



## MONOGRAPH

# ATROPINE

<b>Scope (Staff):</b>	Medical, Pharmacy, Nursing, Anaesthetic Technicians
<b>Scope (Area):</b>	Perth Children's Hospital - All Clinical Areas

### Child Safe Organisation Statement of Commitment

CAHS commits to being a child safe organisation by applying the National Principles for Child Safe Organisations. This is a commitment to a strong culture supported by robust policies and procedures to reduce the likelihood of harm to children and young people.

This document should be read in conjunction with this [DISCLAIMER](#)

### QUICKLINKS

<a href="#">Dosage/Dosage Adjustments</a>	<a href="#">Administration</a>	<a href="#">Compatibility</a>	<a href="#">Monitoring</a>
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### DRUG CLASS

Atropine competitively inhibits acetylcholine from binding to muscarinic receptors in the parasympathetic and central nervous system, smooth muscle and secretory gland, resulting in increased cardiac output and reduction in secretions. <sup>1-4</sup>

### INDICATIONS AND RESTRICTIONS

#### Parenteral:

- Bradycardia with haemodynamic compromise. <sup>1-4</sup>
- Cholinergic crisis (organophosphate poisoning, chemical nerve agent toxicity). <sup>1-4</sup>
- Prophylaxis of cholinesterase inhibitor-induced muscarinic effects. <sup>1-4</sup>

#### Sublingual:

- Reduce excessive salivation and secretions. <sup>1-4</sup>

#### Ophthalmic:

- Diagnostic (mydriasis, cycloplegia). <sup>1-4</sup>
- Iritis or uveitis. <sup>1-4</sup>
- Amblyopia (healthy eye penalisation) <sup>1-4</sup>

## CONTRAINDICATIONS

Note: Atropine is a life-saving medication in events of severe or life-threatening muscarinic effects (e.g. poisoning with organophosphates or nerve agents). Contraindications and precautions are relative in such situations.

- Hypersensitivity to atropine or any component of the product.<sup>3,5</sup>
- Angle-closure glaucoma, myasthenia gravis.<sup>1,2,6</sup>
- Severe inflammatory gastrointestinal disease or obstruction (e.g. pyloric stenosis, paralytic ileus).<sup>1,6</sup>
- Genitourinary system obstruction.<sup>6</sup>
- *Ophthalmic formulation*: Increased intraocular pressure.<sup>1</sup>

## PRECAUTIONS

- Constipation, delirium, tachycardia, fever, urinary retention, arrhythmias, autonomic neuropathy, cardiovascular disease, gastrointestinal disease, hyperthyroidism, pulmonary disease (e.g. asthma, chronic lung disease).<sup>1,3</sup>

## FORMULATIONS

Listed below are products available at PCH, other formulations may be available, check with pharmacy if required.

- 1% (10 mg/mL) eye drop 15 mL and minim.
- 600 micrograms/1 mL ampoule.

## DOSAGE & DOSAGE ADJUSTMENTS

**Neonates:** [Refer to Neonatal Medication Protocols](#)

Note: Low doses of atropine (<100 microg) may cause paradoxical bradycardia.<sup>4</sup>

**Child ≥1 month:**

### PARENTERAL

#### **Bradycardia with haemodynamic compromise**

- IV, Intraosseous: 20 microg/kg/dose (max 600 microg) Repeat once if necessary.<sup>7,8</sup>

#### **Cholinergic crisis (organophosphate poisoning, chemical nerve agent toxicity)**

- IV, IM, Intraosseous: 50 microg/kg/dose (max 3 mg).<sup>4,8</sup> Give double the previous ineffective dose every 5 minutes until atropine effect (tachycardia, dry flushed skin, mydriasis) is evident.<sup>1,6,8</sup>
  - Repeat the effective or a lower dose every 1 to 4 hourly as required to maintain atropinisation.<sup>8</sup>
- Continuous atropine IV infusion may be considered for patients requiring large doses of atropine to maintain stabilisation.<sup>4</sup>

- Commence infusion at hourly rate of 10 – 20% of total dose required for stabilisation (i.e. If total atropinisation dose = 10 mg, commence infusion at 1 – 2 mg/hour of atropine).<sup>4</sup>
- Dosing may be reduced when patient has been stabilised for at least 6 hours.<sup>1</sup>

