# Drug Therapy Protocols: Atropine

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| **Policy code** | DTP_ATR_0722 |
| **Date** | July, 2022 |
| **Purpose** | To ensure a consistent procedural approach to atropine administration. |
| **Scope** | Applies to Queensland Ambulance Service (QAS) clinical staff. |
| **Health care setting** | Pre-hospital assessment and treatment. |
| **Population** | Applies to all ages unless stated otherwise. |
| **Source of funding** | Internal – 100% |
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# Atropine



## Drug class[1,2]

Antichlolinergic (antimuscarinic)

## Pharmacology

Atropine works by inhibiting the action of the parasympathetic nervous system allowing for an unchallenged sympathetic response. It successfully blocks the action of the vagus nerve on the heart, increases the rate of the SA node, conduction through the AV node and blocks exocrine gland activity.[1–3]

## Metabolism

Atropine is metabolised by the liver and excreted mainly by the kidneys.[1–3]

### Indications[1–6]

- **Bradycardia** (with poor perfusion)
- **Envenomation** (with increased parasympathetic activity)
- **Hypersalivation** (secondary to ketamine administration)
- **Organophosphate toxicity** (with cardiac AND/OR respiratory compromise)

### Contraindications

- Allergy AND/OR Adverse Drug Reaction

### Precautions

- Atrial flutter
- Atrial fibrillation
- AMI
- Glaucoma

### Side effects[1–3]

- Agitation
- Hallucinations
- Dilated pupils
- Dry mouth/dry skin/reduced bronchial and gastric secretions
- Tachycardia

### Presentation

- Ampoule, 1.2 mg/1 mL *atropine sulphate monohydrate*

| Onset (IV) | Duration (IV) | Half-life |
|---|---|---|
| 1–2 minutes (peak 15–50 minutes) | Up to 5 hours | 3–4 hours |

## Schedule

- S4 (Restricted drugs).

### Routes of administration

| | |
|---|---|
| Intramuscular injection (IM) | CCP |
| Intravenous injection (IV) | CCP |
| Intraosseous injection (IO) | CCP |
| Intravenous infusion (IV INF) | E CCP |

### Special notes

- A dose of up to 1.2 mg of atropine is generally sufficient to resolve bradycardia in adult patients. Subsequent doses in patients who fail to respond is not usually beneficial.[1]
- Sub-therapeutic doses of atropine may cause paradoxical bradycardia.

### Special notes *(cont.)*

- Ambulance officers must only administer medications for the listed indications and dosing range. Any consideration for treatment outside the listed scope of practice requires mandatory approval via the *QAS Clinical Consultation and Advice Line*.
- Atropine requirements for organophosphate toxicity vary enormously between patients and organophosphates.
- Target atropinisation for organophosphate toxicity is achieved when the patient has the following endpoints:
  - chest clear and no wheeze on auscultation
  - heart rate > 80 beats per minute
  - systolic BP > 80 mmHg
- Organophosphate toxicity induced tachycardia should not prohibit atropine administration if respiratory distress is present (e.g. profuse oral and/or bronchial secretions).
- Total loading dose (CCP ESoP – aeromedical IV INF protocol) is defined as the sum of the initial doses given at the beginning of a course of treatment prior to administering a lower maintenance dose.
- Atropine administration is not indicated in the newly born pre-hospital resuscitation.
- All cannulae and IV lines must be flushed thoroughly with sodium chloride 0.9% following each medication administration.

# Atropine

## Adult dosages[1,2,4–6]

### Bradycardia (with poor perfusion)

| | | |
|---|---|---|
| CCP | IV/IO | **600 microg**<br>Repeated once after **2 minutes**.<br>**Total maximum dose 1.2 mg.** |

### Envenomation (with increased parasympathetic activity)

| | | |
|---|---|---|
| CCP | IM/IV/IO | **1.2 mg**<br>Repeated at **5 minute** intervals.<br>**No maximum dose.** |

### Hypersalivation (secondary to ketamine administration)

| | | |
|---|---|---|
| CCP | IV | **600 microg**<br>**Single dose only.** |

### Organophosphate toxicity
(with cardiac AND/OR respiratory compromise)

| | | |
|---|---|---|
| CCP | IM/IV/IO | **1.2 mg**<br>Repeated at **5 minute** intervals.<br>**No maximum dose.** |
| E CCP | IV<br>INF | RSQ Clinical Coordinator consultation and approval required in all situations.<br>**5–10 mL/hour** (10–20% of leading dose/hour) to maintain atropinisation.<br>***Syringe preparation:*** *Mix the total loading dose of atropine with sodium chloride 0.9% to make up a total volume of 50 mL. Ensure all syringes are appropriately labelled.* |

## Paediatric dosages[1,3–6]

### Bradycardia (with poor perfusion)

| | | |
|---|---|---|
| CCP | IV/IO | **20 microg/kg**<br>Single dose not to exceed 600 microg.<br>Repeated once after **2 minutes.**<br>**Total maximum dose 40 microg/kg.** |

- **Envenomation** (with increased parasympathetic activity)
- **Organophosphate toxicity** (with cardiac AND/OR respiratory compromise)

| | | |
|---|---|---|
| CCP | IM/IV/IO | **20 microg/kg**<br>Single dose not to exceed 600 microg.<br>Repeated at **5 minute** intervals.<br>**No maximum dose.** |

### Hypersalivation (secondary to ketamine administration)

| | | |
|---|---|---|
| CCP | IV | **20 microg/kg**<br>Single dose not to exceed 600 microg.<br>**Single dose only.** |