



**Nursing Assessment
of the Newborn
for Hyperbilirubinemia**

Overview

- **Approximately 60% of newborns in the United States experience jaundice during the first week of life.**
- **While this is a benign condition in most cases, hyperbilirubinemia is a frequent cause of newborn readmission.**
- **In rare instances, hyperbilirubinemia can lead to devastating brain damage or death if not properly assessed and treated.**

Overview continued...

- **Hyperbilirubinemia and/or kernicterus should be considered when screening an infant less than one month of age.**
- **Quick action by the health care provider is critical to avoiding a disastrous and preventable outcome.**

Overview continued...

- **With so many infants exhibiting jaundice, there is often a lack of concern for this condition.**
- **Jaundice may even be viewed as unimportant, however, severe hyperbilirubinemia can lead to bilirubin encephalopathy or kernicterus with clinical outcomes including:**

Overview continued...

- Cerebral Palsy**
- Hearing Loss**
- Delayed Motor Skills**
- Mild Intellectual Defects**
- Death**

Overview continued...

- **As a nurse caring for newborns, you should always consider, for every newborn for whom you care, the risk factors associated with hyperbilirubinemia.**
- **The presence or absence of these risk factors should be determined upon assessment and documented in the medical record.**

Hyperbilirubinemia Risk Factors

- **Jaundice**
- **Gestational age 35 – 36 weeks.**
- **Exclusive breastfeeding or poor feeding**
- **Bruising and/or cephalohematoma**
- **A sibling who had jaundice.**
- **Asian Race**
- **Male infant**
- **Infant's mother older than 25 years of age.**

Infant Feeding

- **Detailed assessment of infant feeding is an important part of the evaluation.**
- **Aspects of feeding which should be covered include:**
 - **Type of feeding (breast or bottle)**

Infant Feeding continued...

- Breast feeding, 15-30 minutes, with active sucking and swallowing, 8-10 times in 24 hours**
- Bottle feeding at least 2-3 ounces 8-10 times in 24 hours.**
- Weight gain/loss since birth**
- 6 - 8 wet diapers in 24 hours**

Infant Feeding continued...

- Stooling – color should transition from dark (meconium) to lighter within 3 – 5 days for both breast and bottle fed babies, consistency, and number per day (breast fed: 2– 3/day, bottle fed: 1- 2/day)

Jaundice

- An infant does not have to appear jaundiced to have hyperbilirubinemia.
- Relying on the presence or severity of jaundice can lead to an error in diagnosis of hyperbilirubinemia.
- However, infants should be carefully assessed for jaundice.

Jaundice continued...

- **The assessment for jaundice should occur in a well-lighted room with the infant's chest, abdomen and extremities exposed. The assessment should include:**
 - **Location of jaundice**
 - **Presence of jaundice in the eyes**
 - **Blanching of the skin with digital pressure to determine the exact color of the skin and underlying tissue.**

Jaundice continued...

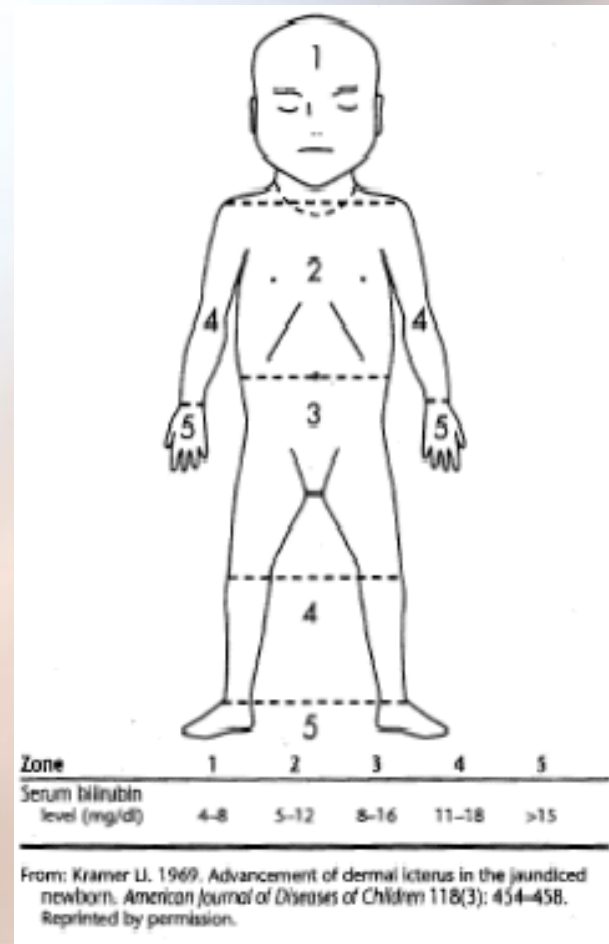
- Any jaundice observed lower than chest level is concerning.
- The physician should be informed of any jaundice noted.

