

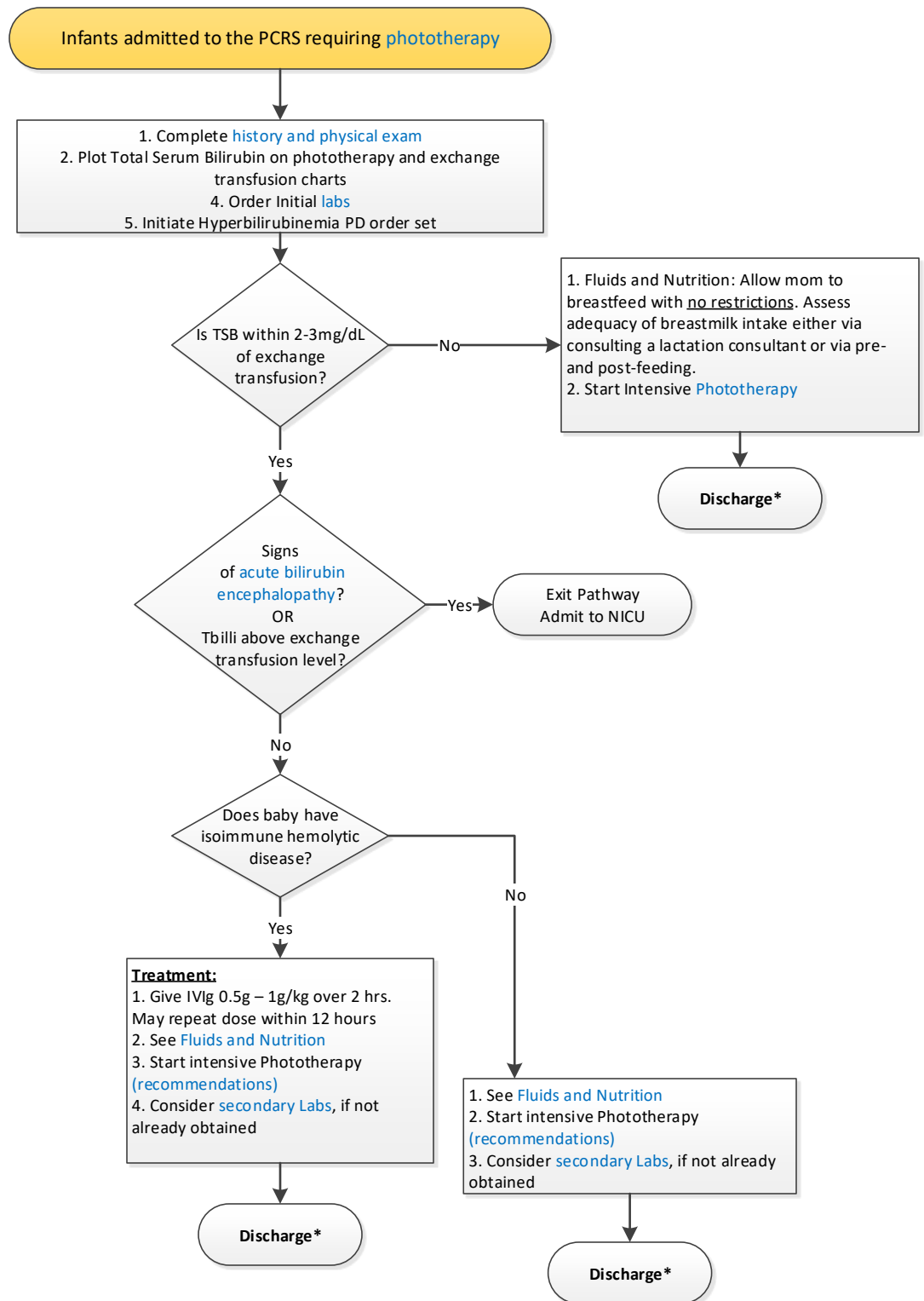
Bilitool.org

Inclusions Criteria:

- Previously healthy infants
- Age >24 hours and <21 days
- ≥ 35 weeks gestational age

Exclusion Criteria:

- Infant requiring exchange transfusion (NICU direct admission criteria)
- With conjugated hyperbilirubinemia: bilirubin concentration greater than 2 mg/dL or more than 20% of total bilirubin
- Suspected acute bilirubin encephalopathy or displaying clinical findings associated with acute bilirubin encephalopathy such as hypotonia, weak suck or high pitched cry; and
- Suspected sepsis, history of fever or ill-appearing on assessment



***Discharge Criteria:**

1. Discontinue phototherapy when TSB is 2-3mg/dL below phototherapy threshold or 13-14mg/dL.
2. Follow up within 24 hours at PCP office for babies with isoimmune hemolytic disease (may need rebound TSB drawn at PCP office.) Do not draw a rebound TSB In the hospital.

