

Noninvasive Pulse CO-Oximetry Expedites Evaluation and Management of Patients with Carbon Monoxide Poisoning.

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Purposes

Pulse CO-Oximetry (Rad-57; Masimo Corp, Irvine, CA) has been available since 2005. To date, all published clinical studies have focused on clinical reliability and whether the device enhances case finding through screening of various populations. This study examines whether use of pulse CO-Oximetry shortens the time to diagnosis and treatment of patients with carbon monoxide (CO) poisoning.

Basic Procedures

Data from the joint Undersea and Hyperbaric Medical Society/Centers for Disease Control and Prevention CO poisoning surveillance system from August 2008 to July 2011 were analyzed. Of 1711 cases of CO poisoning treated with hyperbaric oxygen in the United States and reported through the system, 1606 had their initial carboxyhemoglobin (COHb) level measured by laboratory CO-Oximetry and 105 by pulse CO-Oximetry. Patients were selected from the laboratory CO-oximetry group to match each of the 105 patients evaluated by pulse CO-Oximetry in 5 characteristics-age, sex, race/ethnicity, intent of poisoning, and occurrence of loss of consciousness. Measures of timeliness in measurement and management were compared between the 2 groups.

Main Findings

Patients with initial COHb measurement by pulse CO-oximetry had significantly shorter time to measurement of COHb, higher average levels of COHb, and shorter time from the end of CO exposure to the initiation of hyperbaric oxygen treatment. On average, patients evaluated by pulse CO-Oximetry reached the hyperbaric chamber 1 hour faster than did patients evaluated by laboratory CO-Oximetry ($P < .01$).

Conclusions

Pulse CO-Oximetry is associated with more rapid diagnosis and initiation of hyperbaric oxygen therapy in CO-poisoned patients compared with laboratory CO-oximetry. The impact on clinical outcome remains to be determined.