

Masimo Radical-7 Continuous Hemoglobin Measurement Error Grid Approach Results.

Gomez Diago L., Soliveres J., Balaguer J., Hernández M.J., Sánchez A., Solaz C. *EJA* 2012; 29: May 2012 Supplement. Abstract 453.

Background and Goal of Study

Pulse CO-Oximetry™ (SpHb) (Radical-7, Masimo Corp) is a noninvasive, continuous hemoglobin monitor, and in vivo calibration has been recently introduced. Our aim is to determine the bias and precision of the in vivo calibration feature.

Materials and Methods

After local ethics committee approval, written informed consent was obtained from 36 older than 18 years ASA I-III patients scheduled for surgery under general anesthesia monitored with a radial artery catheter. The Radical-7 probe was placed at the extremity of the second finger on the same side as the arterial catheter. The results from the Radical-7 were compared with the arterial Hb from the central hematology analyzer used in our hospital (Coulter). A grid error similar to the one described for blood glucose measurement is used (1) showing concentrations between 0 and 16 g/dL. Hb from the laboratory reference value (LabHb) and SpHb are ordered in pairs. Ideally, all points would be on a line of unity (shown in the figure 1). Zone A means deviation of $\pm 10\%$ from the reference (95% of the values should be here); in zone B, significant errors occur (less than 5% of the values should be here) but not as significant as zone C, in which major therapeutic errors may occur (no values should be here). We applied the hemoglobin in vivo calibration to raw data collected previously to draw the hemoglobin error grid. Calibration consisted in adding or subtracting the difference between LabHb (analyzed at the beginning of the surgery) and SpHb to the SpHb value observed from that moment until the end of the surgery. Each pair of values was taken every 15 minutes.

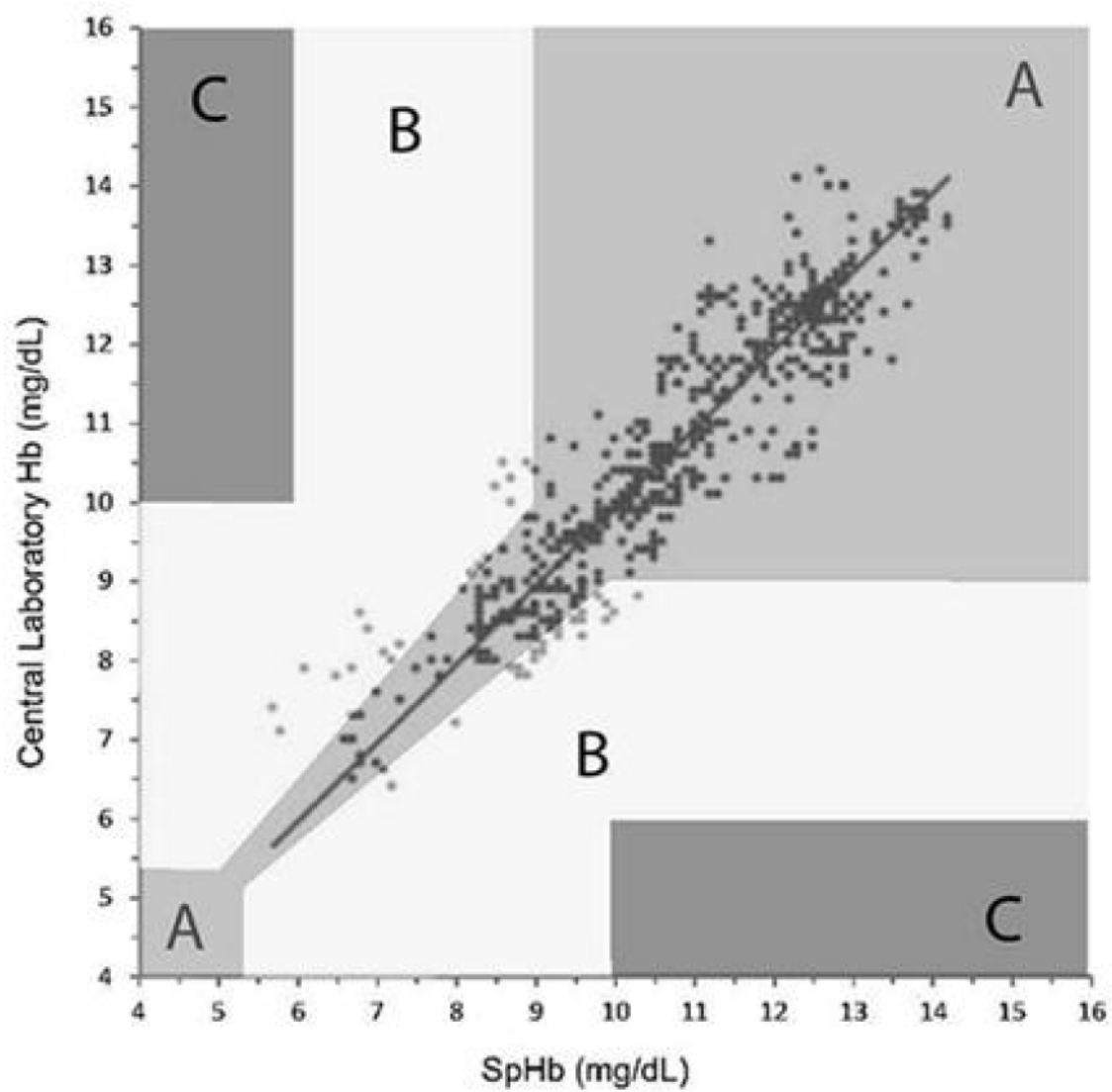
Results and Discussion

No patients were excluded. 592 samples were analyzed from 36 patients, 31 had an error greater than 10 % (5,2%, zone B). No value fell in zone C. Figure 1 shows the hemoglobin error grid with the tree zones.

Conclusion

Both methods can be considered to be exchangeable.

References: (1) *Anesth Analg*, 2011;113:89-90



[Figure 1]