[2006] [5575.479] Routine Transcutaneous Bilirubin (TcB) Measurements in the Nursery Predict the Risk of Subsequent Hyperbilirubinemia

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BACKGROUND: Measurements of total serum bilirubin (TSB) prior to discharge can identify infants at risk for the subsequent development of hyperbilirubinemia but there are limited data regarding predischarge TcB measurements.
OBJECTIVE: To evaluate predischarge TcB measurements (using population-specific TcB percentiles) as predictors of the risk of subsequent TSB ≥ 17 and ≥ 20 mg/dL.
DESIGN/METHODS: We routinely perform daily TcB measurements (Minolta JM-103) on all infants in our well baby nursery. If the TcB is > 75th percentile (Bhutani et al, Pediatrics 1999;103:6), a TSB is obtained. Additional TcB/TSB measurements are obtained as clinically indicated. Using TcB measurements in 3,984 infants we established hour-specific percentiles for our well baby population in the first 96 hours. Using these percentiles, we analyzed the predischarge peak TcB and TSB levels in infants who subsequently developed a TSB ≥ 17 and ≥ 20 mg/dL.
RESULTS: Between 1/1/2004 and 8/30/2005, 9,710 infants were discharged from the well baby nursery. 69 (0.71%) infants were readmitted at 111 ± 33.4 hours with TSB ≥17 mg/dL. 26 (0.27%) had TSB ≥ 20 mg/dL. 86% were white, 13% Asian, 87% exclusively breast fed and 65% ≤38 wk gestation. Using our percentiles, we calculated the denominators for each category assuming that the non-readmitted infants did not develop TSB's ≥17 mg/dL. The results are shown in the table. Compared with predischarge TcB <50th percentile, infants with a predischarge TcB or TSB between the 75th and 95th percentile or >95th percentile are 11.5 and 47.9 times, respectively, more likely to subsequently develop a TSB ≥17 mg/dL. 5/4854 infants (0.1%) with a predischarge TcB <50th percentile developed a TSB ≥17mg/dL and none developed a TSB ≥20 mg/dL.
CONCLUSIONS: Predischarge TcB levels are excellent predictors of the risk, or absence of risk, of subsequent hyperbilirubinemia.

Predischarge TcB Percentiles and Subsequent Hyperbilirubinemia

		Post discharge TSB				
Percentiles	**Total Population**	**≥ 17 mg/dL**		**≥ 20 mg/dL**		**RR* for TSB > 17 mg/dL vs <50th percentile (95% CI)**
		n	**%**	**n**	**%**	
< 50	4854	5	.10	0	- - -	
50-75	2428	18	.74	7	.29	7.2 (2.67-19.37)
76-95	1942	23	1.18	7	.36	11.5 (4.36-30.34)
> 95	466	23	4.94	12	2.58	47.92 (18.16-126.4)
Totals	**9710**	**69**		**26**		

* RR = relative risk

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