**Prophylaxis of cholinesterase inhibitor-induced muscarinic effects when anticholinesterase agents (i.e. neostigmine, pyridostigmine) are used to reverse neuromuscular blockade**

- IV: 10 to 20 microg/kg (up to 1.2 mg).<sup>6,9</sup> Repeat or adjust dose every 10 to 20 minutes as required.<sup>1</sup> (*Give 10 microg/kg for bradycardia without cardiac output compromise*).<sup>9</sup>

**SUBLINGUAL**<sup>10</sup>

**Inhibit salivation and secretions.**

- Using 1% eye drop: Initially, 1 drop **sublingually** daily.
- Titrate dose according to clinical response. May be given every 4 to 6 hourly if necessary.

**OPHTHALMIC – 1% EYE DROP/MINIM**

**Diagnostic (Mydriasis, Cycloplegia)<sup>3</sup>:**

- Mydriasis occurs after at least 40 minutes following administration; cycloplegia occurs after 1 – 3 hours.<sup>8</sup>
- ≥ 3 months to < 3 years: 1 drop 40 minutes prior to intended maximum dilation time. Maximum of once daily.<sup>8</sup>
- ≥ 3 years: 1 drop 40 minutes prior to intended maximum dilation time. Maximum of twice daily.<sup>8</sup>
- Ophthalmologist may initiate drops up to 3 days prior to diagnostic appointment.<sup>11</sup>

**Iritis, Uveitis:** 1 drop to the affected eye(s) 2 to 3 times daily.<sup>1</sup>

**Amblyopia (healthy eye penalisation):** 1 drop into the unaffected eye once daily, on weekends only (may be increased to twice daily for children ≥ 3 years, if necessary).<sup>1, 3, 12, 13</sup>

No specific dosage adjustment recommendations available for renal or hepatic impairment.  
Use with caution in patients with significant impairment.<sup>1</sup>

**RECONSTITUTION & ADMINISTRATION**

**Intravenous Injection**

Administer undiluted by **rapid IV injection**; slow IV injection may cause paradoxical bradycardia.<sup>2,15</sup>

**Continuous Intravenous Infusion**

Dilute 6 mg of atropine with sodium chloride 0.9%, to a final volume of 20 mL to give a final concentration of 0.3 mg/mL.

### COMPATIBILITY (*LIST IS NOT EXHAUSTIVE*)

**Compatible fluids:** Sodium chloride 0.9%.<sup>15</sup>

**Compatible at Y-site:** Adrenaline (epinephrine), amiodarone, calcium chloride/gluconate, fentanyl, heparin sodium, hydromorphone, ketamine, midazolam, potassium chloride, sodium bicarbonate, noradrenaline (norepinephrine) acid tartrate.<sup>3,15</sup>

*Only commonly used drugs are listed below. This is not a complete list of incompatible drugs. [Compatibilities of IV drugs](#) must be checked when two or more drugs are given concurrently.*

### INCOMPATIBLE drugs:

Flucloxacillin, diazepam, metaraminol, pantoprazole, phenytoin, thiopental.<sup>3,15</sup>

### MONITORING

Intravenous: continuous cardiac monitoring, blood pressure, temperature, pulse, mental status.<sup>2</sup>

### ADVERSE EFFECTS

Severity and frequency are dose related.<sup>2</sup> Adverse effects generally occur with parenteral administration but may also occur with sublingual and ophthalmic use.<sup>4,11</sup>

**Common:** Dry mouth, dysphagia, constipation, urinary retention, flushing, arrhythmias/palpitations, confusion, dizziness, headache, blurred vision.<sup>6,16</sup>

**Rare:** Angina pectoris, hypertensive crisis, seizure.<sup>6</sup>

### STORAGE

Atropine Minims – Protect from light. Refrigerate, do not freeze.<sup>5</sup>

Ampoule and Eye Drop – Protect from light. Store below 25°C.<sup>5</sup>

### INTERACTIONS

Atropine may interact with other medications; please consult PCH approved references (e.g. [Clinical Pharmacology](#)), a clinical pharmacist or PCH Medicines Information Service on extension 63546 for more information.

**\*\*Please note:** The information contained in this guideline is to assist with the preparation and administration of **Atropine**. Any variations to the doses recommended should be clarified with the prescriber prior to administration\*\*




### REFERENCES

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