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Exclusion Criteria

- Newborn is known to have direct hyperbilirubinemia
- Newborn is < 35 weeks gestation
- Newborn has received home phototherapy

Prematurity is already accounted for in Peditool - do not choose high risk in Peditool if prematurity is the only risk factor.

**If newborn is less than 24 hours old with a TSB at or above the phototherapy threshold- they are likely to have a hemolytic process and should be evaluated for hemolytic disease.*

Hyperbilirubinemia Neurotoxicity Risk Factors

- Gestational age < 38 wks (risk increases with the degree of prematurity)
- Albumin < 3.0 g/dL
- Isoimmune hemolytic disease (i.e., positive direct antiglobulin test), G6PD deficiency, or other hemolytic conditions
- Sepsis
- Significant clinical instability in the previous 24 hours

Signs/Symptoms of Acute Bilirubin Encephalopathy (ABE)

- Lethargy
- Hyper- or hypotonia
- Poor suck
- High-pitched cry
- Recurrent apnea
- Opisthotonos
- Retrocollis
- Seizures

Newborn infant ≥ 35 weeks gestational age

Consider risk factors for developing significant hyperbilirubinemia

Is there visible jaundice?

No → Obtain TcB or TSB prior to discharge at 24 - 48 hours of age

Yes → Obtain **fractionated serum bilirubin** as soon as possible

Obtain total serum bilirubin (TSB)

- (indirect + direct for one total)
- If transcutaneous bilirubin (TcB) is within 3 mg/dL of or exceeds phototherapy threshold
 - OR**
 - If TcB is ≥ 15 mg/dL
- TcB may underestimate bilirubin in patients with darker skin tone*

Determine hour-specific TSB threshold (use Phototherapy Thresholds [with risks](#) or [without risks](#) to calculate OR [PediTools](#)) for phototherapy based on:

- Newborn's gestational age
- *Age of infant in hours
- Risk factors for neurotoxicity

Calculate difference between hour-specific TSB Recommendation and bilirubin level

Use the [Discharge Recommendations Table](#) to determine need for follow-up testing, discharge to home, and/or home phototherapy**

*Refer to the AAP 2022 Hyperbilirubinemia Guidelines for specifics on home phototherapy***

Does TSB meet phototherapy threshold?

No → Proceed to the [Phototherapy algorithm](#)

Yes → Does newborn show signs/symptoms of ABE?

No → Proceed to the [Phototherapy algorithm](#)

Yes → Are TSB levels within 2 mg/dL of the exchange transfusion threshold?

No → **Off guideline**
Evaluate for other causes of encephalopathy

Yes → Proceed to the [Escalation of Care algorithm](#)

Abbreviations:

- DAT = Direct antiglobulin test
- G6PD = Glucose-6-phosphate dehydrogenase deficiency
- Rh = Rhesus



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Prematurity is already accounted for in Peditool - do not choose high risk in Peditool if prematurity is the only risk factor.

Newborn \geq 35 weeks gestation suspected to meet criteria for phototherapy - recheck using [PediTools \(Screening algorithm\)](#)

Treatment thresholds are higher than in previous guidelines - 2022 AAP guideline

Before initiating phototherapy, complete the following labs:

- Confirmatory fractionated TSB level - if no recent (within 6 hours) fractionated TSB level or only has TcB
- CBC w/ differential
- **Test for hemolysis, if not already performed**

Phototherapy

- Position newborn supine w/diaper only and opaque orbital shield
- Maximize skin exposure and treatment time
- Deliver phototherapy from above and below
- Minimize interruptions to phototherapy

Monitoring

- Documentation of phototherapy start and stop times
- Vital signs q4 hours
- Monitor intake & urinary output q4 hours
- TSB levels within 12 hours of starting phototherapy

Are TSB levels at or above the exchange transfusion threshold?

Yes

[Escalation beyond phototherapy](#)

No

- Verify correct phototherapy administration and adjust as needed
- Minimize interruptions for feeding and holding
- Continue to measure TSB as clinically indicated based on:
 - Age of patient
 - Neurotoxicity risk factors
 - TSB level and trajectory

Has TSB decreased by a minimum of 2 mg/dL below the hour-specific threshold at the initiation of therapy?

Yes

Does newborn have risks for rebound hyperbilirubinemia?

Yes

- Repeat TSB 6-12 hours after discontinuation (DO NOT discharge until TSB result is back)
- [Resume treatment if indicated](#), otherwise proceed to discontinuation

No

- Discontinue phototherapy.
- Repeat bilirubin (TSB or TcB) 24-48 hours after discontinuation in the inpatient or outpatient setting.
- [Resume treatment if indicated](#)
- [Consider other clinical risk factors for significant hyperbilirubinemia to guide additional follow-up](#)

Hemolysis Testing

- Obtain DAT if mother has O or RhD negative blood types **OR** positive maternal antibody screen
- If hemoglobin is low, obtain:
 - Reticulocyte count
 - Peripheral blood smear
 - G6PD enzyme activity

G6PD activity should be measured in any infant with jaundice of unknown cause:

- Whose TSB increases despite intensive phototherapy
- Whose TSB increases suddenly or increases after an initial decline

OR

- Who requires escalation of care

Risks for Rebound Hyperbilirubinemia

- Exceeded phototherapy threshold during birth hospitalization **AND**
 - Received phototherapy < 48 hours of age**OR**
 - Positive DAT **OR**
 - Known or suspected hemolytic disease
- Inadequate feeding
- Neurotoxicity risk factors

Abbreviations:

