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Clinical Standardization

## Neonatal Hyperbilirubinemia, OP/ED, Inpatient, Pathway

Updated: February 3, 2023

### Clinical Pathway Summary

**CLINICAL PATHWAY NAME:** Neonatal Hyperbilirubinemia, [OP/ED](#), [Inpatient](#)

**PATIENT POPULATION AND DIAGNOSIS:** Neonates (0-28 days old) born at 35 weeks gestation or more, diagnosed with indirect hyperbilirubinemia

**APPLICABLE TO:** Helen DeVos Children's Hospital and SH regional sites treating patient population

**BRIEF DESCRIPTION:** The goal of this clinical practice guideline (CPG) is to provide an evidence-based approach to the diagnosis and management of indirect hyperbilirubinemia in neonates born at 35 weeks gestation or more. This CPG is intended for pediatricians, family medicine physicians, emergency medicine physicians, pediatric hospitalists, neonatologists, resident physicians, nurse practitioners and physician assistants who care for these children in the clinic, emergency department, inpatient and neonatal intensive care unit settings. This CPG does not apply to premature infants born prior to 35 weeks gestational age or those with direct hyperbilirubinemia, although some initial direction is provided in the latter case.

Indirect hyperbilirubinemia leading to jaundice will affect more than 80% of newborn infants. Careful monitoring of all newborn infants and application of appropriate treatments are essential because high bilirubin concentrations can cause acute bilirubin encephalopathy and kernicterus. Risk factors for significant hyperbilirubinemia, when to initiate phototherapy or escalate care and guidance on testing, including in follow-up, are included in this CPG.

**IMPLEMENTATION DATE:** May 1, 2023

**LAST REVISED:** February 3, 2023

### Pathway Information

**OWNERS:** Heather Gladfelter, MD; Allison Long, MD

**CONTRIBUTORS:** Lana Gagin, MD; Mitch DeJonge, MD

**EXPERT IMPROVEMENT TEAM (EIT):** Pediatric EIT

**CLINICAL PRACTICE COUNCIL (CPC):** Children's Acute Care

**CPC APPROVAL DATE:** May 1, 2023

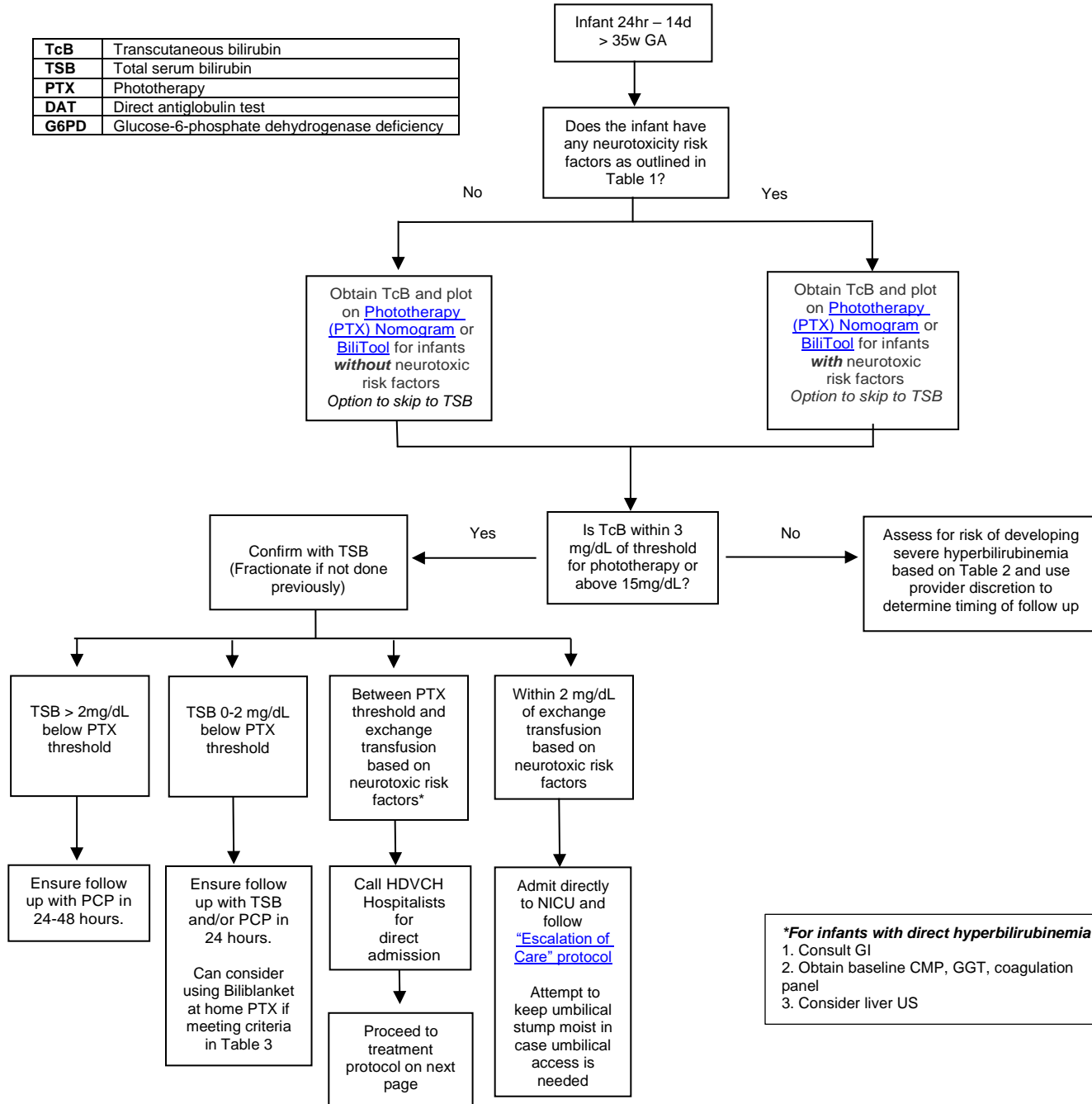
**OTHER TEAM(S) IMPACTED:** Nursing, lactation consultants, registered dietitians

