

Guideline offers direction for prompt diagnosis, treatment of hyperbilirubinemia

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In light of early hospital discharge and other changes in newborn care over the past decade, pediatricians have had to adjust how to more quickly identify and treat newborn jaundice in hopes of preventing hyperbilirubinemia and its potentially dangerous complications.

A revised AAP clinical practice guideline, *Management of Hyperbilirubinemia in the Newborn Infant ≥ 35 Weeks of Gestation* (*Pediatrics*. 2004; 114:297-316), emphasizes the importance of universal in-hospital screening for the risk of severe hyperbilirubinemia, medical follow-up within the first few days of hospital discharge (depending on length of hospital stay and hyperbilirubinemia risk), and prompt intervention and treatment when jaundice is confirmed. The guideline was authored by the AAP Steering Committee on Quality Improvement and Management's Subcommittee on Hyperbilirubinemia.

The guideline also urges pediatricians and hospital medical staff to promote and support breastfeeding efforts, as low caloric intake and dehydration associated with poor breastfeeding can contribute to severe jaundice.

Fifty to 60% of all newborns have jaundice, which most often is benign. However, neurotoxic levels of bilirubin in the bloodstream during the first week of life can progress to hyperbilirubinemia, and in rare cases, bilirubin encephalopathy, and ultimately, kernicterus.



Dr. Stevenson

"With these guidelines there is a different tenor," said David K. Stevenson, M.D., FAAP, member of the AAP Subcommittee on Hyperbilirubinemia. "We are saying, generally things go well, but there are children who are at risk and bad things can happen. Please pay attention."

"Although rare, kernicterus does occur in America," said AAP Subcommittee on Hyperbilirubinemia member Vinod K. Bhutani, M.D., FAAP. "And yet it is almost always preventable through the early and aggressive use of phototherapy.

"We hope that if pediatricians read these guidelines and



Dr. Bhutani

implement them in practice that they will not see this devastating condition," said Dr. Bhutani. "Ultimately, we hope to ensure that every baby has a safe first week."

The new guideline essentially brings hospital and pediatrician procedures related to jaundice in line with other changes in newborn care.

"Clinicians used to have infants come in at one to two weeks for newborn follow-up," said Carole M. Lannon, M.D., M.P.H., FAAP, director of the AAP Steering Committee on Quality Improvement and Management.

"Over the last decade, there have been many changes in newborn care," said Dr. Lannon.

The hospital stay for most newborn babies and their mothers has diminished, often to between 24 and 48 hours of childbirth. Newborn bilirubin levels, however, do not typically peak until sometime between the third and fifth day of life. In addition, breastfeeding may not be well established before mother and baby leave the hospital.

Another hospital procedural change affecting newborn jaundice is the inclusion of near-term babies — those born between 35 and 37 weeks — in the regular nursery. These babies are at higher risk for severe jaundice as they metabolize bilirubin more slowly.

"All of these factors can contribute to severe jaundice," said Dr. Lannon.

"In the old days when a mother stayed in the hospital for a week, the doctor could monitor the jaundice more closely," said Ann R. Stark, M.D., FAAP, AAP Section on Perinatal Pediatrics executive committee liaison to the AAP Committee on Fetus and Newborn. "But now the peak happens when the babies are at home. The goal is to use all the systems we have to ensure a safe transition from the birth hospital to home."

A recent AAP Pediatric Research in Office Settings (PROS) study, "Life Around Newborn Discharge" (LAND), revealed that most infants still are not receiving timely follow-up care as highlighted in the recently published AAP policy statement titled *Hospital Stay for Healthy Term Newborns* (*Pediatrics*. 2004;113:1434-1436). This prospective study followed more than 4,300 healthy term newborns and their mothers for the first month after birth. Researchers found that while virtually all pediatricians reported discussing



Dr. Stark

follow-up medical care with mothers in the hospital, only 75% of mothers recalled being asked to schedule a follow-up visit. And while pediatricians suggested that these follow-up visits be made around one week after hospital discharge, only half of these visits occurred within the recommended timeframe. “This suggests that babies aren’t getting in for the initial follow-up visit in a timely manner,” said Dr. Lannon.

Logistical barriers also may contribute to insufficient medical follow-up.

“Many of the families of babies I admit to the newborn nursery live in rural North Carolina, an hour or more from the hospital. Some infants may be discharged without an easily available safety net,” said Dr. Lannon. “For example, if a baby goes home before a holiday weekend, the only follow-up option may be the local hospital emergency department.”

