Policy code | DTP_SAL_0519
---|---
Date | May, 2019
Purpose | To ensure a consistent procedural approach to salbutamol administration.
Scope | Applies to all Queensland Ambulance Service (QAS) clinical staff.
Health care setting | Pre-hospital assessment and treatment.
Population | Applies to all ages unless specifically mentioned.
Source of funding | Internal – 100%
Author | Clinical Quality & Patient Safety Unit, QAS
Review date | May, 2022

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All feedback and suggestions are welcome. Please forward to: Clinical.Guidelines@ambulance.qld.gov.au

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**Drug class**
Beta-adrenergic agonist

**Pharmacology**
Salbutamol is a direct acting sympathomimetic agent which mainly affects β2 – adrenoceptors. It primarily acts as a bronchodilator but also has inotropic and chronotropic actions. Additionally it lowers serum potassium levels through its direct stimulation of the sodium/potassium ATPase pump, drawing potassium into cells.[1–3]

**Metabolism**
Hepatic with renal excretion.[1]

**Indications**
- Bronchospasm
- **Suspected hyperkalaemia** (with QRS widening AND/OR AV dissociation)

**Contraindications**
- Allergy and/or Adverse Drug Reaction
- Patients < 1 year

**Presentation**
- Metered Dose Inhaler, 100 microg/puff *salbutamol*
- Nebule, 2.5 mg/2.5 mL *salbutamol*
- Nebule, 5 mg/2.5 mL *salbutamol*
- Ampoule, 500 microg/1 mL *salbutamol*

**Onset**
- 2–5 minutes (NEB)
- 1–3 minutes (IV)

**Duration**
- 16–60 minutes (NEB)
- 10–20 minutes (IV)

**Half-life**
- 1.6 hours

**Precautions**
- Acute pulmonary oedema
- Ischaemic heart disease

**Side effects**
- Anxiety
- Tachyarrhythmias
- Tremors
- Hypokalaemia and metabolic acidosis
Salbutamol

Schedule

• Metered dose inhaler, S3 (Therapeutic Poison).
• NEB, S4 (Restricted drugs).

Routes of administration

<table>
<thead>
<tr>
<th>Schedule</th>
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<tbody>
<tr>
<td>Metered Dose Inhaler (MDI)</td>
</tr>
<tr>
<td>Nebuliser (NEB)</td>
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<tr>
<td>Intravenous injection (IV)</td>
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<tr>
<td>Intravenous infusion (IV INF)</td>
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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.
• Different preparations of salbutamol are used for nebulised and IV routes. The inappropriate IV administration of nebulizer salbutamol solution will cause serious adverse effects.
• For patients with COPD, nebulised salbutamol is to be delivered via nebuliser mask at a rate of 6 L/minute. For all other patients 8 L/minute is appropriate.
• Nebulised salbutamol will reduce serum potassium by 0.5–1 mmol/L within 30 minutes.
• The manufacturer recommends that nebulisers must be stored within the foil packet and are to be discarded three months after opening. The date that the foil packet is opened should then be clearly marked on the packet.
• The potential harm versus benefit of IV salbutamol is not favourable when compared to administration via NEB; there is no evidence of increased efficacy. IV salbutamol is therefore reserved for the sickest of patients AND/OR when NEB administration is impractical.
### Adult dosages

#### Bronchospasm

<table>
<thead>
<tr>
<th></th>
<th>MDI</th>
<th>NEB</th>
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<tbody>
<tr>
<td><strong>Bronchospasm</strong></td>
<td><strong>12 (1.2 mg) MDI inhalations</strong>&lt;br&gt;Repeat at 10 minutes.&lt;br&gt;No maximum dose.</td>
<td><strong>5 mg</strong>&lt;br&gt;Single dose only.</td>
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### Adult dosages (cont.)

#### Suspected hyperkalaemia

(with QRS widening AND/OR AV dissociation)

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<tr>
<th></th>
<th>CCP</th>
<th>NEB</th>
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<tbody>
<tr>
<td><strong>Suspected hyperkalaemia</strong></td>
<td><strong>20 mg</strong>&lt;br&gt;Single dose only.</td>
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### Paediatric dosages

#### Bronchospasm

<table>
<thead>
<tr>
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<th>IV</th>
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</table>
| **250 microg**<br>Repeated at 5 minute intervals.<br>Total maximum dose 1 mg. | **RSQ Clinical Coordinator consultation and approval required in all situations.**
Commence infusion at 5 microg/minute (5 mL/hour) and increase by 2.5 microg/minute (2.5 mL/hour) every 3–5 minutes as determined by patients respiratory status.

*Syringe preparation:* Mix 3 mg (6 mL) of salbutamol with 44 mL of sodium chloride 0.9% in a 50 mL syringe to achieve a final concentration of 60 microg/mL. Ensure all syringes are appropriately labelled. Administer via syringe driver. | **MDI**<br>1–5 years – 6 (600 microg) MDI inhalations<br>Repeated at 10 minutes.<br>No maximum dose.<br>GS – 6 years – 12 (1.2 mg) MDI inhalations<br>Repeated at 10 minutes.<br>No maximum dose.<br>≥ 6 years – **5 mg**<br>Single dose only. |  |

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<thead>
<tr>
<th></th>
<th>NEB</th>
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<tr>
<td><strong>1–5 years – 2.5 mg</strong>&lt;br&gt;Single dose only.</td>
<td><strong>1–5 years – 2.5 mg</strong>&lt;br&gt;Repeated PRN.&lt;br&gt;No maximum dose.&lt;br&gt;GS – 6 years – 5 mg&lt;br&gt;Repeated PRN.&lt;br&gt;No maximum dose.</td>
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</table>
### Paediatric dosages (cont.)

#### Bronchospasm

<table>
<thead>
<tr>
<th>Route</th>
<th>≥ 1 year – 15 microg/kg</th>
<th>Single dose not to exceed 250 microg.</th>
<th>Repeated once at 10 minutes.</th>
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<tr>
<td>IV INF</td>
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**Syringe preparation:** Mix 15 microg/kg (max 250 microg) of salbutamol with sodium chloride 0.9% in 30 mL SPRINGFUSOR® syringe to achieve a final concentration of 15 microg/kg/10 mL. Ensure syringe is appropriately labelled. Administer via SPRINGFUSOR® at a rate of 60 mL/hr (over 10 mins).

#### Suspected hyperkalaemia

(with QRS widening AND/OR AV dissociation)

<table>
<thead>
<tr>
<th>Route</th>
<th>5 mg</th>
<th>Single dose only.</th>
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<tr>
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**CCP**