DCMC Evidence-Based Outcomes Center

Inclusions Criteria:

- Previously healthy infants
- Age >24 hours and <21 days
- ≥ 35 weeks gestational age

Exclusions Criteria:

- Ill-appearing
- Fever (100.4) temperature instability
- Documented direct hyperbilirubinemia

Risk stratification for phototherapy - (use to interpret phototherapy nomogram)

Lower risk: ≥ 38 weeks and well

Medium risk: ≥ 38 weeks and any neurotoxic risk factors (see below) or 35-37 6/7 weeks and well

Higher risk: 35-37 6/7 weeks and risk factors

Neurotoxic Risk factors

- Isoimmune hemolytic disease
- G6PD deficiency
- Asphyxia
- Significant lethargy
- Temperature instability
- Sepsis
- Acidosis
- Albumin < 3.0 g/dL

Pathologic Jaundice

- Jaundice in first 24 hrs of life
- Rise in bilirubin > 0.2 mg/dL
- Direct bilirubin > 1 mg/dL or 20% of total serum bilirubin

Neonate with hyperbilirubinemia

Assessment

- Quantify oral intake
- Quantify stool/urine output
- Birth and family history for risk factors
- Assess hydration status
- Assess for cephalohematoma

Initial Labs

- Total and direct bilirubin via heel stick
- *if concern for hemolysis or dehydration consider CBC, BMP, total/direct bilirubin, blood type & screen

Bilirubin Evaluation

- Assess bilirubin through Bilitool
- Review neurotoxic risk factor to determine risk level
- Determine phototherapy need

Phototherapy needed?

No

Yes

Interpret exchange transfusion criteria in **Bilitool** or other risk stratification graph

Meet exchange criteria?

No

Yes

Discharge Criteria
(1) Adequate follow-up available. Review Bilitool for recommended follow up
(2) Adequate feeding (lactation, formula supplementation need)

Floor

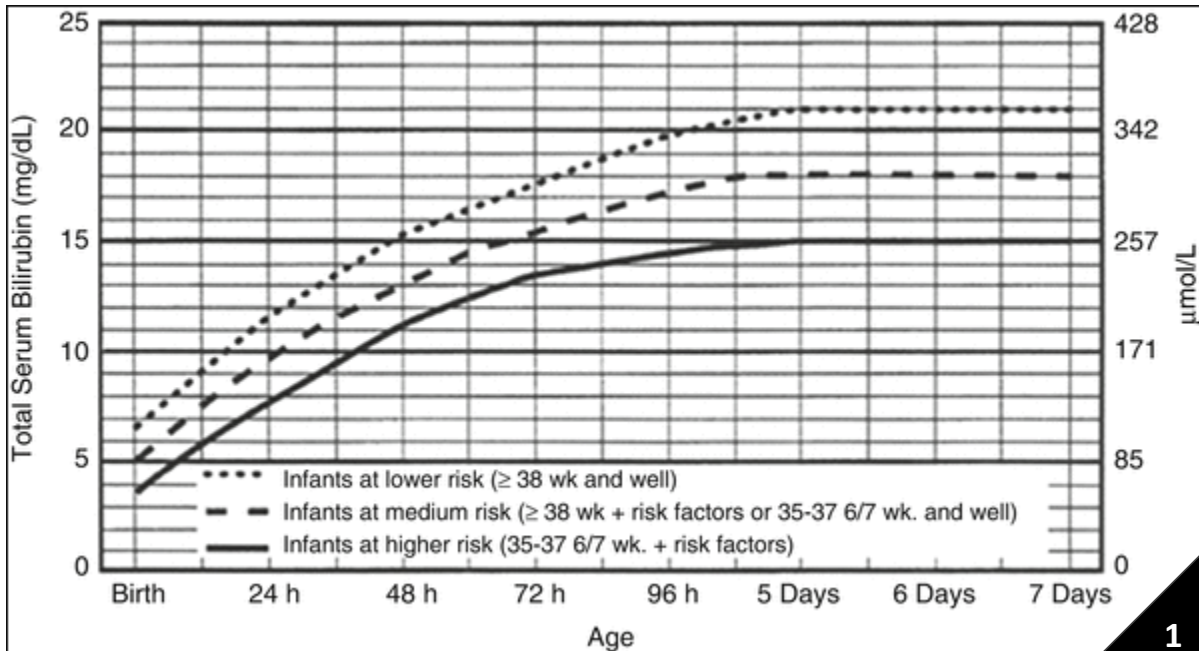
- Assess ABO incompatibility from newborn records
- Assess need for IV*
- Start phototherapy
- Admit to PCRS
- Assess for pathological jaundice. If signs of pathological jaundice, consider specialty consultation (GI, surgery, and/or NICU)

