

Evaluation of multiwave pulse total-hemoglobinometer during general anesthesia.

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The purpose of this prospective study was to evaluate the accuracy and trending ability of a four-wavelength pulse-total hemoglobinometer that continuously and noninvasively measures hemoglobin in surgical patients. With IRB approval and informed consent, spectrophotometric hemoglobin (SpHb) was measured with a pulse-total hemoglobinometer manufactured by Nihon Kohden Corp (Tokyo, Japan) and compared to the CO-oximeter equipped with blood gas analyzer. Two hundred twenty-five samples from 56 subjects underwent analysis. Bland-Altman analysis revealed that the bias \pm precision of the current technology was 0.0 ± 1.4 g/dl and -0.2 ± 1.3 g/dl for total samples and samples with $8 < \text{Hb} < 11$ g/dl, respectively. The percentages of samples with intermediate risk of therapeutic error in error grid analysis and the concordance rate of 4-quadrant trending assay was 17 % and 77 %, respectively. The Cohen kappa statistic for $\text{Hb} < 10$ g/dl was 0.38, suggesting that the agreement between SpHb and CO-oximeter-derived Hb was fair. Collectively, wide limits of agreement, especially at the critical level of hemoglobin, and less than moderate agreement against CO-oximeter-derived hemoglobin preclude the use of the pulse-total hemoglobinometer as a decision-making tool for transfusion.