

## **Oxygen Saturation in Neonates. Comparison of Three Different Pulse Oximeters with Arterial Measurements.**

Indrebo M.M., Liestol K., Brundvand L., Lindermann R. *Eur J Pediatr.* 2006 November; 165(Suppl 1): 1–389.

### **Background**

There are several brands of pulse oximeters, but accuracy and reliability differ and there is lack of validation in neonates. We wanted to compare the accuracy of three pulse oximeters compared with arterial oxygen saturation (SaO<sub>2</sub>), and time consumption to a stable value.

### **Methods**

The measurements were performed on neonates who needed an arterial line. SaO<sub>2</sub> was measured from blood sample taken from an umbilical artery catheter and analyzed with a Radiometer ABL735. The pulse oximeters used were Nellcor OxiMaxN-550. Masimo SET Radical Mini Corr Oximeter BCI 3402. 42 measurements were performed on 21 patients, GA 23.4–41.3 weeks, age 1–25 days. On each infant, two different random monitors were used, on two different feet. The time until a stable SpO<sub>2</sub> was registered, and a SaO<sub>2</sub> was measured.

### **Results**

The monitors had a tendency to show lower values when SaO<sub>2</sub> was high and opposite when SaO<sub>2</sub> was low. The mean absolute deviation was 2.79, 1.96 and 3.19 respectively. Gender, gestational age, age and blood pressure did not influence the results. There were no significant differences in time to stable values.

### **Conclusions**

Presumed that arterial oxygen saturation is the true value, there were significant difference between the monitors in accuracy and reliability. This is of importance when used as a screening tool for congenital heart diseases.