



Drug Therapy Protocols: Glyceryl trinitrate

Policy code	DTP_GTN_0119
Date	January, 2019
Purpose	To ensure a consistent procedural approach to glyceryl trinitrate 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	January, 2022
Information security	UNCLASSIFIED – Queensland Government Information Security Classification Framework.
URL	https://ambulance.qld.gov.au/clinical.html

While effort has been made to contact all copyright owners this has not always been possible. The QAS would welcome notification from any copyright holder who has been omitted or incorrectly acknowledged.

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

Disclaimer

The Digital Clinical Practice Manual is expressly intended for use by QAS paramedics when performing duties and delivering ambulance services for, and on behalf of, the QAS.

The QAS disclaims, to the maximum extent permitted by law, all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs incurred for any reason associated with the use of this manual, including the materials within or referred to throughout this document being in any way inaccurate, out of context, incomplete or unavailable.

© State of Queensland (Queensland Ambulance Service) 2019.



This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives V4.0 International License

You are free to copy and communicate the work in its current form for non-commercial purposes, as long as you attribute the State of Queensland, Queensland Ambulance Service and comply with the licence terms. If you alter the work, you may not share or distribute the modified work. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/deed.en>

For copyright permissions beyond the scope of this license please contact: Clinical.Guidelines@ambulance.qld.gov.au



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 \geq 160 mmHg)^[4-5]
- **Irukandji syndrome**
(with a systolic BP \geq 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^[1-4]

- 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.
- 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.
- 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.
- Prepared GTN IV infusion solutions are stable in polypropylene syringes for 24 hours.
- 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.
- CCP ESoP aeromedical officers are to display extreme caution when ceasing GTN infusions due to the potential of rebound symptoms.
- 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.
- 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*.
- All cannulae and IV lines must be flushed thoroughly with sodium chloride 0.9% following each medication administration.

Adult dosages

Suspected ACS (with pain)		
AT P ACP1 ACP2 CCP	SUBLING	<p>400 microg Repeated at 5 minute intervals. No maximum dose.</p>
CCP	IV INF	<p>CCP ESoP aeromedical – RSQ Clinical Coordinator 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.</p> <p><i>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.</i></p> <p>If at anytime the patient becomes unresponsive or hypotensive, cease infusion immediately.</p> <p>Infusion may be recommenced at 50% the preceding dose when patient is GCS 15 and systolic BP > 100 mmHg.</p>
Acute cardiogenic pulmonary oedema		
AT P ACP1 ACP2 CCP	SUBLING	<p>400 microg Repeated at 5 minute intervals. No maximum dose.</p>

Adult dosages (cont.)

<ul style="list-style-type: none"> • Autonomic dysreflexia (with a systolic BP \geq 160 mmHg) • Irukandji syndrome (with a systolic BP \geq 160 mmHg) 		
ACP1 ACP2 CCP	SUBLING	<p>400 microg Repeated at 5 minute intervals. No maximum dose.</p>

Paediatric dosages

<ul style="list-style-type: none"> • Autonomic dysreflexia (with a systolic BP \geq 160 mmHg) • Irukandji syndrome (with a systolic BP \geq 160 mmHg) 		
ACP2 CCP	SUBLING	<p>QAS Clinical Consultation and Advice Line approval required in all situations.</p>
<p>Note: In all other instances, QAS officers are NOT authorised to administer GTN to paediatric patients.</p>		