Systematic review and meta-analysis of method comparison studies of Masimo pulse co-oximeters (Radical-7™ or Pronto-7™) and HemoCue® absorption spectrometers (B-Hemoglobin or 201+) with laboratory haemoglobin estimation.

Hiscock R(1), Kumar D(1), Simmons SW(2).
Anaesth Intensive Care. 2015 May;43(3):341-50.

(1)Department of Anaesthesia, Mercy Hospital for Women, Heidelberg, Victoria.
(2)Department of Anaesthesia, Mercy Hospital for Women, Heidelberg and Department of Pharmacology, University of Melbourne, Victoria.

We assessed agreement in haemoglobin measurement between Masimo pulse co-oximeters (Rad-7™ and Pronto-7™) and HemoCue® photometers (201+ or B-Hemoglobin) with laboratory-based determination and identified 39 relevant studies (2915 patients in Masimo group and 3084 patients in HemoCue group). In the Masimo group, the overall mean difference was -0.03 g/dl (95% prediction interval -0.30 to 0.23) and 95% limits of agreement -3.0 to 2.9 g/dl compared to 0.08 g/dl (95% prediction interval -0.04 to 0.20) and 95% limits of agreement -1.3 to 1.4 g/dl in the HemoCue group. Only B-Hemoglobin exhibited bias (0.53, 95% prediction interval 0.27 to 0.78). The overall standard deviation of difference was larger (1.42 g/dl versus 0.64 g/dl) for Masimo pulse co-oximeters compared to HemoCue photometers. Masimo devices and HemoCue 201+ both provide an unbiased, pooled estimate of laboratory haemoglobin. However, Masimo devices have lower precision and wider 95% limits of agreement than HemoCue devices. Clinicians should carefully consider these limits of agreement before basing transfusion or other clinical decisions on these point-of-care measurements alone.