

PROMOTING HEALTHY
ENVIRONMENTS FOR CHILDREN

Carbon Monoxide



KEY POINTS

- Carbon monoxide (CO) is an invisible, odorless, and tasteless toxic gas.
- Common fuel-burning sources of CO include furnaces, gas stoves, portable electric generators, and motor vehicles.
- Children and families' health can be critically impacted by CO exposures.
- Primary prevention of CO poisoning requires limiting exposure to known common fuel-burning sources' emissions.

CLINICAL GUIDANCE

- The route of exposure to CO is through inhalation. When in the bloodstream, CO causes decreased oxygen delivery to the body's tissues.
- The health effects from acute CO exposure range from flulike symptoms such as headache, dizziness, nausea, fatigue, weakness, drowsiness, confusion, and irritability, to coma and death from prolonged or intense exposure.
- Infants and children have an increased susceptibility to CO toxicity because of their higher metabolic rates. Fetuses are especially vulnerable.
- Unintentional exposure to CO can be largely attributed to faulty or improperly vented gas or gasoline fueled appliances, solid fuel appliances (eg, wood burning stoves), clogged chimneys, smoke inhalation from fires, motor vehicle exhaust, and tobacco smoke.
- The risk from CO poisoning increases after disasters, when gasoline-powered generators may be more frequently used to supply power.
- Patients who have been exposed to CO should be immediately removed from the source and into fresh air. Call 911 for emergency assistance.

Prevention is key!

- Help families identify possible CO sources within their homes. These could include fuel-burning appliances, fireplaces and woodstoves, space heaters, barbecue grills and hibachis, motor vehicles, electric generators and other power equipment, and boats.
- Advise families of the following:
 - Battery-operated CO detectors should be installed in the hallway near every separate sleeping area of the home, on every floor of a home including the basement, and near attached garages. CO detectors should also be installed in the indoor sections of boats. CO detectors should be checked regularly to ensure they are operating correctly. (CO detectors may be available free of charge to those in need through fire departments, local governments, or regional American Red Cross chapters.)

- All fuel-burning appliances and equipment should be checked professionally once a year or as recommended by the manufacturer.
- Chimneys should be cleaned annually.
- Installation of an exhaust hood is recommended above all gas stoves to decrease indoor air pollution and decrease the risks from CO poisoning.
- Generators, barbecue grills, and hibachis should never be used indoors.
- Gas cooking stovetops and ovens should not be used for supplemental heat.
- Never leave any motor vehicle running in the garage or other enclosed space. CO can accumulate even when a garage door is open.
- Space heaters should be properly vented.

Physicians should consider CO exposure when members of the same household present with similar nonspecific symptoms. Diagnosis requires the measurement of blood COHb to determine if the patient has elevated concentrations. Once diagnosed, treatment may include supplemental oxygen, ventilatory support, and monitoring cardiac dysrhythmias. Use of hyperbaric oxygen decreases recovery time.

BACKGROUND INFORMATION

According to the Centers for Disease Control and Prevention, each year, more than 400 Americans die from unintentional CO poisoning not linked to fires, more than 100,000 visit the emergency room, and more than 14,000 are hospitalized.

FOR MORE INFORMATION

The following resources offer additional information regarding carbon monoxide:

- [Pediatric Environmental Health, 4th Edition](#) – AAP Policy Manual
- [Carbon Monoxide's Impact on Indoor Air Quality](#) – US EPA
- [Carbon Monoxide Poisoning](#) – CDC