

Clinical Pathway

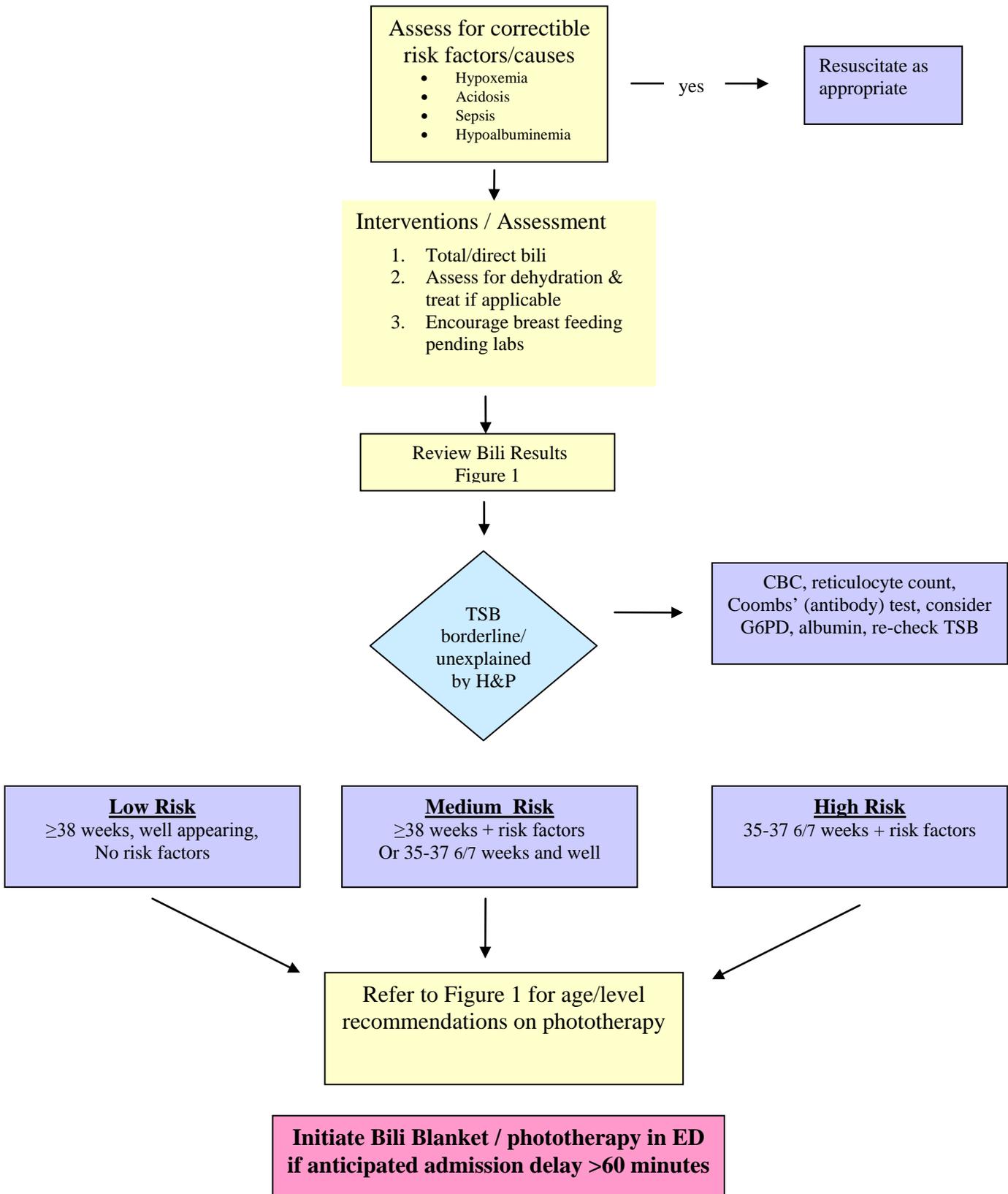
Neonatal Jaundice/ Suspected Hyperbilirubinemia

