



PENNSYLVANIA EMERGENCY  
HEALTH SERVICES COUNCIL  
*Your Voice In EMS*

## RECOMMENDATION FOR CONSIDERATION

Board Meeting Date: June 15, 2016

Subject: Addition of Hydroxocobalamin to EMS Medication List

VTR#: 0616-02

Committee/Task Force: Medical Advisory Committee

Recommended Goal

Recommended Policy Change

Other:

### **Recommendation:**

**The Department of Health should add hydroxocobalamin as an option to the “Approved and Required Medications Lists for Emergency Medical Services Agencies and Emergency Medical Services Providers” for providers above the level of AEMT; and amend Statewide ALS Treatment Protocol #8081 Cyanide Compound Exposure to include hydroxocobalamin as a treatment option.**

### **Rationale [Background]:**

Hydroxocobalamin is a form of vitamin B<sub>12</sub> that binds cyanide to form cyanocobalamin (vitamin B<sub>12</sub>), which is excreted in urine. Hydroxocobalamin has not been associated with clinically significant adverse effects with the exception of isolated allergic reactions and transient, asymptomatic elevations in blood pressure. The clinical properties of hydroxocobalamin as a cyanide antidote have been documented in studies in fire victims with suspected cyanide poisoning from smoke inhalation<sup>1</sup>.

Cyanide is a major component of fire smoke, and cyanide poisoning must be considered in victims of smoke inhalation who have hypotension, central nervous system depression, metabolic acidosis, or soot in the nares or respiratory secretions. Cyanide poisoning causes rapid cardiovascular collapse, which manifests as hypotension, lactic acidosis, central apnea, and seizures<sup>2</sup>.

Patients presenting with signs and symptoms of known or suspected cyanide poisoning should receive cyanide-antidote therapy with a cyanide scavenger (either IV hydroxocobalamin or a nitrate such as IV sodium nitrite and/or inhaled amyl nitrite), followed as soon as possible by IV sodium thiosulfate. Because nitrites induce methemoglobin formation and can cause hypotension, hydroxocobalamin has a safety advantage, particularly in children and victims of smoke inhalation who might also have carbon monoxide poisoning<sup>3</sup>.

<sup>1</sup> Borron et al, Hydroxocobalamin for severe acute cyanide poisoning by ingestion or inhalation. AJEM (2007) 25, 551-558

<sup>2</sup> 2010 AHA Guidelines: Part 12 (Special Circumstances); Circulation: November 2, 2010

<sup>3</sup> ibid

Sodium thiosulfate serves as a metabolic cofactor, enhancing the detoxification of cyanide to thiocyanate. Thiosulfate administration enhances the effectiveness of cyanide scavengers in animal experimentation and has been used successfully in humans with hydroxocobalamin. Based on the best evidence available, AHA recommends a treatment of 100% oxygen and hydroxocobalamin, with or without sodium thiosulfate<sup>4</sup>.

**Medical Review [Concerns]:**

The medical advisory committee offers this recommendation. The committee has considered the use of hydroxocobalamin in the past, but opted not to make a recommendation due to its high cost and infrequency of use. In reconsidering their position, the committee acknowledges the published evidence on the drug’s efficacy, but believes its use should remain an agency medical director option along with sodium thiosulfate. The applicable statewide treatment protocol should be amended to include the use of hydroxocobalamin for those agencies who elect to carry this medication.

**Fiscal Concerns:**

This fiscal issues related to this medication have been addressed in the medical review section of this VTR. Currently in the United States hydroxocobalamin , in the concentration required for cyanide exposure, is under patent by one pharmaceutical manufacturer under the brand name Cyno-Kit™. Agencies considering stocking this medication should perform a cost-benefit and community risk analysis prior to purchasing.

**Educational Concerns:**

Agency medical directors are responsible for providing education on the administration of hydroxocobalamin and associated changes to the statewide treatment protocol.

**Plan of Implementation:**

Hydroxocobalamin should be included in the next published update of the “Approved and Required Medications Lists for Emergency Medical Services Agencies and Emergency Medical Services Providers” and statewide treatment protocols.

The PEHSC Committee/Task Force offers consultation to the Department in regard to the content of this Vote to Recommend (VTR) and its attached documents. The PEHSC Committee/Task Force specifically offers staff or member support to participate in Department deliberations regarding this recommendation in an effort to convey committee/task force discussions.

**Board Meeting Comments/Concerns:**

None

Signed: \_\_\_\_\_ Date \_\_\_\_\_  
President

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For PEHSC Use Only – PA Department of Health Response

Accept: \_\_\_\_ Table: \_\_\_\_ Modify: \_\_\_\_ Reject: \_\_\_\_

Comments:

Date of Department Response: \_\_\_\_\_

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<sup>4</sup> ibid