Jaundice continued...

Jaundice should be documented according to location on the infant's body. The Kramer diagram may be used for this purpose.

Note: If the jaundice is present at a level 3 or greater, the infant's condition is urgent & a further medical evaluation should not be delayed.

Zones showing Kramer's progression of jaundice with increasing levels of serum bilirubin.



Direct Coombs Test

- **A direct Coombs test may be done for the following risk factors:**
 - **Rh incompatibility – Mother is Rh negative and baby is Rh positive**
 - **ABO incompatibility – Mother is blood group O and baby is blood group A, B, or AB**
- **ABO incompatibility is three times as common as Rh incompatibility**
- **A positive direct Coombs test means more jaundice in the baby**

Activity Level

- **The infant's activity level should be assessed.**
- **Areas of concern include:**
 - **Decreased activity**
 - **Lethargy**
 - **Sleeping a lot**
 - **Difficult to awaken**

The Newborn's Cry

- **A high-pitched cry or a change in the infant's cry can be an indication of an increasing bilirubin level.**
- **During the assessment, the character of the baby's cry and whether there has been a change should be determined.**

Intervention

- After assessment, if the nurse believes that a newborn may have hyperbilirubinemia, he/she should:
 - Discuss these concerns with the physician
 - Develop a plan of action
 - Keep in mind that kernicterus is rare and that most physicians have not seen a case in their career
- Recognition of the situation and quick, timely action is extremely important!

Transcutaneous Bilirubin (TcB)

