Non-invasive Pulse CO-Oximetry Screening in the Emergency Department Identifies Occult Carbon Monoxide Toxicity. Suner S., Partridge R., Sucov A., Valente J., Chee K., Hughes A., Jay G. *J Emerg Med.* 2008 May; 34(4):441-50.

Introduction

As carbon monoxide (CO) toxicity may present with non-specific signs and symptoms and without history of exposure, screening for CO toxicity may identify occult cases. The objective of this study was to determine whether non-invasive screening for CO exposure could be performed in all patients presenting to a high-volume urban emergency department (ED) and would identify patients with unsuspected CO toxicity.

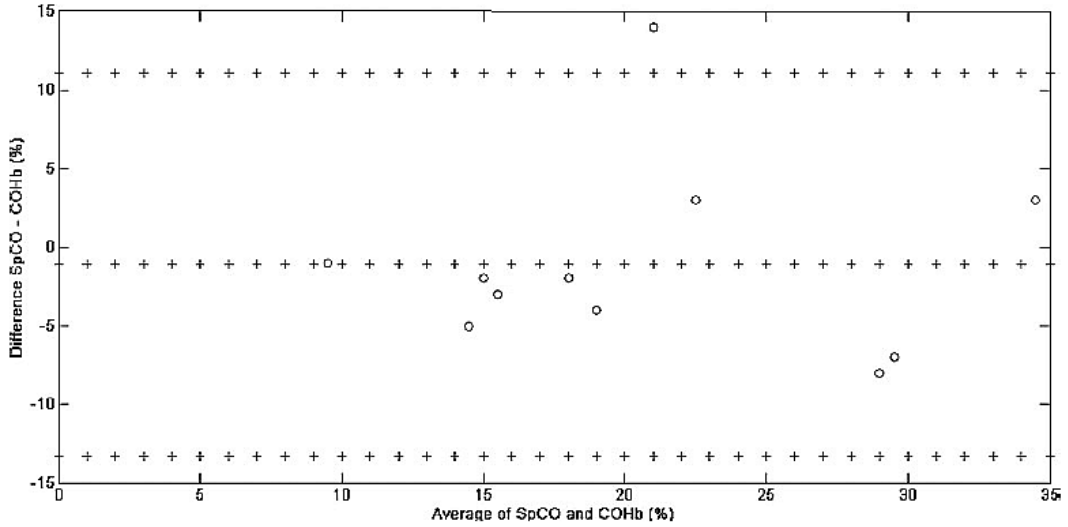
Methods

A study of adult patients, who presented to the ED for any complaint, prospectively screened for carboxyhemoglobin concentration by a pulse CO-Oximeter (SpCO). ED triage staff recorded SpCO on the patient's chart at triage. Data, including SpCO and vital signs, were recorded in a database by two trained research assistants. When available, carboxyhemoglobin concentration obtained by venous blood was also included in the data set.

Results

There were 14,438 patients who presented to the ED and were entered in the study. Data from 10,856 (75%) patients receiving screening for SpCO were analyzed. Patients were 44 +/- 19 years old and 51% female; 32% of the patients smoked. The mean SpCO was 5.17% +/- 3.78% among smokers and 2.90% +/- 2.76% among non-smokers. During the study period, 11 patients with presenting signs and symptoms not consistent with CO toxicity were identified through SpCO screening.

Bland-Altman plot showing mean SpCO and COHb for 11 patients with occult CO toxicity.



The middle line, denoted with +, is the mean difference, and the upper and lower lines are mean ±2 SD representing the limits of agreement. The mean difference is -1.1% with a 95% confidence interval of_-4.7–2.5%.

Conclusion

Screening for CO toxicity using a non-invasive pulse CO-Oximeter can be conducted even in a busy tertiary center ED and identify patients with occult CO toxicity.