



Blue Ridge Poison Center's

# Tox Talks

Vol. 6, No. 1 January 2008 A Bulletin for Health Care Professionals Who Manage Poisoned Patients <http://hsc.virginia.edu/brpc/>

## JANUARY DEADLIEST MONTH FOR CO POISONING

### DOES YOUR FACILITY HAVE TELEMEDICINE?

The Blue Ridge Poison Control Center offers CME-accredited toxicology lectures through telemedicine. To request a topic, schedule a lecture for your staff, or more information contact Heather Collier: 434-924-5185 or [HLC8E@virginia.edu](mailto:HLC8E@virginia.edu).

**THE UVA CENTER OF CLINICAL TOXICOLOGY** associated with the Blue Ridge Poison Center manages over 500 patients each year on site in the University of Virginia Health System - from outpatient clinic visits to critically ill inpatients managed in our pediatric and adult intensive care units. In addition, over 2,000 requests are made each year for consultation with our physicians from other healthcare facilities by phone or telemedicine. Our Boarded Medical Toxicologists are internationally known for the expertise in the care of poisoned patients. Call 1-800-222-1222 24 hours a day, every day. [Cell users: 1-800-451-1428]

<http://www.healthsystem.virginia.edu/internet/medtox/cct/ccthome.cfm>

### IN CHARLOTTESVILLE

Reminder: At University of Virginia Hospital, the first Wednesday of every month features toxicology Grand Rounds. For more information, contact Heather Collier: 434-924-5185 or [HLC8E@virginia.edu](mailto:HLC8E@virginia.edu)

- A 64 year old female presents to the local emergency department with chest tightness and a new onset cardiac dysrhythmia.
- A 4 year old has a new onset seizure in the back of the family car while traveling long distance.
- A family of 4 complains of food poisoning after eating fast food.

### What do these cases have in common?

They are all the result of a devious poison, carbon monoxide. It can have subtle presentations and is the great imitator of many other diseases. Many cases are often first diagnosed as ailments such as viral syndrome or "the flu." Other conditions carbon monoxide can mimic include:

- gastroenteritis or food poisoning
- migraine headaches
- ischemic heart disease (e.g., new onset angina)
- cardiac dysrhythmias
- neurologic symptoms (focal and cognitive)
- seizures
- syncope
- hangovers

Although common diseases are common, clinicians must keep carbon monoxide exposures high on the differential list. Sources of exposure may not be obvious. Malfunctioning gas appliances, inadequate exhaust systems on gasoline powered equipment, charcoal grills unwisely used to heat an interior or closed-in space, defective automobile mufflers, and propane powered forklifts or zambonis are common culprits.

According to the U.S. Centers for Disease Control and Prevention, **January is the worst for carbon monoxide poisoning**. Nationwide, at least two people die each day from carbon-monoxide poisoning in January—three times the fatality rate recorded in August and July.

It should come as no surprise that CO deaths are the highest in winter (December is the second highest month). Cold weather increases the use of gas-powered furnaces as well as the use of risky alternative heating and power sources (portable generators, charcoal briquettes, propane stoves or grills) during power outages.

**Think of it!!**

The clinician must keep an open mind to unusual exposures. Many patients have vague symptoms or the onset of new conditions that send them to the physician or emergency department for evaluation.

One of the most common early complaints from CO poisoning is headache and dizziness. Whenever the patient has these complaints, consider carbon monoxide as a possible cause of the illness. Clinicians should also consider the possibility of CO poisoning whenever anyone is complaining of a flu-like illness, uses gas appliances in their home and has symptomatic co-inhabitants or ill pets.

**Stop the exposure**

Environmental and workplace exposures need further investigation because others may be at RISK! Detection of carbon monoxide is important for treating the ill patient, but is even more important for discovering a potentially toxic environment. One of the most important concepts to understand about environmental exposures is that they are a public health concern. The first patient seen may be the sentinel case. Early identification and preventive actions may prevent additional illnesses.

**Specialized treatment**

In most simple terms, treatment is focused on stopping additional exposure. Most treatments are supportive and symptomatic. Significant recovery occurs from many toxicologic diseases, including CO poisoning, once continued exposure is halted.

Diagnostic evaluation should focus on end-organ effects. Carbon monoxide impairs oxygen delivery/oxygen use to those organs with the highest oxygen demands (i.e., brain and heart). A 12-lead ECG is essential. If chest pain is present, the patient should be evaluated just like any patient at risk of acute coronary syndromes. Metabolic acidosis and serum lactate levels are helpful to assess tissue perfusion. The carboxyhemoglobin level is most helpful to confirm exposure. Tables correlating clinical effects and levels are at times inaccurate. Therapeutic decisions should not be based solely on the carboxyhemoglobin levels.

The specific treatment of carbon monoxide is oxygen. Controversy exists over how the oxygen is administered; our recommendation is that 100% oxygen should be administered immediately upon recognizing CO poisoning. Patients with mild symptoms may be treated with 100% oxygen by tight fitting mask until symptoms resolve. Those with syncope, altered mental status, coma, seizures, or cardiac complications may require treatment with hyperbaric oxygen; the clinician should discuss this with a medical toxicologist.

**Other mimickers**

Other toxins that can claim to be great imitators of CO poisoning include chronic salicylism, pesticide poisoning, and heavy metal poisoning. All of these can present with flu-like illnesses or gastroenteritis. Always consider these hidden toxins in your differential diagnosis.

**Looks like tox but is NOT**

On the other hand, some medical conditions can mimic the clinical presentation of carbon monoxide conditions. Patients “found down” are particular prone to being labeled a poisoning in many cases before confirmatory evidence of any condition is available.

Examples of medical conditions that can mimic CO poisoning include:

- Influenza
- Food-borne illnesses
- Hypoglycemia