

# Neonatal Jaundice

## FAST FACTS

### 50–60%

of full-term babies have jaundice

### 80%

of newborns have jaundice

### ~4%

of 47,801 infants had a total serum bilirubin level qualified for phototherapy in one 2003 study

## WHEN TO REFER

Consult with Cincinnati Children's Gastroenterology if infant has conjugated hyperbilirubinemia or evidence of cholestatic jaundice with acholic stools. Infant will likely require admission for further evaluation.

Call pediatrician or neonatologist on-call at infant's birth hospital to discuss readmission for phototherapy.

For clinical questions about this topic, contact Neonatology at 513-803-2681.

Neonatal jaundice is caused by accumulation of bilirubin in an infant's blood. Bilirubin may be elevated for many reasons. Many infants develop normal physiologic jaundice >24 hours after birth, usually peaking when the infant is 4–5 days old, but may peak later in late pre-term infants born 35–37 weeks gestation. Physiologic jaundice can be caused by a number of factors, but it typically resolves by two weeks of age.

## ASSESSMENT

Assess for degree of jaundice in skin and eyes—jaundice starts in the face and progresses caudally. Assess voiding/stooling patterns and expected number of wet/dirty diapers to evaluate appropriate intake (especially in breast-fed babies) and transition of stools to yellow-seedy appearance. Plot transcutaneous or total serum bilirubin levels (TSBs) using Bhutani nomogram or BiliTool™ to determine risk of significant hyperbilirubinemia and guide treatment planning.

Review discharge summary and evaluate risk factors for severe hyperbilirubinemia: bilirubin in high-risk zone at discharge; jaundice in first 24 hours of life; ABO incompatibility (+ direct Coomb's) or other known cause of hemolytic disease; 35–36 weeks gestational age. Other risk factors for hyperbilirubinemia include: sibling with jaundice requiring phototherapy, cephalohematoma or significant bruising, and exclusive breastfeeding (if feeding poorly). One or more risk factors may require earlier or more frequent bilirubin recheck after nursery discharge to ensure it does not exceed the level requiring phototherapy.

## HPE (HISTORY AND PHYSICAL EXAM) RED FLAGS

- Visible jaundice in first 24 hours of life
- Bilirubin increasing more than 5mg/dL in 24 hours or rate of rise >0.2/hour
- Serum conjugated bilirubin concentration either >1.0mg/dL if TSB <5.0mg/dL or 20% of total bilirubin if TSB >5.0mg/dL (conjugated hyperbilirubinemia)—indicative of neonatal cholestasis. Requires hospitalization and pediatric gastroenterologist evaluation
- Pallor suggestive of hemolysis
- Ill appearance—concerning for infection/sepsis

## MANAGEMENT/TREATMENT

Interpret TSB using phototherapy nomograms from AAP Management of Hyperbilirubinemia Practice Guide or BiliTool™. Assign risk based on infant's gestational age and presence of any of these risk factors: isoimmune hemolytic disease, G6PD deficiency, asphyxia, significant lethargy, temperature instability, sepsis, acidosis or albumin level <3.0g/dL.

Phototherapy is first-line treatment for unconjugated hyperbilirubinemia.

- **TSB at or above phototherapy level**—initiate intensive inpatient phototherapy
- **TSB level 2–3 below phototherapy level but with brisk rate of rise, evidence of significant hemolysis or other major risk factors**—consider intensive inpatient phototherapy
- **TSB 2–3 below phototherapy level with risk factors and established follow-up**—consider initiating low intensity phototherapy with a biliblanket at home

If you would like additional copies of this tool, or would like more information, please contact the Physician Outreach and Engagement team at Cincinnati Children's.

# Neonatal Jaundice

## Inclusion Criteria

Late preterm and term infants (>35 weeks gestation)

## Patient Presents

## Standard Workup

- History of Present Illness
- Family History
- Physical Exam

## HPE (HISTORY AND PHYSICAL EXAM) RED FLAGS

- Visible jaundice in first 24 hours of life
- Bilirubin increasing more than 5mg/dL in 24 hours or >0.2/hour
- Pallor suggestive of hemolysis
- Ill appearance—concerning for infection/sepsis
- Serum conjugated bilirubin concentration either >1.0mg/dL if TSB <5.0mg/dL or 20% of total bilirubin if TSB >5.0mg/dL (conjugated hyperbilirubinemia)—indicative of neonatal cholestasis. Requires hospitalization and pediatric gastroenterologist evaluation

## Infant well appearing? Infant less than 14 days old?

Yes

No

Infant <24 hrs old?  
Significant or worsening jaundice by visual assessment?  
TcB in high or high intermediate risk zone on Bhutani nomogram?

Infant ill-appearing/septic? Infant with signs of acute encephalopathy?

- Lethargy
- Hypotonia
- Seizures
- Poor feeding
- Irritability

Yes

No

Yes

No

- Check fractionated serum bilirubin (FSB)
- Utilize BiliTool™ for recommendations for follow-up and/or AAP nomogram for phototherapy and exchange levels

- Minimal jaundice on physical assessment?
- Previous bilirubin in low risk or low intermediate risk zone?
- Infant feeding well?
- No major risk factors for development of significant hyperbilirubinemia?

Immediate referral to hospital for admission

Infant >2 weeks old?

Yes

Send fractionated bilirubin level

Conjugated hyperbilirubinemia

Unconjugated hyperbilirubinemia

Urgent GI consult

Evaluate for causes other than physiologic jaundice (i.e. breastmilk jaundice, hemolytic disorder, hypo-thyroidism, Crigler-Najjar/ Gilbert syndrome)

Continue to clinically monitor.

Infant discharged early from birth hospital (when <48 hrs old)?

Should be assessed by medical professional trained in the care of newborns for jaundice 1–2 days after discharge from nursery and may require additional check at 4–5 days old when bilirubin is expected to peak.

Infant >4–5 days old?

Should expect improvement in jaundice following peak. Confirm resolution of jaundice by 2 weeks.

TSB rising but below phototherapy level

- Can utilize BiliTool™ recommendations for follow-up. Could consider initiation of home phototherapy with biliblanket if TSB rising and within 2–3 of light level.
- Optimize feeding.
- Follow up by phone or in office next day.

TSB ≥ phototherapy level

- Initiate phototherapy. May need readmission based on level and rate of rise.
- Optimize feeding (consider supplementation in poorly breastfeeding infants, lactation support).
- \*If TSB is approaching or above exchange transfusion level, infant will require more emergent admission/transfer to NICU for possible IVIG and/or exchange transfusion.

For urgent issues, or to speak with the specialist on call 24/7, call the Physician Priority Link® at 1-888-987-7997.