

## Accuracy of Point-of-Care Testing for Anemia in the Emergency Department

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**BACKGROUND:** Pulse oximetry has become the standard of care in emergency medicine, operating rooms, and medical wards for the monitoring of oxygenation, but the use of pulse oximetry for assessment of hemoglobin (Hb) is controversial. The purpose of this study was to compare the accuracy and precision of 2 point-of-care Hb measurement devices, the Pronto-7 and the HemoCue 201, to laboratory testing.

**METHODS:** We studied a convenience sample of patients in the emergency department who required a complete blood count. We excluded patients in critical condition or those with elevated methemoglobin, impaired perfusion, or finger deformities. Each subject provided 2 capillary samples for measurement with the HemoCue 201 and 2 consecutive readings with the Pronto-7. We used Bland-Altman analysis to compare the performance of the point-of-care devices to laboratory measurements. We also determined the diagnostic performance for the detection of anemia by sex (Hb < 11.6 g/dL for females, Hb < 13.8 g/dL for males).

**RESULTS:** 201 of the 350 subjects enrolled (57%) were female. Mean (SD) age was 50.9 (19.0) y. Complete data were available for 297 (84.9%) of the Pronto-7 readings and 323 (92.3%) of the HemoCue 201 readings. Mean (SD) laboratory Hb was 13.1 g/dL (2.3). Mean bias (Bland-Altman limits of agreement) for the Pronto-7 was 0.52 g/dL (3.29 to 2.25), and for the HemoCue 201 the mean bias was 0.98 g/dL (3.57 to 1.61). Sensitivity and specificity for diagnosis of anemia were 81.6% (95% CI 72.5–88.7) and 75.4% (95% CI 68.8 – 81.1) for the Pronto-7 and 99.1% (95% CI 94.8 –100.0) and 71.0% (95% CI 64.4 –76.9) for HemoCue 201.

**CONCLUSION:** Both devices provided clinically useful methods to screen for anemia.