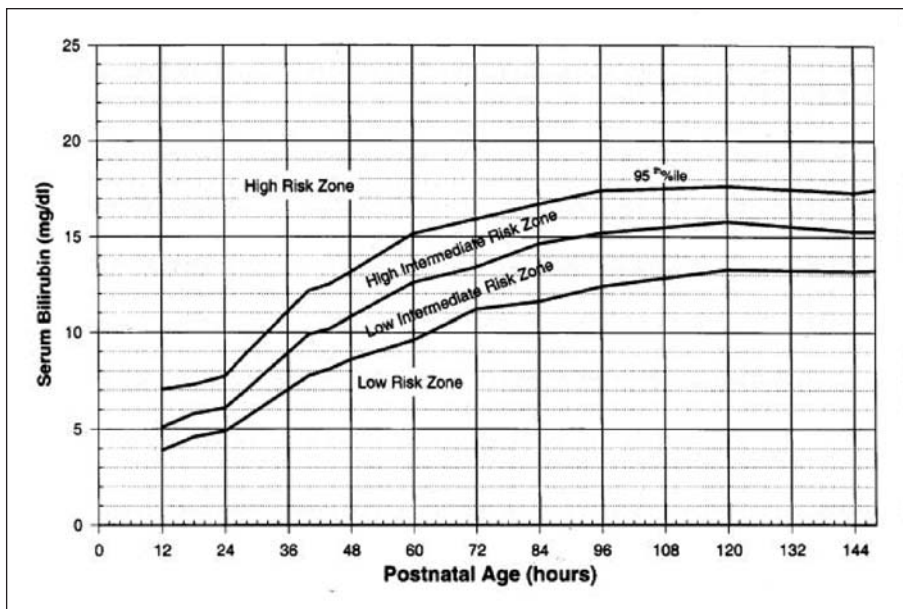
To prevent severe jaundice, the new guidelines recommend the establishment of nursery protocol for the identification and evaluation of hyperbilirubinemia, which should include “circumstances in which nursing staff can obtain a bilirubin level without a doctor’s order,” said M. Jeffrey Maisels, M.B., B.Ch., M.D., FAAP, chair of the AAP Subcommittee on Hyperbilirubinemia.

Prior to discharge, every newborn should be assessed for the risk of developing severe hyperbilirubinemia. This should include assessing clinical risk factors and/or measuring the total serum bilirubin or transcutaneous bilirubin level. The new guidelines also recommend that all bilirubin levels be interpreted according to the infant’s age in hours.

Visual estimation alone of the degree of jaundice can lead to errors, according to the guidelines, especially for infants with darker skin.

All parents should be provided with written and oral information on newborn jaundice, and medical follow-up should be scheduled based on the time of discharge and the risk assessment, according to the guidelines.

Infants deemed at risk of severe hyperbilirubinemia may undergo phototherapy at home or in the hospital. Severe hyperbilirubinemia that does not respond to phototherapy, or that has progressed to bilirubin encephalopathy, may require exchange transfusion.



Data source: Bhutani VK, et al. *Pediatrics*. 1999;103:6-14

This nomogram measured designated risk in 2,840 well newborns ≥ 36 weeks’ gestational age with birth weight $\geq 2,000$ g or ≥ 35 weeks’ gestational age and birth weight $\geq 2,500$ g based on the hour-specific serum bilirubin values. The serum bilirubin level was obtained prior to discharge and the zone in which the value fell predicted the likelihood of a subsequent bilirubin level exceeding the 95th percentile (high-risk zone).

To help parents, physicians and hospital staff, the Academy has approved the Safe and Healthy First Week of Life program to facilitate the implementation of the revised guideline. One of the program’s components is the development of a tool kit.

Tools for clinicians may include parent handouts, an hour-specific nomogram for interpreting bilirubin levels, examples of hospital medical orders, and relevant AAP policies, said Dr. Stark.

The Safe and Healthy First Week of Life program also will engage several national organizations that represent non-profit and federal agencies that want to prevent severe jaundice, said Dr. Lannon.

“We want to raise awareness about risk factors for severe jaundice and appropriate follow-up so that clinicians and families

can work together to ensure a safe and healthy first week for infants. The program wants to raise awareness but not anxiety,” said Dr. Lannon.

“If the key elements of these guidelines are followed,” said Dr. Maisels, “I have little doubt that we will significantly reduce the number of babies who develop extremely high bilirubin levels and brain damage from hyperbilirubinemia.”

A list of frequently asked questions (available in Spanish and English) related to jaundice and hyperbilirubinemia is available on the Member Center of the AAP Web site: www.aap.org/moc and on www.aap.org.

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