### References

Kemper AR, Newman TB, Slaughter JL, Maisels MJ, Watchko JF, Downs SM, Grout RW, Bundy DG, Stark AR, Bogen DL, Holmes AV, Feldman-Winter LB, Bhutani VK, Brown SR, Maradiaga Panayotti GM, Okechukwu K, Rappo PD, Russell TL. Clinical Practice Guideline Revision: Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks of Gestation. *Pediatrics*. 2022 Sep 1;150(3):e2022058859. doi: 10.1542/peds.2022-058859. PMID: 35927462.

# HDVCH Outpatient/ED Management and Admission Criteria for Neonatal Hyperbilirubinemia

<b>TcB</b>	Transcutaneous bilirubin
<b>TSB</b>	Total serum bilirubin
<b>PTX</b>	Phototherapy
<b>DAT</b>	Direct antiglobulin test
<b>G6PD</b>	Glucose-6-phosphate dehydrogenase deficiency



**Table 1  
Neurotoxicity Risk Factors**

1. Iso-immune hemolytic disease (+DAT), G6PD
2. Sepsis
3. Significant clinical instability in the previous 24 hours
4. Albumin < 3.0g/dL

**Table 2  
Risk Factors for Developing Severe Hyperbilirubinemia**

1. Lower gestational age
2. Jaundice in the first 24 hours of life
3. PredischARGE TcB or TSB close to PTX threshold
4. Hemolysis from any cause (known or suspected)
5. PTX before discharge from birth admission
6. Parent or sibling requiring phototherapy or exchange transfusion
7. Family history of inherited RBC disorders (ie, G6PD, hereditary spherocytosis)
8. Exclusive breastfeeding w/ suboptimal intake
9. Scalp hematoma or significant bruising
10. Down Syndrome
11. Macrosomic infant of diabetic mother

**Table 3  
Eligibility Criteria for using Biliblanket:**

1. GA ≥ 38w
2. Age ≥ 48 hours
3. Clinically well with adequate feeding
4. No neurotoxicity risk factors (Table 1)
5. No previous phototherapy
6. TSB no more than 1 mg/dL above treatment threshold
7. Blanket is available without delay
8. TSB can be measured daily

*If TSB on daily labs is ≥1 mg/dL above threshold OR the difference between TSB and threshold narrowed from previous check, the infant should be direct admitted to the hospital.*

**\*For infants with direct hyperbilirubinemia**

1. Consult GI
2. Obtain baseline CMP, GGT, coagulation panel
3. Consider liver US

[\\*Exchange Threshold for infants without neurotoxicity risk factors](#)  
[\\*Exchange Threshold for infants with neurotoxicity risk factors](#)

# HDVCH Inpatient Management of Neonatal Indirect Hyperbilirubinemia

- Table 2  
Hyperbilirubinemia Admission  
"Order Set"**
1. Admit to general pediatrics floors under "hyperbilirubinemia requiring phototherapy"
  2. Double PTX (1 light and blanket)
  3. Baseline TSB (consider fractionation if not already done\*)
  4. ABO/Rh and DAT (if no cord blood available)
  5. Consider CBC w/ reticulocyte count
  6. Strict I/Os
  7. Daily weights
  8. Consider Lactation/ RD consult
  9. Vitamin D supplementation
  10. Schedule repeat TSB within 12 hours
  11. Consider cultures to evaluate for sepsis if there are clinical signs/symptoms

- Table 1  
Neurotoxicity Risk Factors**
1. Iso-immune hemolytic disease (+DAT), G6PD
  2. Sepsis
  3. Significant clinical instability in the previous 24 hours
  4. Albumin < 3.0g/dL

Infant 24h-14d > 35w GA with TSB between phototherapy threshold and exchange transfusion threshold based on neurotoxic risk factors (Table 1) using [BiliTool](#) or the [AAP CPG](#)

1. Direct Admit to general floors following orders outlined in Table 2
2. Begin double PTX

TSB	Recheck
>25 mg/dL	2-3 hr
20-25 mg/dL	3-4 hr
15-20 mg/dL	6-12 hr
<15 mg/dL	12-24 hr

- Initiate transfer to NICU  
Escalation of Care Protocol in the NICU**
1. STAT CBC, fractionated bilirubin, CMP, type and match
  2. Notify blood bank
  3. TSB q4 hours
  4. Obtain IV (evaluate for umbilical access) and start IVF
  5. Continue PTX
  6. Consider IVIG

