



Scarborough Fire Department

Scarborough, Maine



Standard Operating Guidelines

Book:	Emergency Operations
Chapter:	Medical Emergencies
Subject:	3415 - Use of Carbon Monoxide Patient Monitors
Revision Date:	8/31/2007
Approved by:	<i>B. Michael Thurlow</i>

PURPOSE

The purpose of this policy is to illustrate the dangers of Carbon Monoxide poisoning and to outline requirements and procedures for Carbon Monoxide patient monitoring as an assessment tool to provide high quality patient care.

BACKGROUND INFORMATION

Carbon Monoxide (CO) poisoning is one of the single most common poisoning exposures in the United States. Carbon monoxide, or CO, is an odorless, colorless and tasteless gas that can cause sudden illness and death, and is found as a by-product gas of combustion from gasoline engines, camp stoves, lanterns, burning charcoal and wood, gas ranges, heating systems, generators and poorly vented chimneys. Structural fires are another common source of CO exposure for both victims and fire fighters. Carbon monoxide from these sources can build up over time in poorly ventilated environments to a toxic level that can be inhaled by humans and animals. Though all humans and animals are at risk for carbon monoxide poisoning, pregnant women and their fetuses, infants, and people with chronic heart disease, anemia, or respiratory problems are more susceptible to its effects.

CO toxicity causes impaired oxygen delivery and utilization at the cellular level. CO affects several different sites within the body but has its most profound impact on the organs with the highest oxygen requirement (e.g., brain, heart). Misdiagnosis commonly occurs because of the vagueness and broad spectrum of complaints. Symptoms often are attributed to a viral illness, frequently "the flu" in winter months. It is important to remember that symptoms may not correlate well with measured HbCO levels.

POLICY

Since CO poisoning is easily misdiagnosed as flu-like symptoms, fatigue or other general complaints, the Masimo RAD 57 CO patient monitor shall be used:

- A. On ALL patients that require the use of SpO2 monitoring.
- B. Whenever multiple patients in the same building present with similar signs and symptoms
- C. As part of firefighter monitoring in the rehab sector at structure fires.

PROCEDURES

- A. **SECURE AIRWAY** - As appropriate for license level, secure airway utilizing oral or nasal airway, Combitube or endotracheal tube. Confirm placement of endotracheal tube with end-tidal CO₂ detector and esophageal detector device.
- B. **OXYGEN** - Provide 100% Oxygen via non-rebreather mask, bag-valve-mask or approved ventilator.
- C. **MONITOR** - Monitor and treat EKG rhythm as appropriate. Monitor SpO₂ (pulse oximeter will read falsely high in the presence of Carbon Monoxide) and SpCO. Two (2) SpCO readings must be obtained 10 minutes apart.
- D. **ASSESS** - Determine Carboxyhemoglobin level if possible. Based on reading:
 - a. If patient measures SpCO 0-3% No further evaluation of SpCO needed
 - b. If patient measures SpCO > 3% - Reassess
 - i. Altered LOC or Neurological impairment or SpCO > 25%
 - 1. Treat with 100% oxygen and transport to closest most appropriate hospital (consider hyperbaric facility)
 - ii. No Altered LOC and SpCO < 25%
 - 1. SpCO > 12% - Treat with 100% oxygen and transport
 - 2. SpCO < 12% - Symptoms of CO?
 - a. Yes – Treat with 100% oxygen and transport
 - b. No – No further medical evaluation of SpCO needed
- E. **IV/IO ACCESS** - As appropriate for license level, IV TKO.
- F. **DOCUMENT** - SpCO readings on the Maine EMS run report in the narrative section. If the patient is suspected to be a victim of CO poisoning, complete an EMS Patient CO Monitoring Form, make a copy and leave it with the ED staff and submit the original to be filed with department's copy of the run report.

SCOPE

The RAD-57 Patient Carbon Monoxide Monitor is another patient assessment tool. Its readings alone should not be used to diagnose a patient with Carbon Monoxide poisoning. When assessing and treating patients with any of the signs and symptoms of Carbon Monoxide poisoning, other etiologies of the presenting illness must be considered.

RESPONSIBILITY

It is the responsibility of the EMS provider providing care, to use the CO patient monitor as outlined in this policy.

REFERENCES

- A. Boston EMS SOP “Use of the Rad-57 for Carbon Monoxide Exposure in the Prehospital
- B. RAD-57 EMS and FIRE Quick Reference Guide for RAD-57
- C. Masimo “The Odorless Killer” AHVP-464-0306 Fire and Emergency Training Network