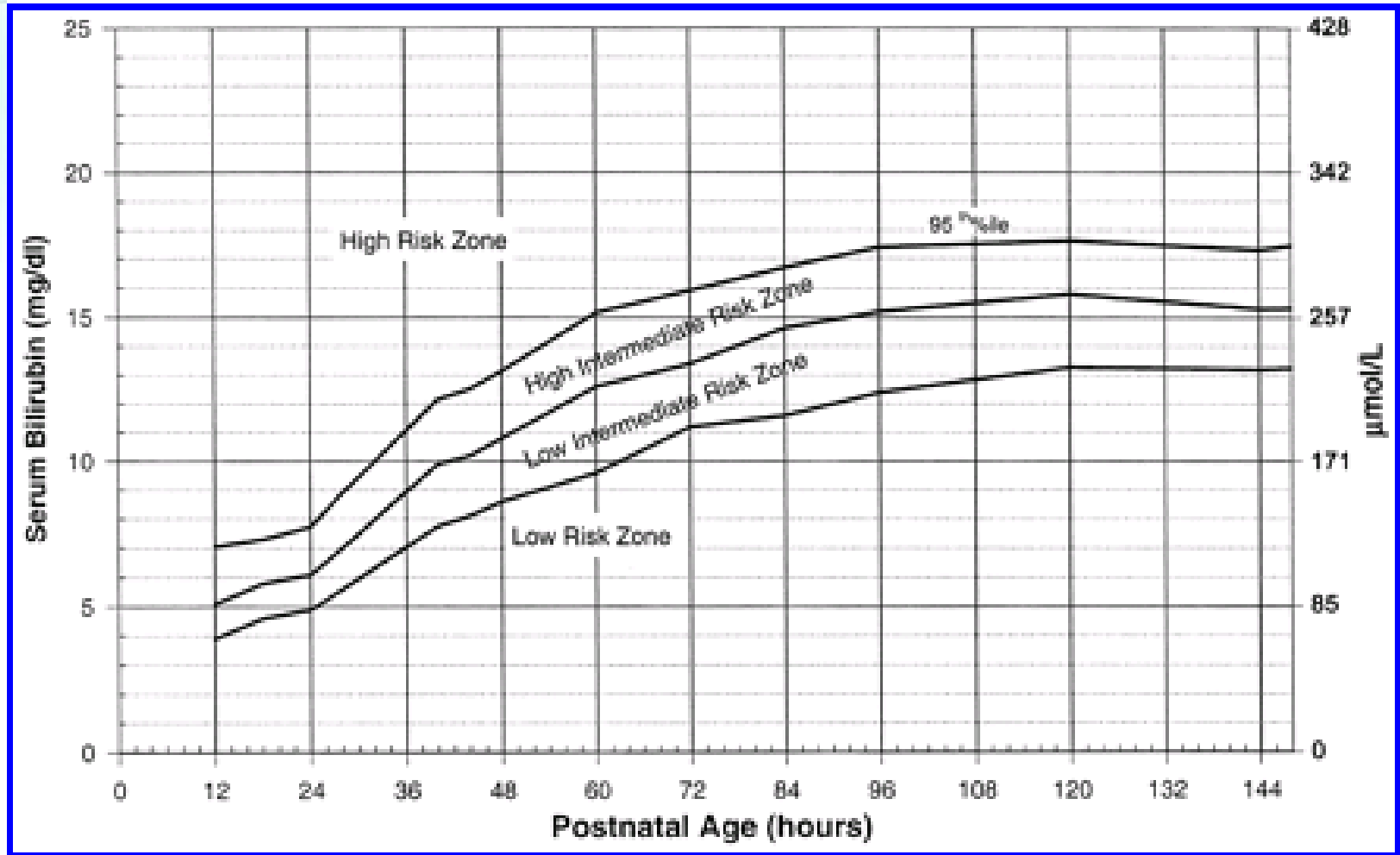
Total Serum Bilirubin (TSB)

- **Transcutaneous Bilirubin (TcB) measurement is a screening tool for hyperbilirubinemia.**
- **While not definitive, the TcB can provide a general idea as to the infant's bilirubin level.**
- **If a newborn is returning to the hospital after discharge and is jaundiced, a Total Serum Bilirubin (TSB) rather than a TcB should be obtained. A heel stick may be utilized in the ED as resource for obtaining a timely TSB.**

Transcutaneous Bilirubin (TcB) Total Serum Bilirubin (TSB) cont...

- **When the test results are received, they should be plotted on the THR Standardized Nomogram to determine the infant's level of risk (See next slide.)**

Bhutani's Nomogram



This nomogram was created by Vinod K. Bhutani, M.D., FAAP and is utilized by the American Academy of Pediatrics to determine risk levels for hyperbilirubinemia. This nomogram is for infants 6 days of age or less. Beyond that timeframe, clinical judgment is necessary to determine risk. This nomogram is utilized as THR's Standardized Nomogram.

Plan of Action

- **After determination of the infant's bilirubin level, the nurse should:**
 - Plot the result on the nomogram
 - Determine the degree of risk for hyperbilirubinemia based on neonatal age in hours and the bilirubin level
 - Notify a physician if the bilirubin level is in the high intermediate risk zone or higher to determine the need for additional consultation, phototherapy or exchange transfusion
- **Time is of the essence for infants at risk.**

Summary

- **Severe hyperbilirubinemia and kernicterus are increasing in occurrence but remain unusual events.**
- **Due to the possibility of overwhelming neurological complications, hyperbilirubinemia should be considered as a possible diagnosis for all infants that are one month old or less.**
- **Intervention should be timely to minimize the neurological impact on the patient.**
- **The role of the nurse can be critical to the safety of the newborn.**