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1: [Pediatr Emerg Care.](#) 2000 Jun;16(3):151-5.



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Characteristics and outcome of children with carbon monoxide poisoning with and without smoke exposure referred for hyperbaric oxygen therapy.

[Chou KJ](#), [Fisher JL](#), [Silver EJ](#).

Division of Pediatric Emergency Medicine, Jacobi Medical Center, Albert Einstein College of Medicine, Bronx, New York, USA.
kjchou@pol.net

OBJECTIVES: To describe the clinical characteristics and outcome of children with carbon monoxide (CO) poisoning with and without smoke exposure referred for hyperbaric oxygen therapy (HBOT), and to determine the association between any of these characteristics and death. **SETTING:** Regional hyperbaric referral center. **PATIENTS:** The medical records of 150 children with CO poisoning (COP) who were treated with HBOT between August 92 and September 95 were reviewed. **MEASUREMENTS/MAIN RESULTS:** COP was defined as a history of probable exposure to CO, with either a carboxyhemoglobin level (COHb) > 25, or COHb < 25 with neurological, respiratory, or cardiac compromise. Major cutaneous burns were described as second degree burns over greater than 20% of the patient's total body surface area (TBSA), or third degree burns over greater than 10% of the patient's TBSA. Children extracted from a closed-space fire who had airway soot, singed facial hair/facial burns, or respiratory distress were defined as having smoke inhalation and carbon monoxide poisoning (CO/SI). CO/SI occurred in 40.1% of patients. Compared to children with COP alone, those with CO/SI were significantly more likely to have a depressed mental status upon arrival to an ED (76.3 % vs 13.6 %, $P < 0.001$), lower mean initial GCS (6.7 vs 14.7, $P < 0.001$), lower mean initial pH (7.2 vs 7.4, $P < 0.001$), respiratory arrest at the scene (68.5% vs 0%, $P < 0.001$), and cardiac arrest at the scene (25.9% vs 0%, $P < 0.001$). Children with CO/SI were significantly more likely to have a poor outcome (death) than children with COP alone (22.6% vs. 0%, $P < 0.001$). Comparing children with CO/SI who died versus survivors, there were significant differences in mean initial COHb (38.3 vs 24.3, $P = 0.03$), mean initial temperature upon arrival in an ED (94.9 degrees F vs 98.2 degrees, $P < 0.006$), respiratory arrest at the scene (92% vs 59.6%, $P = 0.04$), and cardiac arrest at the scene (66.7% vs

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Complications and protocol considerations in carbon monoxide-poisoned patients who require hyperbaric oxygen therapy: report from a ten-year experience. [Ann Emerg Med. 1989]

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13.5%, $P < 0.001$). Sixty percent of children died who had a combination of risk factors of smoke inhalation, low temperature, high COHb level, and respiratory and cardiac arrest in the field. CONCLUSIONS: These preliminary data suggest that children with COP alone who are treated with HBOT are at low risk for dying regardless of initial COHb level. Children with CO/SI have a significantly higher risk of dying than those children with COP alone. A combination of smoke inhalation, low temperature, high COHb level, respiratory arrest, and cardiac arrest is highly associated with death. Prospective studies are needed to confirm and further define these associations.

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