Drug Therapy Protocols: Hydroxocobalamin

Policy code	DTP_HYDX_0722
Date	July, 2022
Purpose	To ensure a consistent procedural approach to hydroxocohbalamin 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
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Hydroxocobalamin

July, 2022

Drug class

Antidote[1,2]

Pharmacology

Hydroxocobalamin (an injectable form of vitamin B12) is an antidote for cyanide toxicity. It binds with circulating and cellular cyanide to form cyanocobalamin, which is then excreted in urine.[1,2]

Metabolism

Excreted by the kidneys[1]

Indications

- **Life-threatening cyanide toxicity** (e.g. shock, respiratory failure, seizure, ALOC or myocardial ischaemia)

Contraindications

- Allergy AND/OR Adverse Drug Reaction

Precautions

- Hypertension *(refer to Special notes)*
- Pregnancy *(refer to Special notes)*

Side effects

- Anaphylaxis
- Chromaturia
- Erythema
- Rash (acne like)
- Hypertension
- Renal failure
- Headache
- Nausea and/or vomiting
- Pain at infusion site

Presentation

- Vial, 5 g *hydroxocobalamin* (CYANOKIT®)[3]

Onset (IV)	Duration (IV)	Half-life
Immediate	Several days	26–31 hours

Hydroxocobalamin

Schedule

- N/A – TGA Special Access Scheme.

Routes of administration

Intravenous infusion (IV INF) ACP2 CCP

Special notes

- Hydroxocobalamin infusions are only to be administered by appropriately trained QAS clinicians within the following response catchments:
  - *Central Queensland District:* Orica Yarwun Cyanide Plant
  - *Darling Downs District:* Texas Silver Mine
  - *North West District:* Great Australian Mine, Lorena Gold Project, Mt Isa Mines, George Fisher
- For patients presenting with non-life threatening toxicity (e.g. headache, confusion, vomiting, dyspnoea or chest tightness) the *QAS Clinical Consultation & Advice Line* should be immediately contacted regarding potential hydroxocobalamin administration.
- Substantial increases in blood pressure may occur following hydroxocobalamin therapy.
- There are no adequate and well-controlled studies of hydroxocobalamin administration in pregnant women. Hydroxocobalamin should be used during pregnancy ONLY if the potential benefits justifies the potential risk to the fetus.

Special notes *(cont.)*

- Each CYANOKIT® contains the following components:
  - one 250 mL glass vial containing 5 g lyophilised hydroxocobalamin for injection,
  - one sterile transfer spike,
  - one sterile vented infusion set,
  - one quick use reference guide and one package insert.

  *** NOTE: dilutant is NOT included (2 x 100 mL sodium chloride 0.9% required).**
- Simultaneous administration of hydroxocobalamin with other medications and/or blood products is not recommended.
- 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.
- All hydroxocobalamin infusions must be initiated using industry supplied stock. Hydroxocobalamin will not be procured by QAS.
- All cannulae and IV lines must be flushed thoroughly with sodium chloride 0.9% following each medication administration.

Adult dosages[1–4]

Life-threatening cyanide toxicity (e.g. shock, respiratory failure, seizure, ALOC or myocardial ischaemia)

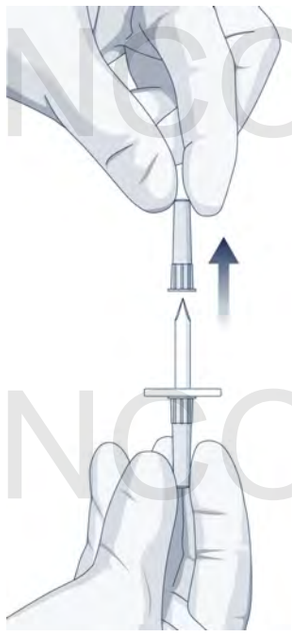
ACP2 CCP	IV INF	**5 g over 15 minutes.**

