Tx Rates Similar With Routine Bilirubin Screening

BY PATRICE WENDLING

FROM THE ANNUAL MEETING OF THE PEDIATRIC ACADEMIC SOCIETIES

VANCOUVER, B.C. — Universal neonatal screening for hyperbilirubinemia can be implemented without increasing blood draws or phototherapy usage, according to a retrospective analysis involving 2,055 newborns.

The number of blood draws for bilirubin was similar at 125 per month before implementation of a routine transcutaneous bilirubin screening protocol vs. 117 per month after implementation.

The average number of infants who underwent phototherapy during initial hospitalization was 6.8 before vs. 4.6 after implementation. The decrease approached statistical significance, with a *P* value of .053, reported Dr. Andrea Wickremasinghe of the Mayo Clinic in Rochester, Minn.

Overall monthly phototherapy usage was also similar when readmission phototherapy was included, at 9.5 infants before and 8 infants after adoption of the protocol, the researchers found.

Several professional organizations have endorsed such screening, including the Canadian Paediatric Society and the American Academy of Pediatrics, which recommends that all infants undergo systematic assessment for hyperbilirubinemia before discharge. Last year, however, the U.S. Preventive Services Task Force concluded that there is insufficient evidence to determine if universal screening can prevent chronic bilirubin encephalopathy (kernicterus).

Jaundice occurs in two-thirds of newborns in the first week of life and typically resolves without sequelae, but in rare cases it leads to acute or chronic bilirubin encephalopathy.

Hyperbilirubinemia is increasingly being missed because more newborns are discharged from hospitals within 2 days of birth. Bilirubin levels peak at 3-5 days after birth, when hyperbilirubinemia usually becomes clinically evident, Dr. Wickremasinghe said. Problems with breastfeeding and late follow-up care also increase the risk for missed cases.

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DR. WICKREMASINGHE

Transcutaneous bilirubin (TcB) testing is gaining in popularity as a predischarge screening method, and is thought to reasonably approximate total serum bilirubin (TSB) levels without the pain of a puncture or need to wait for lab results, she said. In one study, selective TcB screening did not change the number of blood draws for bilirubin, but did decrease readmissions for jaundice within 7 days of discharge (Clin. Chem. 2005;51:540-4).

Last year, a study conducted by two of Dr. Wickremasinghe's coauthors suggested that TcB testing systematically overestimates serum bilirubin levels and that 1 mg/dL should be subtracted from TcB levels.

The current analysis looked at electronic medical records from August 2008 through January 2009 and February 2009 through August 2009—before and after implementation of TcB screening.

During the first study period, serum bilirubin was obtained based on clinical judgment from 906 infants and plotted on an hour-specific nomogram (www.bilitool.org).

During the second period, TcB measurements were obtained shortly before discharge using the BiliChek device (Philips) on the forehead in 1,149 infants. The values were adjusted by 1 mg/dL and plotted on the same serum bilirubin nomogram. A serum bilirubin level was obtained if patients were thought to be high risk, defined by a bilirubin value in the 95th percentile for their age on the nomogram, or high-intermediate risk, defined by a value in the 75th or higher percentile for age, Dr. Wickremasinghe said.

The average monthly nursery census was similar in each group, at 151 infants during the first period and 161 infants during the second.

Dr. Wickremasinghe acknowledged that the study limitations were that it was retrospective, that TcB values were plotted on a TSB nomogram, and that it may be difficult to generalize the results to other ethnicities because the population was predominantly white. The effect of TcB screening on costs was not determined, but may be analyzed in the future.

During a discussion of the findings, Dr. M. Jeffrey Maisels, chair of pediatrics at Beaumont Hospitals in Royal Oak, Mich., applauded the authors for adjusting TcB values in the analysis, noting that such values have been as much as 2-3 mg higher than those obtained with other methods in some studies. He said that although it may never be known if predischarge bilirubin screening can prevent an infant from developing kernicterus, screening does seem to reduce the number of infants readmitted with very high bilirubin levels.

