

Continuous noninvasive hemoglobin monitoring: ready for prime time?

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PURPOSE OF REVIEW: Determination of hemoglobin (Hb) concentration is essential for the detection of anemia and hemorrhage and is widely used to evaluate a patient for a possible blood transfusion. Although commonly accepted as intrinsic to the process, traditional laboratory measurements of Hb are invasive, intermittent, and time-consuming. Noninvasive Hb (NIHb)-monitoring devices have recently become available and promise the potential for detecting sudden changes in a patient's Hb level. In addition to reduced delays in clinical intervention, these devices also allow for a reduction in patient discomfort, infection risk, required personnel, and long-term costs. Unfortunately, it has been shown that many clinical factors can influence their accuracy.

RECENT FINDINGS: Many studies have been published on the accuracy and precision of NIHb-monitoring devices in various clinical settings. A recent meta-analysis has shown a small mean difference but wide limits of agreement between NIHb and laboratory measurements, indicating that caution should be used by physicians when making clinical decisions based on this device.

SUMMARY: NIHb measurements may currently be considered to be a supplemental tool for monitoring trends in Hb concentration, but are not currently developed enough to replace an invasive approach. Moreover, further studies are still required before implementing NIHb in the clinical decision-making process. Specifically, no studies have demonstrated that this technology improves clinical outcomes or patient safety.