**Drug Therapy Protocols: Glyceryl trinitrate**

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<thead>
<tr>
<th><strong>Policy code</strong></th>
<th>DTP_GTN_0119</th>
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<tbody>
<tr>
<td><strong>Date</strong></td>
<td>January, 2019</td>
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<tr>
<td><strong>Purpose</strong></td>
<td>To ensure a consistent procedural approach to glyceryl trinitrate administration.</td>
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<td><strong>Scope</strong></td>
<td>Applies to all Queensland Ambulance Service (QAS) clinical staff.</td>
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<td><strong>Health care setting</strong></td>
<td>Pre-hospital assessment and treatment.</td>
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<td><strong>Population</strong></td>
<td>Applies to all ages unless specifically mentioned.</td>
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<tr>
<td><strong>Source of funding</strong></td>
<td>Internal – 100%</td>
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<tr>
<td><strong>Author</strong></td>
<td>Clinical Quality &amp; Patient Safety Unit, QAS</td>
</tr>
<tr>
<td><strong>Review date</strong></td>
<td>January, 2022</td>
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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
Vasodilator

Pharmacology
Glyceryl trinitrate (GTN) is a potent vasodilator that decreases preload by increasing venous capacity, pooling venous blood in the peripheral veins, reducing ventricular filling pressure and decreasing arterial blood pressure (after load). Because of this cascade it also causes vasodilation in coronary arteries that are in spasm and may assist the redistribution of blood flow along the collateral channels in the heart.[1–3]

Metabolism
GTN is readily absorbed and metabolised by the liver.[1]

Indications
- Suspected ACS (with pain)
- Acute cardiogenic pulmonary oedema
- Autonomic dysreflexia
  (with a systolic BP ≥ 160 mmHg)[4–5]
- Irukandji syndrome
  (with a systolic BP ≥ 160 mmHg)

Contraindications
- Allergy and/or Adverse Drug Reaction
- Heart rate < 50 OR > 150 beats per minute
- Systolic BP < 100 mmHg
- Acute CVA
- Head trauma
- Phosphodiesterase inhibitor medication administration (e.g. Viagra® or Levitra®) in the previous 24 hours[6]

Precautions
- Suspected inferior AMI
- Cerebral vascular disease
- Risk of hypotension and/or syncope
- Intoxication (GTN effects are enhanced)
- Phosphodiesterase inhibitor medication administration (e.g. Viagra® or Levitra®) in the previous 4 days

Side effects
- Dizziness
- Hypotension
- Syncope
- Reflex tachycardia
- Vascular headaches
### Presentation
- Spray (sublingual), 400 microg/dose, 200 doses, nitrolingual pump spray
- Ampoule, 50 mg/10 mL glyceryl trinitrate

### Onset | Duration | Half-life
--- | --- | ---
< 2 minutes | 20–30 minutes | 5.5 minutes

### Schedule
- SUBLING spray – S3 (Therapeutic poisons).
- Ampoule, 50 mg/10 mL – S4 (Restricted drugs).

### Routes of administration
- Sublingual (SUBLING)
- Intravenous infusion (IV INF)

### Special notes
1. 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.
2. Sublingual GTN is the first line treatment for ACS, however IV GTN should be considered as part of the management regime for all patients unresponsive to sublingual GTN, narcotics and/or β blockers.
3. Research has identified that GTN potency may be reduced due to the migration of GTN into certain administration sets. IV INF doses should be titrated according to patient response despite the container and giving set used.
4. Prepared GTN IV infusion solutions are stable in polypropylene syringes for 24 hours.
5. Some patients with normal or low left ventricular filling pressures or pulmonary capillary pressure may be hypersensitive to the effects of GTN and may respond to IV infusion doses from 5 microg/min.
6. CCP ESoP aeromedical officers are to display extreme caution when ceasing GTN infusions due to the potential of rebound symptoms.
7. GTN is the first line treatment for autonomic dysreflexia, however morphine should be considered as part of the management regime, if the patient is unresponsive to initial treatment.
8. 50 mg/10 mL GTN ampoules are not currently supplied by the QAS warehouse – for procurement information please refer to the QAS Drug Management Code of Practice.
9. All cannulae and IV lines must be flushed thoroughly with sodium chloride 0.9% following each medication administration.
### Adult dosages

#### Suspected ACS (with pain)

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<td>SUBLING</td>
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- **400 microg**
  - Repeated at **5 minute** intervals.
  - **No maximum dose.**

CCP ESoP aeromedical consultation and approval required in all situations. Commence infusion at 10 microg/minute (1 mL/hour) and increase by 10–20 microg/minute (1–2 mL/hour) every 3–5 minutes.

*Syringe preparation:* Mix 30 mg (6 mL) of GTN with 44 mL of glucose 5% in a 50 mL syringe to achieve a final concentration of 600 microg/mL. Ensure all syringes are appropriately labelled. Administer via syringe driver.

If at anytime the patient becomes unresponsive or hypotensive, cease infusion immediately.

Infusion may be recommenced at 50% the preceding dose when patient is GCS 15 and systolic BP > 100 mmHg.

#### Acute cardiogenic pulmonary oedema

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<td>SUBLING</td>
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</table>

- **400 microg**
  - Repeated at **5 minute** intervals.
  - **No maximum dose.**

#### Adult dosages (cont.)

- **Autonomic dysreflexia** (with a systolic BP ≥ 160 mmHg)
- **Irukandji syndrome** (with a systolic BP ≥ 160 mmHg)

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- **400 microg**
  - Repeated at **5 minute** intervals.
  - **No maximum dose.**

### Paediatric dosages

- **Autonomic dysreflexia** (with a systolic BP ≥ 160 mmHg)
- **Irukandji syndrome** (with a systolic BP ≥ 160 mmHg)

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- **QAS Clinical Consultation and Advice Line approval required in all situations.**

**Note:** In all other instances, QAS officers are **NOT** authorised to administer GTN to paediatric patients.