

Performance Evaluation of a Noninvasive Hemoglobin Monitoring Device.

Gayat E., Bodin A., Sportiello C., Boisson M., Dreyfus J.F., Mathieu E., Fischler M. *Ann Emerg Med.* 2011;57(4):330-3.

Study objective

Hemoglobin measurement is a routine procedure, and a noninvasive point-of-care device may increase the quality of care. The aim of the present study is to compare hemoglobin concentration values obtained with a portable totally noninvasive device, the Masimo Labs Pulse-Hemoglobin-Meter Monitor, with the results obtained by the ADVIA 2120 in the laboratory.

Methods

This was a prospective monocentric open trial enrolling patients consulting in the emergency department of a university hospital from June 16 to December 17, 2009. The main outcome measure was the agreement between both methods and evaluation of the percentage of potential decision error for transfusion.

Results

Samples from 300 consecutive patients were assessed. Hemoglobin concentration could not be obtained with the new device for 24 patients. In others, the mean bias, the lower and the upper limits of agreement between the 2 methods, was 1.8 g/dL (95% estimated confidence interval [CI] 1.5 to 2.1 g/dL), -3.3 g/dL (95% CI -3.8 to -2.8 g/dL), and 6.9 g/dL (95% CI 6.4 to 7.4 g/dL), respectively. The intraclass correlation coefficient was 0.53 (estimated 95% CI 0.10 to 0.74). The number of potential errors about transfusion decision was 38 (13% of patients). The peripheral oxygen saturation and the true value of hemoglobin concentration were independently associated with the bias.

Conclusion

Results from this widely available noninvasive point-of-care hemoglobin monitoring device were systematically biased and too unreliable to guide transfusion decisions.