



Carbon Monoxide Poisoning

Will/Grundy EMS System CME

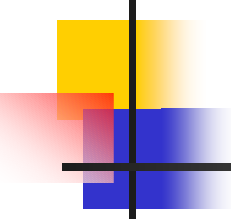
1st Trimester 2008

ALS/ILS/BLS



Learning Objectives

- Define carbon monoxide (CO) and carbon monoxide poisoning.
- Identify signs and symptoms of carbon monoxide poisoning.
- Describe the role of EMS in carbon monoxide poisoning.
- Identify sources of carbon monoxide poisoning.



Carbon monoxide is and has been the most common cause of accidental toxic poisoning and death in the United States for the last 100 years.



Carbon Monoxide is:

- Colorless
- Odorless
- Tasteless gas
- An occupational hazard for those in the first responder community, according to the Center for Disease Control (CDC).

When ingested, it can cause serious physical problems and even death.



Scope of the Problem

- CO Poisoning creates approximately 40,000 visits to hospital ED's each year.
- All people and animals are at risk.
- Certain groups are more susceptible:
 - unborn babies, infants, and people with chronic heart disease, anemia, or respiratory problems.



Scope of the Problem (cont.)

- Each year more than 500 Americans die from CO poisoning.
- More than 2000 commit suicide by intentionally poisoning themselves.



Sources of Carbon Monoxide (CO)

Carbon monoxide is found in combustion fumes, such as those produced by:

- Cars and trucks
- Small gasoline engines
- Stoves and lanterns
- Burning charcoal and wood
- Gas ranges and heating systems.



New Homes

Most new homes are more air tight than older homes, which cuts down the fresh air supply to a furnace. This results in an oxygen-starved flame that forms carbon monoxide gas.





Tobacco Use



Tobacco smoke, including secondhand smoke, is a large source of CO in homes with smokers. Smokers have higher carboxyhemoglobin (COHb) values than nonsmokers. Smokers generally have COHb values of 5 to 6 percent. Nonsmokers have COHb levels of .5 percent, whereas nonsmokers exposed to secondhand tobacco smoke have been shown to have COHb levels in the 2 to 3 percent range.



Winter Season CO causes:

- Gas and oil heaters are not cleaned or serviced.
- Blocked or poorly maintained chimneys
- Old or worn chimney flue liner.
- Birds nest can block the chimney.
- Wrong sized flue installed
- Warming up cars or trucks in a garage



Pathophysiology

- Normally, hemoglobin binds with oxygen.
- When carbon monoxide (CO) is present, the CO will bind to the hemoglobin in red blood cells 200 times more strongly than oxygen.
- This combination of hemoglobin and CO produces carboxyhemoglobin (COHb).
- This decreases the amount of oxygen carried by the hemoglobin, causing oxygen deprivation.

Initial Symptoms



The initial symptoms of CO poisoning are similar to the flu (but without the fever). The most common symptoms are:

- Headache
- Dizziness
- Weakness
- Nausea
- Vomiting
- Chest pain
- Confusion

Long-term Exposure

Symptoms

Neurological

- Long-term nervous system damage

Cardiovascular

- Hypotension
- Dysrhythmias
- Clotting disorders

Respiratory

- Hypoxia
- Shortness of breath



Dangerous CO Levels

- Health effects depend on level of CO, patient's health, and length of exposure.
- The concentration of exhaled CO is measured in parts per million (ppm).
- 1 to 70 ppm generally will not have any noticeable effect.
- Above 70 ppm symptoms become more apparent.
- Above 150 to 200 ppm, disorientation, unconsciousness, and death are possible.



Treatments

- Be safe- don't enter an unsafe scene
- Remove patient from the space.
- Obtain history, initial vital signs, and initiate high flow oxygen.
- If warranted, begin IV and apply cardiac monitor.
- Treat cardiac rhythms appropriately.
- Transport to hospital for testing.



Thank you!

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