Paediatric dosages

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

Hydroxocobalamin (CYANOKIT®) preparation

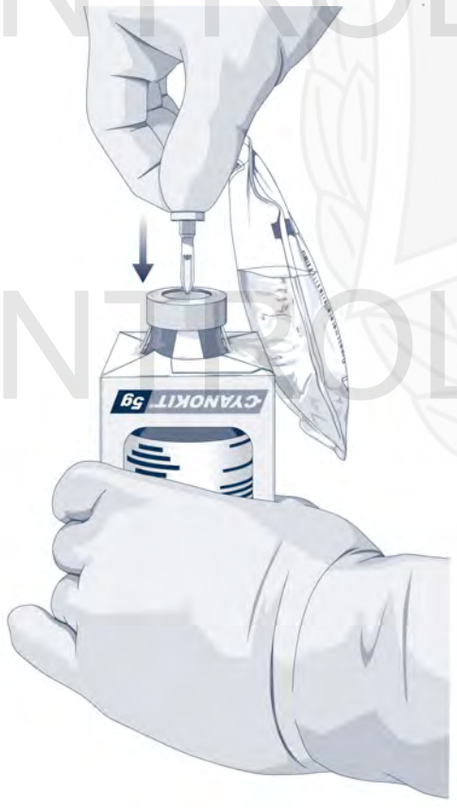
1. Keeping the CYANOKIT® 5g vial in the supplied packaging, place it on a firm flat surface with the cap uppermost. Remove the cap and disinfect the rubber stopper with a 2% chlorhexidine / 70% isopropyl alcohol swab and allow to dry.



2. Take the supplied transfer spike from the packaging and remove the safety cap from one end.

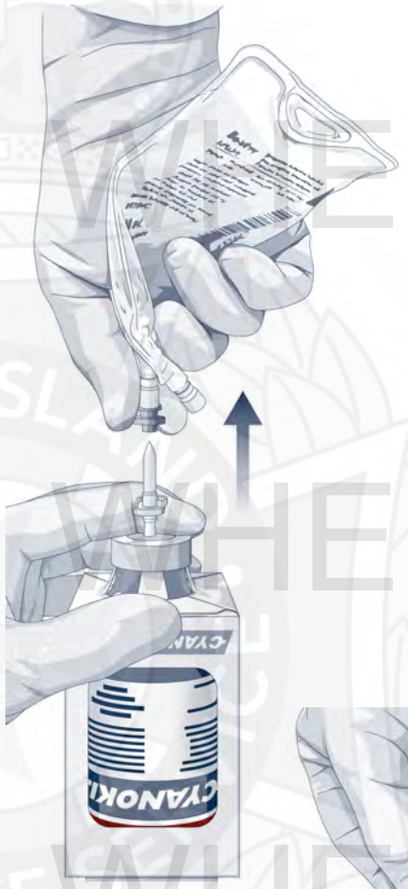
3. Remove the safety cap from one of the 100 mL sodium chloride 0.9% bags and firmly insert the exposed transfer spike.

4. Remove the remaining safety cap from the transfer spike and while maintaining aseptic technique, hold the transfer spike's wings, allow the bag to hang down (so as to not spill any contents) and insert the exposed transfer spike into the rubber stopper of the upright CYANOKIT® vial.

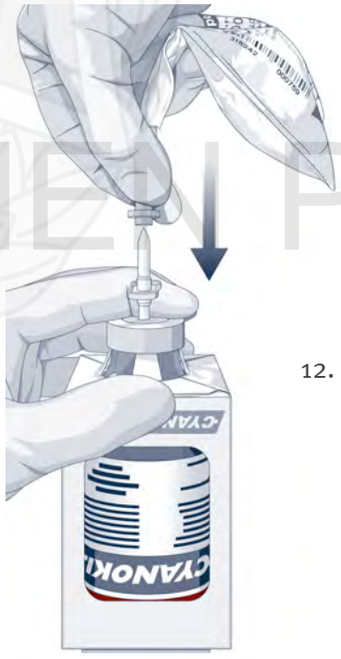


5. Lift the sodium chloride 0.9% bag to empty it fully into the CYANOKIT® vial.

6. While leaving the transfer spike in the upright CYANOKIT® vial gently remove the empty sodium chloride bag.



7. Remove the safety cap from the second 100 mL sodium chloride 0.9% bag and while maintaining aseptic technique carefully insert the exposed transfer spike into the second sodium chloride bag, keeping the CYANOKIT® vial in the upright position.



8. Lift the sodium chloride 0.9% bag to empty it fully into the CYANOKIT® vial.

9. Gently remove the transfer spike with the attached sodium chloride bag from the CYANOKIT® vial.

10. Carefully mix the CYANOKIT® vial solution by repeatedly inverting or rocking the vial for 60 seconds; **do not shake the vial**.

11. Rotate the CYANOKIT® vial within the carton until the glass is viewable in the window. Inspect to confirm the solution is cherry red and free of particulates. Do not administer if it is NOT cherry red or if it contains particulates (contact the *QAS Clinical Consultation & Advice Line* for advice).

12. Prime a QAS supplied Alaris™ (gravity flow) giving set with the reconstituted medication and ensure no air bubbles are present in the line. Open the giving set's red air vent and administer in accordance with *DTP: Hydroxocobalamin*.