

Evaluation of a New Noninvasive Device in Determining Hemoglobin Levels in Emergency Department Patients.

Knutson T., Della-Giustina D., Tomich E., Wills B., Luerssen E., Reynolds P. *West J Emerg Med.* 2013 May;14(3):283-286.

Introduction

The Masimo Radical-7 Pulse CO-Oximeter is a medical device recently approved by the US Food and Drug Administration that performs noninvasive oximetry and estimated venous or arterial hemoglobin measurements. A portable, noninvasive device that rapidly measures hemoglobin concentration could be useful in both austere and modern hospital settings. The objective of this study is to determine the degree of variation between the device's estimated hemoglobin measurement and the actual venous hemoglobin concentration in undifferentiated emergency department (ED) patients.

Methods

We conducted a prospective, observational, cross-sectional study of adult patients presenting to the ED. The subjects consisted of a convenience sample of adult ED patients who required a complete blood count as part of their care in the ED. A simultaneous probe hemoglobin was obtained and recorded.

Results

Bias between probe and laboratory hemoglobin measurements was -0.5 (95% confidence interval, - 0.8 to -0.1) but this was not statistically significant from 0 ($t_{0.05,124} = 0.20$, $P > 0.5$). The limits of agreement were -4.7 and 3.8, beyond the clinically relevant standard of equivalency of ± 1 g/dL.

Conclusion

These data suggest that noninvasive hemoglobin determination is not sufficiently accurate for emergency department use.