Drug Therapy Protocols: Isoprenaline

<table>
<thead>
<tr>
<th>Policy code</th>
<th>DTP_ISO_0519</th>
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<tbody>
<tr>
<td>Date</td>
<td>May, 2019</td>
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<tr>
<td>Purpose</td>
<td>To ensure a consistent procedural approach to isoprenaline administration.</td>
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<tr>
<td>Scope</td>
<td>Applies to all Queensland Ambulance Service (QAS) clinical staff.</td>
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<tr>
<td>Health care setting</td>
<td>Pre-hospital assessment and treatment.</td>
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<tr>
<td>Population</td>
<td>Applies to all ages unless specifically mentioned.</td>
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<tr>
<td>Source of funding</td>
<td>Internal – 100%</td>
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<tr>
<td>Author</td>
<td>Clinical Quality &amp; Patient Safety Unit, QAS</td>
</tr>
<tr>
<td>Review date</td>
<td>May, 2022</td>
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**Isoprenaline**

**Drug class**
Chronotrope

**Pharmacology**
Isoprenaline is a synthetic sympathomimetic amine that is structurally related to adrenaline (epinephrine) but acts almost exclusively on Beta1 (β1) adrenergic receptors with a prominent chronotropic, inotropic and dromotropic effect.[1-3]

**Metabolism**
Isoprenaline is metabolised primarily in the liver, with metabolites excreted in the urine.[5]

**Indications**
- **Bradycardia with poor perfusion** unresponsive to transcutaneous pacing (TCP)

**Contraindications**
- Allergy and/or Adverse Drug Reaction
- Heart rate > 120 beats per minute
- Tachycardia or AV Block caused by Digoxin (digitalis) toxicity
- Active cardiogenic chest pain

**Precautions**
- Acute or recent myocardial infarction
- Ischaemic heart disease
- Hypotension secondary to intravascular volume depleted
- Hypertension

**Side effects**
- Palpitations
- Cardiogenic chest pain
- Dysrhythmias
- Headache

**Presentation**
- Ampoule, 1 mg/5 mL *isoprenaline hydrochloride*

**Onset (IV INF) | Duration (IV INF) | Half-life**
--- | --- | ---
Immediate | Not applicable | < 2 hours
**Special notes**

- 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 Consult and Advice Line.

- All isoprenaline infusions are to be initiated using hospital supplies; isoprenaline will not be carried by the QAS flight team. Hospital presentations may vary – final concentration must equal 3 mg/50 mL.

- Careful dose adjustment is required for patients with coronary insufficiency, diabetes or hyperthyroidism.

- All cannulae and IV lines must be flushed thoroughly with sodium chloride 0.9% following each medication administration.

**Routes of administration**

| Intravenous infusion (IV INF) |

**Schedule**

- S4 (Restricted drugs).

**Adult dosages**

<table>
<thead>
<tr>
<th>Bradycardia with poor perfusion (unresponsive to TCP)</th>
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<tr>
<td>IV INF</td>
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<tr>
<td>CCP ESoP aeromedical – RSQ Clinical Coordinator consultation and approval required in all situations.</td>
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<tr>
<td>Commence infusion at <strong>2 microg/minute</strong> (2 mL/hour) and increase by <strong>1–2 microg/minute</strong> (1–2 mL/hour) every <strong>3–5 minutes</strong> as determined by ventricular response and MAP.</td>
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<td><em>Syringe preparation: Mix 3 mg (15 mL) of isoprenaline with 35 mL of glucose 5% in a 50 mL syringe to achieve a final concentration of 60 microg/mL. Ensure all syringes are appropriately labelled. Administer via syringe driver.</em></td>
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</table>

**Paediatric dosages**

*Note: QAS officers are NOT authorised to administer isoprenaline to paediatric patients*