Policy code | DTP_GLc_0722  
---|---  
Date | July, 2022  
Purpose | To ensure a consistent procedural approach to glucagon 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 | July, 2024  

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

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Glucagon

**Drug class**[^1,^2]
Hyperglycaemic

**Pharmacology**[^1,^2]
Glucagon is a hyperglycaemic agent that mobilises hepatic glycogen, which is released into the blood as glucose.[^1-^3] Glucagon has inotropic and chronotropic effects that are not mediated through beta-receptors.

**Metabolism**
Glucagon is metabolised by the liver, kidneys and in the plasma.[^1]

**Indications**[^1-^3]
- Symptomatic hypoglycaemia (with the inability to self-administer oral glucose)
- Refractory anaphylaxis with persistent hypotension/shock (unresponsive to 3 x IM adrenaline injections and adequate fluid challenges)

**Contraindications**
- Allergy AND/OR adverse drug reaction

**Precautions**
- Nil

**Side effects**
- Nil

**Presentation**
- Vials (powder and solvent), 1 mg glucagon (GlucaGen® Hypokit)[^4]

**Onset (IM)** | **Duration (IM)** | **Half-life**
--- | --- | ---
4–7 minutes | Variable | 3–6 minutes

**Schedule**
- S3 (Therapeutic poisons).

**Routes of administration**
- Intramuscular injection (IM)
- Intravenous injection (IV)

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[^1]: Queensland Ambulance Service
[^2]: Queensland Ambulance Service
[^3]: Queensland Ambulance Service
[^4]: Queensland Ambulance Service
### Adult dosages

#### Symptomatic hypoglycaemia
*(with the inability to self-administer oral glucose)*

<table>
<thead>
<tr>
<th>AT</th>
<th>P</th>
<th>ACP</th>
<th>CCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>IM</td>
<td>1 mg</td>
<td>Single dose only.</td>
<td></td>
</tr>
</tbody>
</table>

*Syringe preparation:* Reconstitute 1 mg of glucagon with 1 mL of water for injection in a 3 mL syringe to achieve a final concentration of 1 mg/1 mL.

#### Refractory anaphylaxis with persistent hypotension/shock
*(unresponsive to 3 x IM adrenaline injections and adequate fluid challenges)*

<table>
<thead>
<tr>
<th>AT</th>
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*Syringe preparation:* Reconstitute 1 mg of glucagon with 1 mL of water for injection in a 3 mL syringe to achieve a final concentration of 1 mg/1 mL.

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### Paediatric dosages

#### Symptomatic hypoglycaemia
*(with the inability to self-administer oral glucose)*

<table>
<thead>
<tr>
<th>AT</th>
<th>P</th>
<th>ACP</th>
<th>CCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>IM</td>
<td>&gt; 25 kg – 1 mg</td>
<td>Single dose only.</td>
<td></td>
</tr>
</tbody>
</table>

*Syringe preparation:* Reconstitute 1 mg of glucagon with 1 mL of water for injection in a 3 mL syringe to achieve a final concentration of 1 mg/1 mL.

| ≤ 25 kg | 0.5 mg | Single dose only. |

*Syringe preparation:* Reconstitute 1 mg of glucagon with 1 mL of water for injection in a 3 mL syringe to achieve a final concentration of 1 mg/1 mL. Decant 0.5 mL of the prepared solution to achieve a final concentration of 0.5 mg/0.5 mL.
### Paediatric dosages

<table>
<thead>
<tr>
<th>Condition</th>
<th>IM</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Refractory anaphylaxis with persistent hypotension/shock</strong> (unresponsive to 3 x IM adrenaline injections and adequate fluid)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACP2 CCP</td>
<td>May be administered when paramedics are unable to achieve IV access.</td>
<td></td>
</tr>
<tr>
<td>&gt; 25 kg – 1 mg</td>
<td><strong>Syringe preparation:</strong> Reconstitute 1 mg of glucagon with 1 mL of water for injection in a 3 mL syringe to achieve a final concentration of 1 mg/1 mL.</td>
<td>&gt; 25 kg – 1 mg</td>
</tr>
<tr>
<td>≤ 25 kg – 0.5 mg</td>
<td><strong>Syringe preparation:</strong> Reconstitute 1 mg of glucagon with 1 mL of water for injection in a 3 mL syringe to achieve a final concentration of 1 mg/1 mL. Decant 0.5 mL of the prepared solution to achieve a final concentration of 0.5 mg/0.5 mL.</td>
<td>≤ 25 kg – 0.5 mg</td>
</tr>
</tbody>
</table>

### 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 Consultation and Advice Line.
- Glucagon may be ineffective in patients lacking stored glycogen (e.g., alcoholic patients with impaired liver function and neonates).
- Oral carbohydrates should be given when the patient has responded to glucagon treatment to restore liver glycogen and to prevent secondary hypoglycaemia.
- Administered for hypoglycaemia if IV glucose 10% cannot be administered in a suitable time frame.
- Clinicians should have a low threshold for glucagon administration in the hypotensive/shocked anaphylaxis patient when presenting with heart failure and/or prescribed beta blocker therapy.
- All parenteral medications must be prepared in an aseptic manner. The rubber stopper of all vials must be disinfected with an appropriate antimicrobial swab and allowed to dry prior to piercing.