Transcutaneous Bilirubinometry in Preterm Infants Receiving Phototherapy.

Nanjundaswamy, Shakuntala M.D. 1; Petrova, Anna M.D., Ph.D., M.P.H. 1; Mehta, Rajeev M.D., F.R.C.P. 1; Hegyi, Thomas M.D. 1

Abstract:
The accuracy of transcutaneous bilirubin (TcB) measurements obtained with a Bilicheck device in 70 preterm neonates before phototherapy and during phototherapy from the exposed and unexposed skin of the forehead (under the eye patch) was evaluated by comparing the TcB with the total serum bilirubin (TSB) that was performed within +/- 30 minutes of the TcB measurements. The correlation and proportion of similar, overestimated, and underestimated paired TcB/TSB measurements was calculated. A TSB point estimate of +/- 1.5 mg/dL was used for comparison of differences between the TcB and TSB. There was weaker correlation between TcB and TSB when the TcB was obtained from the exposed skin (r = 0.70; p > 0.05) as compared with an unexposed area (r = 0.77; p < 0.04) or before initiation of phototherapy (r = 0.86; p < 0.01). The TcB measurements from the area unexposed to phototherapy were predominantly (97.2%) in the similar (57%) or overestimation categories (40.2%). A significantly lower proportion of the paired TcB/TSB measurements obtained from exposed area were similar (42%) or overestimated (27%; p < 0.001). More importantly, in 31% of the measurements, the TSB levels were underestimated by the TcB. We conclude that the Bilicheck can be used for the evaluation of bilirubin levels in preterm neonates receiving phototherapy by using the unexposed skin of the forehead (under the eye patch) for TcB measurements; this may significantly reduce the number of blood draws.