

respiration. CO is responsible for more than half of all fatal inhalation poisonings in the United States. CO is a colorless, odorless gas with an affinity for hemoglobin 230 times greater than that of oxygen. When CO enters the bloodstream, it binds readily with hemoglobin to form carboxyhemoglobin (COHb). Because it is released less readily than oxygen, tissue hypoxia reaches dangerous levels before oxygen is available to meet tissue needs.

Nursing Alert

With carbon monoxide (CO) poisoning, the oxygen saturation (SaO₂) obtained by pulse oximetry will be normal because the device measures only oxygenated and deoxygenated hemoglobin; it does not measure dysfunctional hemoglobin, such as carboxyhemoglobin (COHb).

Accidental CO poisoning is most often a result of exposure to fumes of heaters or smoke from structural fires, although poorly ventilated recreational vehicles with improperly operated or maintained gas lamps or stoves and cooking in under-ventilated areas with charcoal grills are also frequent causes. CO is produced by incomplete combustion of carbon or carbonaceous material, such as wood or charcoal. Purposeful CO poisoning can also occur in an attempted suicide with a vehicle parked in a closed garage for a long period.

The signs and symptoms of CO poisoning are secondary to tissue hypoxia and vary with the level of COHb. Mild manifestations include headache, visual disturbances, irritability, and nausea; more severe intoxication causes confusion, hallucinations, ataxia, and coma. The bright, cherry red lips and skin often described are less common than pallor and cyanosis.

Therapeutic Management

Treatment of children with smoke inhalation injury is largely symptomatic. The most widely accepted treatment is placing the child on humidified 100% oxygen as quickly as possible (assuming no previous medical conditions exist contraindicating this) to rapidly reverse tissue hypoxia and to displace CO and cyanide from protein-binding sites. The child is monitored for signs of respiratory