverse reactions.

**Adverse Reactions/Side Effects**

**Interactions**
**Drug-Drug:** Increases anticholinergic effects with other anticholinergics, including antihistamines, tricyclic antidepressants, quinine, disopyramide. Anticholinergics may alter the absorption of other orally administered drugs by slowing motility of the GI tract. Antacids may alter absorption of anticholinergics. May 7-day minimal lesions in patients taking oral potassium chloride tablets. May alter response to beta-blockers.

**Route/Dosage**

**Preanesthesia (To Decrease Salivation/Secretions)**

**IM, IV, Subcut:** (Adults): 0.4–0.6 mg 30–60 min preop.
**IM, IV, Subcut:** (Children ≥ 5 kg): 0.1–0.2 mg/kg/dose 30–60 min preop to a maximum of 0.4 mg/dose.
**IM, IV, Subcut:** (Children ≤ 5 kg): 0.02 mg/kg/dose 30–60 min preop then q 4–6 hr as needed.

**Bradydysrhythmias**

**IV:** (Adults): 0.5–1 mg; may repeat as needed q 5 min, not to exceed a total of 2 mg (3–5 min in Advanced Cardiac Life Support guidelines) or 0.04 mg/kg (total range: 0.5–1 mg/kg dose)
IV (Children): 0.02 mg/kg (maximum single dose is 0.5 mg in children and 1 mg in adolescents); may repeat q 5 min up to a total dose of 1 mg in children (2 mg in adolescents).

Endotracheal (Children): use the IV dose and dilute before administration.

Reversal of Adverse Muscarinic Effects of Anticholinesterases

IV (Adults): 0.6–12 mg for each 0.5–2.5 mg of neostigmine methylsulfate or 10–20 mg of pyridostigmine bromide concurrently with anticholinesterase.

Organophosphate Poisoning

IM (Adults): 1 mg/mL; dose q 10–20 min until atropinic effects observed then q 1–4 hr for 24 hr. Up to 30 mg may be used for 24 hr and 2 g over several days may be given in severe intoxication.

DM (Children): 0.5–2 mg/kg/dose q 10–20 min. May repeat q 5 min up to a total dose of 1 mg/kg/day.

DM (Children 0–6 mo): 0.1 mg/kg/day. May repeat q 5 min. Up to 1 mg/day may be used if needed.

DM (Children 6 mo–4 yr): 0.05 mg/kg/dose q 10–20 min. May repeat q 5 min up to a total dose of 1 mg/kg/day.

DM (Children 4–10 yr): 0.025 mg/kg/dose q 20 min. May repeat q 5 min up to a total dose of 1 mg/kg/day.

DM (Children 10 yr–15 yr): 0.02 mg/kg/dose q 10–20 min. May repeat q 5 min up to a total dose of 1 mg/kg/day.

DM (Children 16 yr–18 yr): 0.01 mg/kg/dose q 10–20 min. May repeat q 5 min up to a total dose of 1 mg/kg/day.

DM (Children >18 yr): 0.005 mg/kg/dose q 10–20 min. May repeat q 5 min up to a total dose of 1 mg/kg/day.

DM (Adults >18 yr): 0.1–0.5 mg/kg/dose q 10–20 min. May repeat q 5 min up to a total dose of 1 mg/kg/day.

Organophosphate Poisoning

Endotracheal (Children): use the IV dose and dilute before administration.

Potential Nursing Diagnoses

Decreased cardiac output (Indications)

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NURSING IMPLICATIONS

Assessment

● Assess vital signs and ECG tracings frequently during IV drug therapy. Report any significant changes in heart rate or BP, or increased ventricular ectopy or angina to health care professional promptly.

● Monitor intake and output ratios in elderly or surgical patients because atropine may cause urinary retention.

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Implementation

● IV: Infuse slowly at a rate of 1 mg over 1 min, followed by 20 mL of saline flush. Additional volumes may be added during resuscitation as needed.

● Oral: Administer in divided doses over 12 hours. Do not exceed 10 mg/day.

NURSING IMPLICATIONS

Assessment

● Assess vital signs and ECG tracings frequently during IV drug therapy. Report any significant changes in heart rate or BP, or increased ventricular ectopy or angina to health care professional promptly.

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Decreased cardiac output (Indications)

Impaired oral mucous membrane (Side Effects)

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CONTINUED

**atropine**

- decanoate, camphor, olofenac, trichloroethylene, acepromazine, isoflurane, fenfluramine, chlorpromazine, oxytetracycline, penicillin, amoxicillin, cimetidine, tetracycline, trimethoprim, sulfadoxine, sulfafoxide, chloramphenicol, omeprazole, sulfinpyrazone, naproxen, tolazamide, valproic acid, glucose, insulin, meglitinides, metformin, cyclosporine, alfuzosin, clonidine, and theophylline.

- **Y-Site Incompatibility:** alfentanil, propofol, amphotericin B colloidal, dextran, furosemide, dexamethasone, magnesium sulfate, hydroxyzine, racemic epinephrine, ephedrine, botulinum toxin, vancomycin, dopamine, lidocaine, epinephrine, hyaluronidase, dobutamine, isoproterenol, dopamine, inositol, streptokinase, streptodornase, heparin, abciximab, nitroprusside, rizatriptan, propranolol, ketamine, ketorolac, cefazolin, clarithromycin, amikacin, streptomycin, sulfa, vancomycin, doxorubicin, and calcium chloride.

- **Endotracheal:** Dilute with 5–10 mL of 0.9% NaCl.

- **Static:** Inject directly into the endotracheal tube followed by several positive pressure ventilations.

**Patient/Family Teaching**

- May cause dry mouth. Caution patients to avoid driving or other activities requiring alertness until response to medication is known.

- Administer atropine at night, if possible, and frequent oral hygiene may help relieve dry mouth.

- Caution patients that atropine impacts heat regulation. Strenuous activity in a hot environment may cause heat stroke. Advise patient to notify health care professional of all live or OTC medications, vitamins, or herbal products being taken and to consult with health care professional before taking other medications.

- **Pediatric** instruct parents or caregivers that medication may cause fever and to notify health care professional before administering to a febrile child.

- **Geriatric** inform male patients with benign prostatic hyperplasia that atropine may cause urinary hesitancy and retention. Changes in urinary stream should be reported to health care professional.

**Evaluation/Desired Outcomes**

- Increased heart rate.

- Dryness of mouth.

- Reversal of muscarinic effects.

- Why was this drug prescribed for your patient?