This view is supported by a recent prospective study reporting a dramatic decline in severe hyperbilirubinemia among more than 1 million infants born between May 2004 and December 2008. The incidence of infants with total bilirubin levels of 25.0-29.9 mg/dL declined from 43/100,000 before implementation of universal predischarge bilirubin screening to 27/100,000 after implementation, while the incidence of infants with total bilirubin levels of at least 30 mg/dL dropped from 9/100,000 to 3/100,000. The change was associated with a small but statistically significant increase in use of phototherapy (Pediatrics 2010;125:e1143-8). ■

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Major Finding: There were 125 blood draws per month for bilirubin before and 117 after implementation of a routine screening protocol. An average of 6.8 infants per month underwent predischarge phototherapy before and 4.6 after routine screening was adopted. When readmission phototherapy was included, 9.5 infants received treatment before and 8 infants after routine screening was implemented.

Data Source: Retrospective analysis of 2,055 term infants.

Disclosures: The study was funded by the Clinical Practice Innovation program at the Mayo Clinic. The authors disclosed no conflicts of interest.

Most Abnormal Pediatric Coagulation Results Insignificant

BY KATE JOHNSON

FROM THE ANNUAL MEETING OF THE AMERICAN SOCIETY OF PEDIATRIC HEMATOLOGY/ONCOLOGY

MONTREAL — Half of abnormal preoperative coagulation results normalize on repeat testing in children undergoing tonsillectomy and adenoidectomy—and among the other half that remain abnormal, 93% of the abnormalities are clinically insignificant, according to a retrospective chart review.

Despite this finding, relying on patient and family bleeding history alone is not sufficient for identifying potentially life-threatening bleeding abnormalities, said Dr. Neha Bhasin and her coauthor, who presented the findings in a poster.

The review included charts from 791 patients who were referred for further work-up over a 15-year period because routine presurgical coagulation tests revealed an elevated prothrombin time (PT) and/or activated partial thromboplastin time (aPTT), said Dr. Bhasin of Stony Brook (N.Y.) University Medical Center. On follow-up, only 3.4% of the cohort had an acute bleeding disorder, and of these patients 40% would have been missed based on personal or family bleeding history alone, she said.

"So we can't say family history is the sole criteria on which we should base an abnormal PT/PTT work-up," Dr. Bhasin said in an interview. "You should repeat the PT/PTT before you go on a vast search. And if it is still abnormal, a full work-up is a good adjunct to family history to find out why."

The study revealed no diagnosis for 394 (50%) of the 791 patients. For most in this subgroup, repeat testing showed their values had normalized, while for 131 the results remained abnormal for no apparent reason. "A transient lupus anticoagulant can sometimes cause an elevated PT/PTT temporarily," she suggested.

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Specific diagnoses were found to explain the abnormal results in the remaining 397 patients, but only 27 of these patients had clinically significant conditions: mild to moderate von Willebrand's disease (21), low Factor VII (3), hemophilia (2), and liver disease (1).

In the remaining 370 patients with clinically insignificant abnormalities, the most common explanation was a lupus anticoagulant (29.5%) or presumed lupus anticoagulant (36.5%), she said. Even though these findings had no acute clinical relevance to the patients, a persistent lupus anticoagulant "may be a predictor of an autoimmune process, and has been shown to represent a risk for thrombosis," wrote the authors. "Therefore, identifying this abnormality on work-up may potentially be of future clinical significance."

A personal or family bleeding history was documented in 256 (32%) of the 791 patients, but only 107 of them had an abnormality identified on further work-up, and only 16 of these abnormalities were clinically significant.

Additionally, 11 patients with no bleeding history were found to have clinically significant abnormalities. Therefore, relying solely on patient or family history of bleeding would have missed 41% of the 27 that were found, Dr. Bhasin said. "The presence of a positive personal and/or family history of bleeding is a strong but not absolute predictor of identifying a clinically significant bleeding disorder on further evaluation," wrote the authors. "Therefore, routine preoperative coagulation testing serves as useful adjunct to clinical history."

The clinical utility of performing routine preoperative coagulation testing on all children when just 3.4% will have clinically significant results "must be weighed against the risk to the patient of not identifying a hemostatic defect preoperatively," they concluded. ■

Disclosures: *The investigators did not report any financial conflicts of interest.*