TSB = Total Serum Bilirubin
TcB = Transcutaneous Bilirubin
DAT = Direct antiglobulin test
Rh = Rhesus
G6PD = Glucose-6 phosphate dehydrogenase



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Inclusion Criteria
ANY of the following:
 • Signs of acute bilirubin encephalopathy (ABE)
 • Rapidly rising TSB levels
 • TSB levels within 2 mg/dL of the exchange transfusion threshold [with risk factors, without risk factors, PediTool](#)

Exclusion Criteria
 • Newborn has direct hyperbilirubinemia
 • Newborn is < 35 weeks gestation
 • Newborn has received home phototherapy

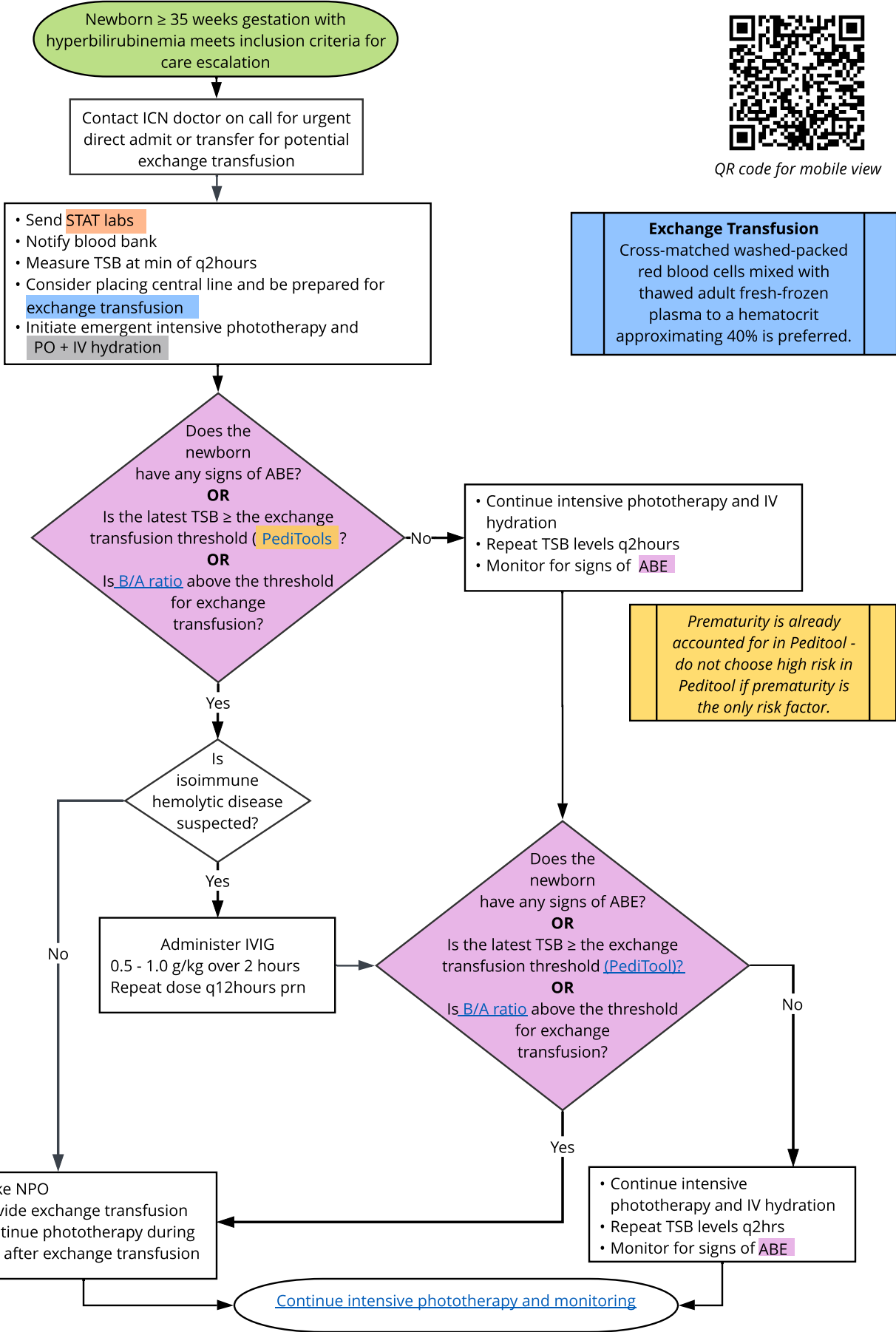
STAT Labs

• TSB	• Serum chemistries
• Direct serum bilirubin	• Type and crossmatch
• CBC	• G6PD enzyme activity if not already obtained
• Serum albumin	

IV Hydration
 • Crystalloid fluid of 10% dextrose with 1/4 NS at maintenance rate
 • 60-80 mL/kg/day for newborns < 48 hrs old
 • 80-100 mL/kg/day for newborns ≥ 48 hours old

Signs/Symptoms of acute bilirubin encephalopathy (ABE)
 • Lethargy
 • Hyper- or hypotonia
 • Poor suck
 • High-pitched cry
 • Recurrent apnea
 • Opisthotonos
 • Retrocollis
 • Seizures

Abbreviations:
 TSB = Total serum bilirubin
 B/A ratio = index of the amount of bilirubin bound to albumin
 DAT = Direct antiglobulin test
 IVIG = Intravenous immunoglobulin



Exchange Transfusion
 Cross-matched washed-packed red blood cells mixed with thawed adult fresh-frozen plasma to a hematocrit approximating 40% is preferred.

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