December 2011

Outcomes/Goals	<ol style="list-style-type: none"> 1. Identification and initiate prompt treatment of infants less than 7 days with jaundice/ suspected hyperbilirubinemia 2. Create a standardized team-oriented approach to efficient and timely evaluation and work-up 3. Create a standardized admission criteria for infants with hyperbilirubinemia 4. Initiate phototherapy for known admission delays
NURSE documentation	Chief complaint. Skin assessment. History of feedings including breast or bottle fed, stool history, level of consciousness/alertness. Birth history including birth weight, hydration status
INTERVENTIONS Initiate on arrival	ESI Triage Level II Full set of vitals, naked weight Evaluate for dehydration Initiate lab draws – do not delay labs for difficult IV placement. May send capillary sample after failed venous attempt x 2 Utilize OHIO warmer as needed for temperature regulation
DIAGNOSTICS	Total serum bilirubin (TSB) Direct bili Blood type, if not available
PHYSICIAN (LIP)	
Fluids (if indicated)	Normal Saline Bolus of 10ml/ kg if weight loss >12% since birth, or clinical evidence of dehydration, and poor history of feeding
Review lab results	Review Figure 1 for phototherapy/ admit criteria Consider need for more thorough lab work-up: CBC, reticulocyte count, Coombs' (antibody) test,
ADMISSION	Call primary care physician Call peds ward/DNCC attending Prepare family/infant for admission to DNCC, or ward as appropriate If delay in admission anticipated, call admitting unit for bili blanket and begin bili blanket therapy.
Risk Factors	Evaluate for correctable risk factors <ul style="list-style-type: none"> • Hypoxemia • Acidosis • Sepsis • Hypoalbuminemia • Temperature instability

Clinical Pathway Decision Making Process Neonatal Jaundice/ Suspected Hyperbilirubinemia

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Neonatal Jaundice/ Suspected Hyperbilirubinemia Rationale and Data

Goals of Clinical Pathway

1. Identification and treatment of infants less than 7 days with jaundice/ suspected hyperbilirubinemia
2. Create a standardized team-oriented approach to efficient and timely evaluation and work-up.
3. Create a standardized admission criteria for infants with hyperbilirubinemia

