



To: ALL HEALTH CARE PROVIDERS including Emergency Physicians, PA/NPs, Nurses, Intensivists, Hospitalists, Paramedics
From: Ron Kirschner, MD
Medical Director, Nebraska Regional Poison Center
Subject: Use of Hydroxocobalamin for Smoke Inhalation Victims
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- Cyanide (CN) ingestion is rare. The most common route of exposure is inhalation of hydrogen cyanide (HCN) gas from enclosed space fires.
 - A recent study found elevated blood CN in 59% of fire-related fatalities. Many also had carbon monoxide poisoning.
 - Because cyanide levels are not available in real time, toxicity should be treated empirically if suspected.
 - Cyanide toxicity should be suspected in fire victims with altered level of consciousness, anion gap metabolic acidosis, or lactate ≥ 10 mmol/L.
- Hydroxocobalamin (Cyanokit®) is a vitamin B12 precursor approved by the FDA in 2006 for treatment of CN toxicity. It binds with cyanide to form vitamin B12 (cyanocobalamin).
- A prospective study of hydroxocobalamin administered in the field to smoke inhalation victims suggested improved survival compared with historical controls.
- Since August 2012, Omaha metro-area paramedics have been able to give hydroxocobalamin 5 g IV in the field to adult smoke inhalation victims with decreased level of consciousness or seizures.
- Patients can be given a second dose of hydroxocobalamin if not improving.
- Hydroxocobalamin is relatively benign but causes reddish discoloration of skin and body fluids that can persist for days.
 - This can also interfere with many lab tests (creatinine, bilirubin, carboxyhemoglobin, and others) making results difficult to interpret.
 - Hydroxocobalamin may interfere with operation of hemodialysis machines.
- **The Omaha Metropolitan Medical Response System (OMMRS) has supplied Cyanokits to metro-area hospitals and rescue squads. Please contact the Nebraska Regional Poison Center (1-800-222-1222) if additional Cyanokits are needed.**

References:

Borron SW. Prospective study of hydroxocobalamin in smoke inhalation. *Ann Emerg Med* 2007; 49:794

Grabowska T. Prevalence of hydrogen cyanide and carboxyhemoglobin in victims of smoke inhalation during enclosed-space fires. *Clin Toxicol* 2012; 50:759.

Sutter M. Hemodialysis complications of hydroxocobalamin: A case report. *J Med Toxicol* 2010; 6:165.

Our trained staff of nurse/physician assistant specialists in poison information and physician toxicologists is available 24 hours a day to answer your questions.