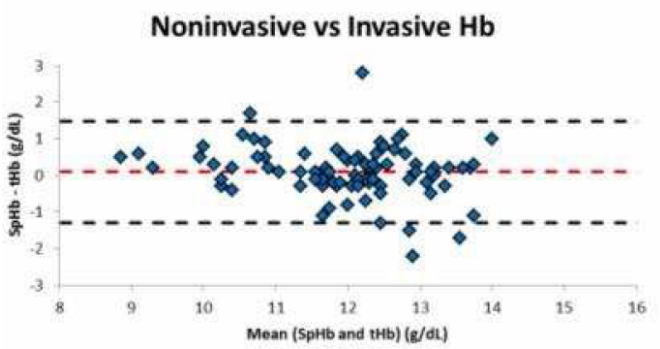
Noninvasive and Continuous Trending of Hemoglobin during Labor and in the Post-Partum Period
Tola G., Capogna G. *Euroanesthesia 2014:* Abstract 11AP3-1.

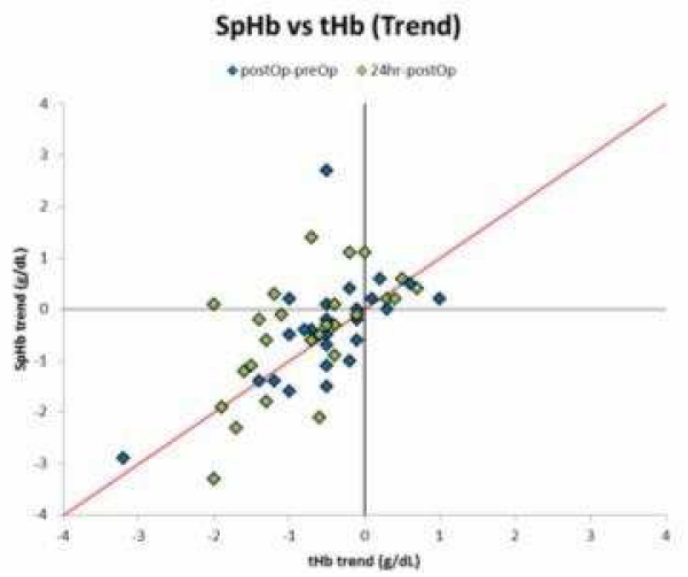
Background and Goal of Study
Postpartum hemorrhage may be associated with significant change in vital signs and/or symptoms, and is usually confirmed with an invasive laboratory hemoglobin test. Intermittent spot checks for total hemoglobin determination can lead to late detection of maternal bleeding. If trending is accurate, noninvasive and continuous total hemoglobin monitoring (SpHb) may provide earlier detection of postpartum hemorrhage. We compared SpHb with values from a central laboratory device in laboring mothers.

Materials and Methods
With IRB approval and patient consent, a SpHb sensor (rainbow ReSposable R2-25 Revision K,Masimo) was placed patient's ring finger and connected to Radical-7 (soft ver.7801). Data were collected (Automated Data Collection software, Masimo) before, after delivery, and 24 hr after delivery. At each of the 3 time periods, a venous blood sample was obtained for total hemoglobin (tHb) measurement on central laboratory device (Horiba Pentra DX120). The bias, precision, and limits of agreement (LOA) of all the differences between SpHb and tHb were calculated. Trend accuracy was determined by comparing directional changes in tHb concentrations to changes in SpHb.

Results and discussion
Twenty-nine patients were enrolled (tHb range 8.6 to 14.4 g/dL). A total of 83 data points were used in the analysis. For all SpHb data, SpHb demonstrated bias and precision of 0.10 ± 0.71 g/dL compared to the central laboratory device with LOA of 1.51 and 1.31 g/dL. (Fig 1) More importantly, SpHb was able to trend changes detected by laboratory readings (Fig 2).

Conclusion
SpHb was able to detect changes in hemoglobin concentration during and after delivery and therefore may provide a means for the early detection of bleeding and postpartum hemorrhage.




SpHb vs tHb (Trend)
postOp-preOp
24hr-postOp
SpHb trend (g/dL)
tHb trend (g/dL)
4
3
2
1
0
-1
-2
-3
-4
-4
-3
-2
-1
0
1
2
3
4