



CHARLOTTESVILLE-ALBEMARLE RESCUE SQUAD

Clinical Review and Training

Hydroxocobalamin (Cyanokit®) Guideline

Introduction: Cyanide is among the most lethal of chemical compounds. Human cells exposed to cyanide are unable utilize oxygen, forming a rapid-onset metabolic acidosis. Left unchanged, this results in CNS, cardiac, and respiratory dysfunction. Toxicity can result from inhalation, ingestion, or dermal routes of exposure. Cyanide may be found in many different forms, including the gas hydrogen cyanide (HCN) and the solid cyanide salts [i.e., sodium cyanide (NaCN) and potassium cyanide (KCN)]. In Virginia, the primary potential sources of cyanide exposure are smoke, pest-control devices (i.e., M44 device), or laboratory/industrial byproducts.

Hydroxocobalamin is extremely safe when used as an antidote for cyanide toxicity. It has been used successfully to treat numerous cases of cyanide poisoning, and the safety profile has been demonstrated in many healthy persons. In addition, studies have shown that the use of hydroxocobalamin is very safe when administered empirically at fire scenes, whether patient's symptoms are cyanide-related or not.

Actions

Hydroxocobalamin rapidly binds cyanide molecules, forming a cyanocobalamin complex (Vitamin B₁₂). This vitamin is non-toxic and excreted by the kidneys.

Storage

1. Stored at room temperature
2. Shelf life is 30 months

Indications

Skill Level: I/P

Hydroxocobalamin should be considered in any patient suspected of having cyanide toxicity from smoke inhalation (exposure to fire smoke in a confined space) with at least one of the following signs:

- Altered mental status
- Hypotension
- Severe respiratory distress
- Cardiac arrest

If suspected, the Blue Ridge Poison Center must be contacted in all cases (1-800-451-1428) for medical command.

Contraindications

None

Administration

1. Given as a 5 gm IV/IO dose in adults (70 mg/kg in pediatrics)
2. Infused over 15 minutes.
3. Supplied in (2) 250 mL glass vials, each containing 2.5 g of powdered hydroxocobalamin; the necessary vented administration set is included in the kit.
4. Each vial should be diluted in 100 mL of normal saline or 100 mL of D5W.
5. When properly mixed, it should be a dark red color.
6. The initial dose of 5 g can be repeated in cases of serious toxicity per **Medical Command**.

Side Effects

1. Hydroxocobalamin can transiently raise BP. This can potentially benefit those who are hemodynamically unstable.
2. Allergic reactions have been reported, but only in patients receiving long-term treatment.



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3. Virtually every patient receiving a 5 g dose will develop red discoloration of the skin, mucous membranes, and urine. This discoloration typically resolves in 24-48 hours and is of no significant clinical consequence.
4. A pustular rash may develop a week after infusion, but should spontaneously resolve.