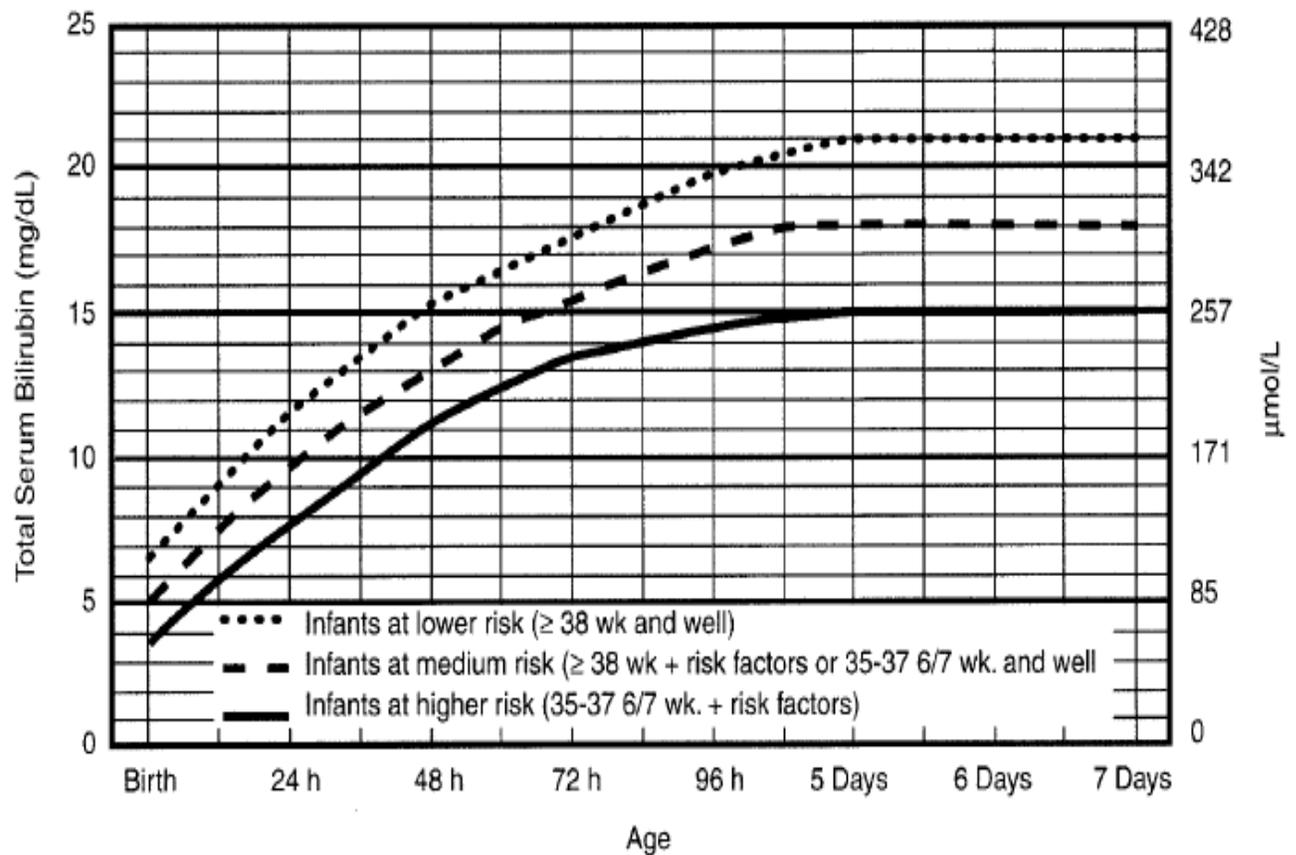
Lab Test	Rationale
Total Serum Bilirubin (TSB)	The AAP (2004) suggests measurement of total, direct, and indirect bilirubin levels as appropriate, and if direct bilirubin is less than 1.5, then one may follow total bilirubin. Indirect bilirubin levels measure “free” or unconjugated bilirubin and direct bilirubin levels measure conjugated bilirubin.
Blood Type	If born outside OHSU or blood type not readily available/known
Coomb’s Test	The direct and indirect Coomb’s tests detect antibodies against RBCs seen in ABO/Rh incompatibility that may cause cellular damage and hemolytic anemia (AAP, 2004; Pagana & Pagana, 2002)
Reticulocyte count	A reticulocyte count may be useful if the infant is anemic to measure RBC production by the bone marrow.
G6PD	Deficiency common in Mediterranean and Middle Eastern regions
Albumin	See below
CBC	Complete blood count with differential, platelet count, albumin (to aid in assessment of unbound bilirubin), blood culture, urinalysis, and peripheral smear to rule out infection and hemolysis may be warranted.

Test Results

- Elevated serum indirect bilirubin with normal reticulocyte count and negative Coomb’s test is associated with physiologic, breast milk jaundice, or familial nonhemolytic jaundice.
- Elevated serum indirect bilirubin with increased reticulocyte count is indicative of increased hemolysis seen with ABO/Rh incompatibility and RBC abnormalities.
- Elevation of both direct and indirect bilirubin with a negative Coomb’s test and normal reticulocyte count is indicative of hepatitis, metabolic or obstructive disorders, or sepsis.

Diagnostic and Treatment Techniques	Use and Accuracy/ Effectiveness
Bilirubin	
Trans-cutaneous Bilirubin (Bilicheck Scan)	Shown to produce bilirubin levels lower to equal that of TSB from blood draws, useful and reliable for estimating TSB.
Capillary TSB (Heel Stick)	May be used to initiate treatment, use of venous sample to ‘confirm’ results not recommended due to high hemolysis rate.
Venous TSB	Gold standard for measuring TSB
Treatment	
Fiberoptic “Bili” Blanket	Less effective than intensive phototherapy. Used on the wards. Option for low risk outpatient
Phototherapy	Must be uninterrupted for no more than 30 minutes at a time to ensure effectiveness. Can reduce TSB 30-40% in first 24 hours of therapy. Only in DNCC.
Exchange Transfusion	Used in severe cases. Recommended if infant remains jaundiced with signs of acute bilirubin encephalopathy (hypertonia, arching, retocolis, opisthotonos, fever, high-pitched cry), even if TSB is reduced.

Figure 1: Guidelines for phototherapy in infants of > 35 weeks gestation



- 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 < 3.0g/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 wk.
- It is an option to provide conventional phototherapy in hospital or at home at TSB levels 2-3 mg/dL (35-50mmol/L) below those shown but home phototherapy should not be used in any infant with risk factors.