NICU

- If meeting exchange transfusion criteria then admit to the NICU

*Consider need for IV placement. Rarely are IV's needed for infants with hyperbilirubinemia

Risk Assessment Curve: Guideline for Intensive Phototherapy



Inpatient
Algorithm

ED
Algorithm

..... Infants at a lower risk (≥ 38 week and well)

----- Infants at a medium risk (≥ 38 week + risk factors or 35-37 6/7 week and well)

———— Infants at a higher risk (35-37 6/7 week + risk factors)

- Use total bilirubin. Do not subtract direct reacting or conjugated bilirubin.
- **Risk factors = isoimmune hemolytic disease, G6PD deficiency, asphyxia, significant lethargy, temperature instability, sepsis, acidosis, or albumin $< 3.0\text{g/dL}$ (if measured)**
- For well infants 35 - 37 6/7 wk, can adjust TSB levels for intervention around the medium risk line. It is an option to intervene at lower TSB levels for infants closer to 35 wks and at higher TSB levels for those closer to 37 6/7 wks.
- It is an option to provide conventional phototherapy in hospital or at home at TSB levels 2 - 3 mg/dL below those shown, but home phototherapy should not be used in any infant with risk factors.

Phototherapy Recommendations:

Bassinet, biliblanket, and NeoBlue light above.

Consider lining with white cloth (bed sheet) if w/in 2-3mg/dL of the exchange transfusion threshold.

Acute Bilirubin Encephalopathy:

Clinical symptoms: Lethargy, high pitched cry, opisthotonus, retrocollis, fever

Treatment: If an infant appears dehydrated and/or has lost 10% or more of its birth weight **AND** is unable to drink, insert an IV, obtain electrolytes, and give a 10cc/kg NS bolus. Continue giving IVF if the infant is unable to drink. If the infant is able to drink, give breast milk (preferred) or formula if breast milk is unavailable.

History and Physical Exam:

Risk Categories	Clinical Features
Family History	Family history of jaundice Cystic Fibrosis G6PD Other blood disorders or hemolytic processes Ethnicity
Pregnancy History	Blood type Rh Isoimmune antibodies Maternal diabetes Hepatitis
Birth History/Feeding/ Stooling/ Weight	Gestational age (35-36 weeks) Birth trauma Weight loss – calculated as % decreased from birth weight Feeding history – latch, frequency, interest Stool color, frequency, and passage of meconium in the first 24 hours Numeric value of the 36 hour transcutaneous bilirubin performed before the infant was discharged after birth (to help determine the rate of rise)



Useful Resources:

- [AAP Guidelines for Exchange transfusion](#)
- [AAP Phototherapy Guidelines](#)

Labs Frequency:

- Consider repeating TSB in 6 hrs. of phototherapy initiation to confirm response and monitor every 12-24 hours until discontinuation of phototherapy.
- If TSB stable/falling repeat every 6-12hrs
- If TSB is rising or remains within 2-3 mg/dL of exchange transfusion, continue checking TSB every 2-6 hrs. and consult NICU.
- If IV fluids are required, serum electrolytes should be checked and fluid choice should be based on individual patient status.

Initial Labs to Consider:

- CBC (with differential), complete metabolic panel, total bilirubin, direct bilirubin
- Blood type and antibody screen or direct antiglobulin test (COOMBS positivity) if maternal blood type is unknown or if mother's blood type is O+/- and baby's blood type is unknown

Secondary Labs:

- If concern for ABO incompatibility or hemolytic disease Obtain absolute reticulocyte
- If infant is ill appearing obtain blood and urine culture and urinalysis with microscopic

Fluids and Nutrition Recommendations:

- Do not give IVF unless dehydrated and unable to drink. If able to drink, allow mom to direct breastfeed every 2-3 hours for no more than 30 minutes. Consider feeding additional EBM or formula.
- Lactation consultation when TSB is less than 2-3mg/dL from exchange transfusion.
- Breastfeeding should continue during phototherapy