

**Usefulness of non-invasive spectrophotometric haemoglobin estimation for detecting low haemoglobin levels when compared with a standard laboratory assay for preoperative assessment.**

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**BACKGROUND:** Delay in diagnosis of anaemia during preoperative assessment poses logistic problems, leading to multiple clinic visits, inadequate preoperative management, and unnecessary delay of surgery. Therefore, we tested an instant spectrophotometric haemoglobin (SpHb) measurement technique to facilitate this assessment.

**METHODS:** We evaluated portable instant SpHb vs standard laboratory screening of anaemia between March 2012 and December 2013. Paired Hb measurements were performed on 726 patients using SpHb (Pronto-7, Masimo Corporation, Irvine, CA, USA) and Hb measured on the same day using an automated analyser. The results were obtained from a group of 638 patients from the pre-anaesthetic clinic with expected normal Hb values, and 88 patients from the oncology clinic with known low Hb.

**RESULTS:** Median (range) SpHb was 129.5 (67-171) compared with 136 g litre<sup>-1</sup> (63-178) Hb measured using the automated system. Identifying Hb below a threshold of 130 g litre<sup>-1</sup> for males had a high sensitivity (93%), while identifying a threshold of 120 g litre<sup>-1</sup> for females had lower sensitivity (75%). The specificity for males (77%) and females (81%) was similar. Mean measurement bias and agreement: tolerability interval ratio was -8.1 g litre<sup>-1</sup> and 2.78 for men and -3.1 g litre<sup>-1</sup> and 2.44 for women.

**CONCLUSIONS:** SpHb was sensitive as a preliminary screening tool for detecting true low Hb values in males, but less sensitive in females. Instant SpHb measurement may enable prompt routine preoperative anaemia management, but its precision was lower than expected.