The aim of the study was to evaluate the comparability of the new neonatal bilirubin method on the RapidLab 1265 blood gas analyzer. This point-of-care testing (POCT) device has the option for the determination of neonatal bilirubin, making it potentially valuable for use in neonate intensive care units or in outpatient ambulances. We paired 240 patient samples for intermethod comparisons between the new POCT method and the routine laboratory method (Vitros 350 chemistry system with BuBc slide). In parallel, a transcutaneous jaundice meter (JM-103) was applied to the newborns. Low birthweight and premature neonates were excluded from the trial. The turn-around-time (TAT) for the POCT method was also compared with the routine method, and the practicality of the new analyzer was evaluated for clinical purposes. Bilirubin measurements using the RapidLab 1265 are suitable for the application in newborns. For imprecision, coefficients of variation between 5.6% and 23% were found. The correlation between the Vitros 350 (x) and RapidLab 1265 (y) was $y=1.0x-0.1 \ (r=0.91)$, with a mean bias of $+0.1 \text{mg/dL}$ and a 95% limit of agreement of $\pm2.5 \text{mg/dL}$. As in all POCT methods, the TAT was significantly lower than that of the core laboratory. In contrast to the JM-103, the results of the RapidLab 1265 correlated closely with the Vitros 350, although occasional results of both methods were more different than
expected. In general, the RapidLab 1265 blood gas analyzer provides clinically useful bilirubin results using neonatal whole blood samples, although imprecision data are higher than for the laboratory method. The POCT device is suitable for neonatal intensive care units after thoroughly training the employees that will use the device.