This is a corrected version of the Putting Prevention into Practice that appeared in print.

Putting Prevention into Practice
An Evidence-Based Approach

Screening of Infants for Hyperbilirubinemia to Prevent Chronic Bilirubin Encephalopathy

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▶ **See related U.S. Preventive Services Task Force Recommendation Statement on page 408.**

▶ **See related editorial on page 336 and Tips from Other Journals starting on page 426.**

EB CME

This clinical content conforms to AAFP criteria for evidence-based continuing medical education (EB CME). See CME Quiz on page 353.

The case study and answers to the following questions on screening of infants for hyperbilirubinemia to prevent chronic bilirubin encephalopathy are based on the recommendations of the U.S. Preventive Services Task Force (USPSTF), an independent panel of experts in primary care and prevention that systematically reviews the evidence of effectiveness and develops recommendations for clinical preventive services. More information on this subject is available on the USPSTF Web site (http://www.ahrq.gov/clinic/uspstfix.htm). The practice recommendations in this activity are available at http://www.ahrq.gov/clinic/uspstf/uspshyperb.htm.

Case Study

K.J. is a full-term newborn male who was born 24 hours ago after an uncomplicated spontaneous vaginal delivery. His parents, who are Asian American, have been attending your practice for five years. K.J. does not appear jaundiced on examination. His mother is exclusively breastfeeding with no problems. K.J. has had normal urine output and has the same blood type as his mother.

Case Study Questions

1. Which one of the following conditions is a complication of severe neonatal hyperbilirubinemia?

- ❑ A. Glucose-6-phosphate dehydrogenase deficiency.
- ❑ B. Gastrointestinal problems.
- ❑ C. Bruising.
- ❑ D. Kernicterus.
- ❑ E. Weight gain.

2. Based on the recommendation from the U.S. Preventive Services Task Force (USPSTF), which one of the following statements about hyperbilirubinemia is correct?

- ❑ A. Chronic bilirubin encephalopathy is common in the United States.
- ❑ B. Phototherapy does not interfere with breastfeeding or the development of the maternal-infant relationship.
- ❑ C. Significant morbidity occurs in as many as 5 percent of patients who undergo exchange transfusion.
- ❑ D. Screening for hyperbilirubinemia reliably identifies all infants who are at risk of developing chronic bilirubin encephalopathy.
- ❑ E. Phototherapy is not associated with the possible growth of melanocytic nevi.

3. Based on K.J.'s risk factors for hyperbilirubinemia, what is the appropriate next step?

- ❑ A. Do not screen K.J. because there is not enough evidence to recommend screening.
- ❑ B. Screen K.J. because he is being exclusively breastfed.
- ❑ C. Screen K.J. because he is Asian American.
- ❑ D. Do not screen K.J. because his urine output is normal.

Answers appear on the following page.

Answers

1. The correct answer is D. Severe neonatal hyperbilirubinemia is associated with kernicterus, which is the yellow staining of specific areas of brain tissue in the neonate caused by accumulation of unconjugated bilirubin. Kernicterus is often associated with chronic bilirubin encephalopathy, which describes the clinical neurologic sequelae associated with severe hyperbilirubinemia, including choreoathetoid cerebral palsy, sensorineural hearing loss, gaze paresis, and intellectual deficits. Glucose-6-phosphate dehydrogenase deficiency and bruising are risk factors for hyperbilirubinemia, but are not complications of elevated levels of bilirubin. Weight loss and gastrointestinal problems are potential harms associated with phototherapy treatment for hyperbilirubinemia.

2. The correct answer is C. Treatment with exchange transfusion for severe hyperbilirubinemia results in apnea, bradycardia, cyanosis, vasospasm, thrombosis, or necrotizing enterocolitis in as many as 5 percent of patients. Furthermore, hypoxic-ischemic encephalopathy and AIDS have occurred in otherwise healthy infants receiving exchange transfusions. Potential harms of phototherapy treatment include weight loss, gastrointestinal problems, interruption of breastfeeding, disruption of the maternal-infant relationship, and possible growth of melanocytic nevi. The exact incidence of chronic bilirubin encephalopathy in the United States is not known but is believed to be very low. There is adequate evidence that screening using risk factors and/or hour-specific bilirubin measurement can identify infants at risk of developing hyperbilirubinemia. However, not all children with a history of hyperbilirubinemia develop chronic bilirubin encephalopathy, and no known screening test will reliably identify all infants who are at risk of developing chronic bilirubin encephalopathy.

3. The correct answer is A. Risk factors for hyperbilirubinemia include exclusive breastfeeding, family history of neonatal jaundice, bruising, cephalohematoma, Asian or black ethnicity, maternal age older than 25 years, male sex, glucose-6-phosphate dehydrogenase deficiency, and gestational age of less than 38 weeks. However, the contribution of these risk factors to chronic bilirubin encephalopathy in otherwise healthy children is not well understood. The USPSTF concluded that the evidence is insufficient to recommend screening infants for hyperbilirubinemia to prevent chronic bilirubin encephalopathy.

SOURCES

U.S. Preventive Services Task Force. Screening of infants for hyperbilirubinemia to prevent chronic bilirubin encephalopathy: U.S. Preventive Services Task Force recommendation statement. *Pediatrics.* 2009;124(4):1172-1177.

Trikalinos T, Chung M, Lau J, Ip S. Systematic review of screening for bilirubin encephalopathy in neonates. *Pediatrics.* 2009;124(4):1162-1171. ■