Accuracy of Non-invasive Hemoglobin Measurement through a Pulse CO-Oximeter Compare to Venous Blood Draw in a Community Setting.

**Introduction**
Measurement of Hemoglobin is a routine and essential Clinical tool for knowing anemic status of patients. With the help of a non-invasive method of Hemoglobin Measurement we could avoid puncture of vessels, blood exposure and processing time to get the results. In addition, non-invasive method does not require much processing time, so we could get the results much faster than the invasive method.

**Methods**
After IBR approval and informed written consent, 127 adult patients were recruited from two Health Fairs in the general community in the study. Four non-invasive Hemoglobin devices (Pronto 7® with Rev F SpHb Sensor, Masimo, Irvine, CA) were used. The SpHb sensor consisted of a reusable optical probe connected to the Pronto 7® hand-held device. These sensors were placed on the subjects four fingers (middle and ring fingers of both hands), covered with light shielding bags, and measurements were recorded by the devices. A venous blood sample was collected and analyzed on a laboratory reference device (Beckman Coulter LH500®). The mean bias, precision, and upper and lower limits of agreement for SpHb compared to laboratory hemoglobin were calculated.

**Results**
A total of 325 measurements recorded and analyzed with a Hemoglobin range of 9.0-17.1 g/dl. It was compared to values obtained from laboratory analysis of Hemoglobin, which had a range of 10.55-17.35 g/dl. The Bias, Precision & Accuracy were -0.0646, 1.0680 & 1.0683 respectively.

**Conclusion**
Non-invasive hemoglobin measurement with the Masimo Pronto 7® hand-held device gives immediate result. When compared to a laboratory reference device, the Pronto-7 provides similar values and offers acceptable accuracy. The Pronto-7 has the potential to be very helpful in "spot checking" for anemia in the general community without the need for an exhaustive set-up or processing time.
Figure 2

\[ y = 0.19x + 2.7 \]

\[ R^2 = 0.3832 \]