

Routine screenings uncover hidden carbon monoxide poisoning

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Screening all emergency room patients for carbon monoxide poisoning is a simple yet potentially life-saving practice that can be done even in a high-volume urban hospital, according to new research by emergency physicians at Rhode Island Hospital.

In the largest study of its kind, more than 14,000 patients visiting the hospital's emergency department were routinely screened for exposure to carbon monoxide (CO), a highly toxic gas that can cause brain and heart damage and even death. Researchers identified 11 cases of CO poisoning in which the patients did not know they were being exposed to dangerous levels of the gas. None of the patients exhibited the usual signs of CO poisoning, such as headaches, dizziness and flu-like symptoms.

The study is published online by *The Journal of Emergency Medicine*.

“There is a clear and significant benefit to universal screening for carbon monoxide, especially during the winter months, when carbon monoxide poisoning is most common,” said lead author Selim Suner, M.D., M.S., director of emergency preparedness and disaster medicine at Rhode Island Hospital. “Unless you have a carbon monoxide detector, it's extremely difficult to know if you're being exposed to toxic levels of this gas. If we can identify these cases of unsuspected poisoning early on, we can administer treatment and prevent them and others from being further exposed.”

When applied to national emergency room data, the findings suggest that as many as 11,000 cases of carbon monoxide poisoning could potentially go undetected each year in the United States, said Suner, who's also an associate professor of emergency medicine, surgery and engineering at The Warren Alpert Medical School of Brown University.

CO exposure is the leading cause of accidental poisoning deaths across the country, responsible for an estimated 15,000 emergency department visits and 500 unintentional deaths each year - with most occurring in the winter. It is an odorless, colorless gas produced by common household appliances that burn fuel, such as gasoline, oil and wood. When not properly ventilated or used incorrectly, CO emitted by these appliances can build up to dangerous levels. CO poisoning can be very difficult to diagnose, since its symptoms resemble those of the flu and other common illnesses. Pregnant women, children and the elderly are most susceptible to carbon monoxide poisoning.

In the study, hospital staff used a portable, non-invasive pulse CO-oximeter - a device similar to the standard pulse oximeter - to screen 14,438 patients who presented to the emergency department for various concerns over a three-month span. A sensor placed on the patient's index or middle finger quickly measured the amount of CO in the blood. These measurements were documented along with initial vital signs and oxygen saturation as part of the standard triage process.

A total of 28 cases of CO poisoning were detected, 11 of which were unexpected and identified only with routine screening. Nearly a third of the patients required hyperbaric oxygen treatment, in which 100 percent oxygen is delivered under high pressure in a specialized chamber to reduce the amount of CO in the blood and return oxygen levels to normal. Overall, four of the 11 patients were smokers.

Patients diagnosed with CO poisoning were interviewed by researchers

to determine how they used the information they were provided in the emergency department after being discharged. Those judged to have environmental CO poisoning were also contacted by telephone and asked if they discovered the source of CO, whether the fire department was contacted, the incidence of recurrent similar symptoms, and whether a smoke or CO detector was purchased.

“We demonstrated that its possible to conduct quick, non-invasive and inexpensive carbon monoxide screening on every patient even in a high volume, urban emergency department,” said Suner. “This is a public health initiative that could be applied universally in other large health care institutions.”

Source: Lifespan

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