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 (SaO2), and time consumption to a stable value.

Methods
The measurements were performed on neonates who needed an arterial line. SaO2 was measured from blood sample taken from an umbilical artery catheter and analyzed with a RadiometerABL735. The pulse oximeters used were NellcorOxiMaxN-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 SpO2 was registered, and a SaO2 was measured.

Results
The monitors had a tendency to show lower values when SaO2 was high and opposite when SaO2 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.