Hyperbilirubinemia

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I. What is bilirubin?

II. It is eliminated in 3 steps:
   1. It binds to serum albumin
   2. Conjugated by the liver (necessary for clearance)
   3. Excreted in stool, some in urine

III. Types of Bilirubin
   A. Conjugated – direct
      1. Water-soluble
      2. Easily excreted in water and stool
      3. Non-toxic
   B. Unconjugated - indirect
      1. Fat-soluble
      2. Bound or unbound to albumin
      3. Potentially toxic

IV. Hyperbilirubinemia
   A. Possible Causes:
      1. physiologic – normal occurrence in 65% of all newborns
      2. Hemolytic disease – rapid destruction of red blood cells results in increased by-products
      3. Birth trauma – cephalohematoma, bruising, etc.
      4. Any condition of ↑ production and ↓ excretion

V. Physiologic Hyperbilirubinemia
   A. Bilirubin production 3x that of adult
   B. Conjugation process in liver slower in newborn than adult
   C. Fetus/newborn has high levels of an intestinal enzyme that converts conjugated bilirubin back to unconjugated bilirubin
   D. Necessary for fetal clearance

VI. Bilirubin is most likely to cause brain damage when:
   A. There is too much bilirubin for the serum protein
   B. Serum protein levels are low
   C. Binding capacity of serum protein is decreased
   D. The baby has been severely stressed

VII. Acute Bilirubin Encephalopathy

VIII. Kernicterus
   A. Bilirubin staining of the brainstem nuclei and cerebellum
   B. Kernicterus is a chronic form of bilirubin encephalopathy that is manifested by cerebral palsy, auditory dysfunction, dental-enamel dysplasia, paralysis of upward gaze, and other handicaps. Intellectual impairment is unusual.

Jaundice is NOT normal in the first 24 hours of life!

IX. AAP Guidelines

1. Promote and support successful breastfeeding – 8-12 X per day
2. Establish nursery protocols for the identification and evaluation of hyperbilirubinemia
3. Measure the total serum bilirubin (TSB) or transcutaneous bilirubin (TcB) level on infants jaundiced in first 24 hours.
4. Recognize that visual estimation of the degree of jaundice can lead to errors, particularly in darkly pigmented infants.
5. Interpret all bilirubin levels according to infants age in hours
6. Recognize that infants less than 38 weeks gestation are at higher risk
7. Perform a systematic assessment on **all** infants before discharge for the risk of severe hyperbilirubinemia
8. Provide parents with written and verbal information about newborn jaundice
9. Provide appropriate follow-up based on the time of discharge and the risk assessment
10. Treat newborns, when indicated, with phototherapy or exchange transfusion

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