| Outcomes/Goals | 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 |
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>NURSE documentation</td>
<td>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</td>
</tr>
</tbody>
</table>
| INTERVENTIONS | 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  
• Hypoxemia  
• Acidosis  
• Sepsis  
• Hypoalbuminemia  
• Temperature instability |
Assess for correctible risk factors/causes
- Hypoxemia
- Acidosis
- Sepsis
- Hypoalbuminemia

yes

Resuscitate as appropriate

Interventions / Assessment
1. Total/direct bili
2. Assess for dehydration & treat if applicable
3. Encourage breast feeding pending labs

Review Bili Results
Figure 1

TSB borderline/unexplained by H&P

CBC, reticulocyte count, Coombs’ (antibody) test, consider G6PD, albumin, re-check TSB

Low Risk
≥38 weeks, well appearing, No risk factors

Medium Risk
≥38 weeks + risk factors
Or 35-37 6/7 weeks and well

High Risk
35-37 6/7 weeks + risk factors

Refer to Figure 1 for age/level recommendations on phototherapy

Initiate Bili Blanket / phototherapy in ED if anticipated admission delay >60 minutes
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

<table>
<thead>
<tr>
<th>Lab Test</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Serum Bilirubin (TSB)</td>
<td>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.</td>
</tr>
<tr>
<td>Blood Type</td>
<td>If born outside OHSU or blood type not readily available/known</td>
</tr>
<tr>
<td>Coomb’s Test</td>
<td>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 &amp; Pagana, 2002)</td>
</tr>
<tr>
<td>Reticulocyte count</td>
<td>A reticulocyte count may be useful if the infant is anemic to measure RBC production by the bone marrow.</td>
</tr>
<tr>
<td>G6PD</td>
<td>Deficiency common in Mediterranean and Middle Eastern regions</td>
</tr>
<tr>
<td>Albumin</td>
<td>See below</td>
</tr>
<tr>
<td>CBC</td>
<td>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.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Use and Accuracy/ Effectiveness</th>
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<tbody>
<tr>
<td>Bilirubin</td>
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<tr>
<td>Trans-cutaneous Bilirubin (Bilicheck Scan)</td>
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<tr>
<td>Capillary TSB (Heel Stick)</td>
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<tr>
<td>Venous TSB</td>
</tr>
<tr>
<td>Treatment</td>
</tr>
<tr>
<td>Fiberoptic “Bili” Blanket</td>
</tr>
<tr>
<td>Phototherapy</td>
</tr>
<tr>
<td>Exchange Transfusion</td>
</tr>
</tbody>
</table>
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.

Reviewed and approved: PEM Section meeting January 2012