Maine Medical Center Newborn Nursery
Hyperbilirubinemia Clinical Practice Guideline

General Information

This guideline, based on 2022 AAP Subcommittee on Hyperbilirubinemia report, provides a framework for management of hyperbilirubinemia in infants 35 or more weeks of gestation. The goal of the guideline is to reduce the incidence of severe hyperbilirubinemia, acute bilirubin encephalopathy or kernicterus. Kernicterus, though very rare, still occurs and is usually in babies with no underlying medical problems. This guideline focuses on utilizing a risk assessment for severe hyperbilirubinemia and treatment with phototherapy when indicated.

Risk factors that place an infant at increased risk of hyperbilirubinemia are as follows:

- Known hemolytic disease (known or suspected based on rapid rate of increase in bilirubin of >0.3mg/dl/hr in the first 24 hours or >0.2mg/dl per hour thereafter)
- Exclusive breastfeeding with suboptimal intake
- Lower gestational age (risk increased with each week less than 40 weeks)
- Pre-discharge bilirubin level close to the phototherapy threshold
- Macrosomic Infant of Diabetic Mother
- Previous sibling or parent received phototherapy
- Weight Loss greater than 10% of birthweight
- Cephalohematoma or significant bruising at birth
- Jaundice in the first 24 hours after birth
- Phototherapy before discharge
- Trisomy 21
- ABO incompatibility with positive direct antiglobulin test (Coombs or DAT)

Infants at Risk for Antibody Mediated Hemolysis

- **All infants born to mothers who are type O, Rh negative, or have known antibodies should have cord blood sent for a blood type and direct antiglobulin (DAT) test**
- **If an infant is DAT positive, bilirubin should be checked immediately then Q4Hx2, Q12Hx3. TcB is acceptable for testing unless infant meets other criteria for a serum bilirubin per Bilitool.**
- **If infant is DAT positive ONLY for anti-Rh(D), and their mother received RhIG during pregnancy and was known to not be anti-Rh(D) positive before RhIG they do not require extra testing in the absence of other risk factors/concerns**

*This guideline is not intended to replace the physician's clinical judgement or to establish a single protocol applicable to all such newborns with hyperbilirubinemia. Some clinical problems may not be adequately addressed by this guideline which cannot be considered to represent an exclusive approach to care. As always, physicians are urged to document management strategies.

Predischarge Assessment for Hyperbilirubinemia

The AAP recommends assessment of jaundice at discharge by obtaining a transcutaneous bilirubin (TcB) or serum bilirubin (TSB). Use the AAP provided algorithm below or www.bilitool.org, and EPIC "Bilirubin" tab to determine timing of follow up

- **Jaundice before 24 hours of age is pathologic and a TcB should be done ASAP at the discretion of providers, nursing staff.**
- **All babies are screened at 24 hours of age with a TcB or TSB**
- **TcB's within 3mg/dl of treatment threshold OR >15mg/dl should have a TSB done**

Phototherapy Threshold Minus TcB or TSB measures		**Discharge Recommendations**
0.1-1.9 mg/dL	Age <24 hours	Delay Discharge, consider phototherapy, measure TSB in 4 to 8 hours
	Age ≥24 hours	Measure TSB in 4 to 24 hours Options: • Delay discharge and consider phototherapy[a] • Discharge with home phototherapy if all considerations in the guideline are met • Discharge without phototherapy but with close follow up
2.0-3.4 mg/dL	Regardless of age or discharge time	TSB or TcB in 4 to 24 hours
3.5-5.4 mg/dL	Regardless of age or discharge time	TSB or TcB in 1-2 days[a]
5.5-6.9 mg/dL	Discharging <72 hours	Follow-up within 2 days; TcB or TSB according to clinical judgment[b]
	Discharging ≥ 72 hours	Clinical judgment[b]
≥7.0 mg/dL	Discharging <72 hours	Follow-up within 3 days; TcB or TSB according to clinical judgment[b]
	Discharging ≥ 72 hours	Clinical Judgment[b]

Figure 7 from the 2022 AAP Clinical Practice Guideline

[a]Use clinical judgment and shared decision making to determine when to repeat the bilirubin measure within this 4 to 24 hour time window.

[b]Clinical judgment decisions should include physical examination, the presence of risk factors for the development of hyperbilirubinemia or hyperbilirubinemia neurotoxicity risk factors, feeding adequacy, weight trajectory, and family support.

The Barbara Bush Children's Hospital
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Phototherapy

Please refer to www.bilitool.org and the EPIC "Bilirubin" Tab for hour specific nomograms, treatment thresholds and more information. Make sure to have the correct gestational age and account for the following neurotoxicity risk factors:

- Gestational age < 38 weeks, with risk increasing with degree of prematurity
- Albumin < 3.0 g/dL
- Isoimmune hemolytic disease, G6PD deficiency, or other hemolytic conditions
- Sepsis
- Significant clinical instability in the previous 24 hours

Infants Receiving Phototherapy:

- TSB should be measured within 6-12 hours of starting phototherapy at the latest
- Discontinuation of phototherapy is an option when TSB is 2 mg/dL below the hour specific treatment threshold at the initiation of phototherapy
- Longer treatment is an option if there are risk factors for rebound hyperbilirubinemia:
    1. Gestational age less than or equal to 38 weeks
    2. Age less than 48 hours at initiation of phototherapy
    3. Presence of hemolytic disease
- Escalation of care: notify the NICU if any infant has a serum bilirubin level within 3-4 mg/dL of exchange transfusion threshold, or a **serum bilirubin > 4 mg/dL at birth**
- The AAP discourages the interruption of breastfeeding in healthy, term newborns and encourages continued and frequent breastfeeding. Depending on the family's preference and physician's judgement, supplementation with donor milk/formula or temporary interruption of nursing and substitution with donor milk/formula may accompany treatment

Rebound Bilirubin Levels:

- Measure TSB 6-12 hours after phototherapy discontinuation for ANY of the following reasons:
    1. Phototherapy before 48 hours of age
    2. Positive DAT
    3. Known or suspected hemolytic disease
- All other infants that receive phototherapy should have bilirubin measured the day after discontinuation

Laboratory Aids in the Evaluation of Neonatal Jaundice

BILIRUBIN, total and direct (if direct bilirubin is ≥2.0 mg/dL or >15% of total)- exit algorithm and investigate cholestasis)

JAUNDICE THAT PRESENTS AT LESS THAN 24 HOURS OF AGE requires total and direct bilirubin and a check of INFANT BLOOD TYPE and DAT (automatically obtained if mother is blood type O)

OTHER LAB STUDIES THAT MAY BE INDICATED PENDING CLINICAL COURSE:
CBC, reticulocyte count, hemoglobin electrophoresis, G6PD level, thyroid studies, Urine for reducing substances (r/o galactosemia), electrolytes (to assess dehydration)

Notes:

Use total bilirubin. Do not subtract direct reacting or conjugated bilirubin.

This guideline, revised June 2023, is based on the most recent AAP Practice Guideline
Reference: Pediatrics. 2022; 150(3):e2022058859