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### Exclusion Criteria

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

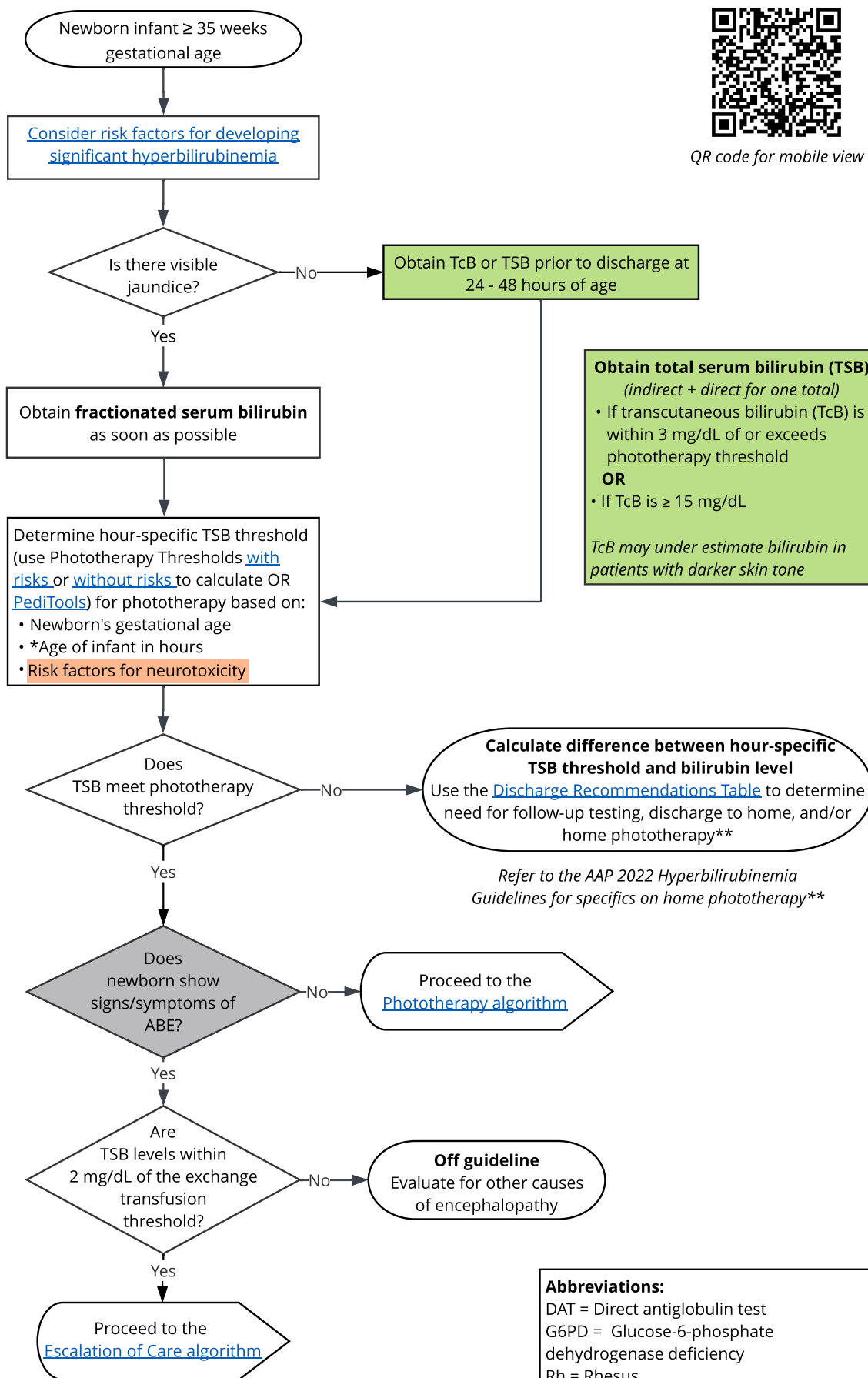
*\*If newborn is less than 24 hours old with a TSB at or above the phototherapy threshold- they are likely to have a hemolytic process and should be evaluated for hemolytic disease.*

### 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



### 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*

**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\*\**

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



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**Inclusion Criteria:**

- Newborn  $\geq 35$  weeks gestation having a TSB within 3 mg/dL of or exceeding the phototherapy threshold and/or has an [associated risk factor](#)

**Exclusion Criteria:**

- Newborn  $\geq 35$  weeks gestation with direct hyperbilirubinemia
- Newborn whose TSB levels are  $\geq 3$  mg/dL below phototherapy threshold and shows no signs of any associated risk factors or acute bilirubin encephalopathy
- Newborn  $< 35$  weeks gestation
- Newborn has received home phototherapy

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

**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

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

**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**

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

No → [Back to Monitoring]

Yes → [Next Decision]

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]

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](#)

**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**

<ul style="list-style-type: none"> <li>• TSB</li> <li>• Direct serum bilirubin</li> <li>• CBC</li> <li>• Serum albumin</li> </ul>	<ul style="list-style-type: none"> <li>• Serum chemistries</li> <li>• Type and crossmatch</li> <li>• G6PD enzyme activity if not already obtained</li> </ul>
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**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

Newborn ≥ 35 weeks gestation with hyperbilirubinemia meets inclusion criteria for care escalation

Contact ICN doctor on call for urgent direct admit or transfer for potential exchange transfusion

- Send **STAT labs**
- Notify blood bank
- Measure TSB at min of q2hours
- Consider placing central line and be prepared for **exchange transfusion**
- Initiate emergent intensive phototherapy and **PO + IV hydration**

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

Does the newborn have any signs of ABE?  
**OR**  
 Is the latest TSB ≥ the exchange transfusion threshold ([PediTool](#))?  
**OR**  
 Is [B/A ratio](#) above the threshold for exchange transfusion?

• Continue intensive phototherapy and IV hydration  
 • Repeat TSB levels q2hours  
 • Monitor for signs of **ABE**

Is isoimmune hemolytic disease suspected?

Administer IVIG  
 0.5 - 1.0 g/kg over 2 hours  
 Repeat dose q12hours prn

Does the newborn have any signs of ABE?  
**OR**  
 Is the latest TSB ≥ the exchange transfusion threshold ([PediTool](#))?  
**OR**  
 Is [B/A ratio](#) above the threshold for exchange transfusion?

• Make NPO  
 • Provide exchange transfusion  
 • Continue phototherapy during and after exchange transfusion

• Continue intensive phototherapy and IV hydration  
 • Repeat TSB levels q2hrs  
 • Monitor for signs of **ABE**

[Continue intensive phototherapy and monitoring](#)