



I. PURPOSE

To assess the infant for risk for hyperbilirubinemia and to develop parent knowledge/skills through a systematic approach to the provision of care/parent education.

II. DEFINITION

HCP = Health Care Provider

III. POLICY

- A. Nursing personnel who have received education and demonstrated competency are authorized to perform bilirubin screening (refer to Women’s Services policy NB 76 Bilichek Noninvasive Bilirubin analysis.
- B. All infants are screened for transdermal bilirubin level at 12, 24 and 48 hours of age. If the infant is discharged prior to 48 hours of age, screening should be performed prior to discharge.
- C. Infants that develop symptoms of jaundice before 12 hours of age should also be screened at the time the jaundice is noted and HCP notified.
- D. If an infant has a transdermal bilirubin level in the high risk zone on the hour specific bilirubin nomogram (see Attachment A) a serum bilirubin should be obtained per protocol order and plotted on the serum bilirubin nomogram (see Attachment B). Notify the HCP if the serum bilirubin results are in the high risk zone on the nomogram to obtain orders for further assessment/treatment.

See also Medical Staff Policy MS 78, *Protocol Development Policy*.

IV. PROTOCOL

- A. All infants are to be considered at risk for hyperbilirubinemia.
- B. Review maternal and neonatal histories/lab values to determine presence of additional risk factors such as blood type O positive/any Rh negative blood type, positive Coombs/DAT results, prematurity, breastfeeding, history of sibling that received phototherapy, significant neonatal bruising/cephalohematoma, etc.
- C. Assess Transdermal bilirubin levels at 12, 24 and 48 hours of age and plot on the hour specific nomogram in the infant’s medical record. Interpret value based on infant’s age in hours.

Departmental Approval

Signed: _____ RN, BSN, MSN
 Title: Manager
 Department: Women’s Services

Administrative Approval

Signed: _____ MSN, RN, NE-BC
 Title: Executive Director, Women’s & Children’s Services
 Signed: _____
 Title: Medical Director for Newborn Nursery



IV. PROTOCOL (CONT.)

- D. If transdermal bilirubin is in the high risk zone, obtain a serum bilirubin level. Plot the bilirubin on the same nomogram. Notify the HCP of bilirubin results if the serum bilirubin is in the high risk zone.
1. Communicate known risk factors.
 2. Obtain an order for treatment in newborn nursery or for transfer to the NICU for management of hyperbilirubinemia, as appropriate to the infant's bilirubin level and according to the HCP's preference.
- E. Provide and reinforce information about jaundice to parents throughout hospitalization.
- F. Assess for adequacy of breastfeeding prior to discharge and refer to lactation consultant if needed.
- G. Provide written and verbal instructions about jaundice(basic facts, risk factors, significance, how to check for jaundice, changes in infant to notify HCP about, etc.) before discharge. Incorporate plan for post-discharge follow-up of bilirubin levels and appointments into discharge instructions (After Visit Summary).
- H. Management of elevated bilirubin levels
1. Management of high bilirubin levels will be ordered by the individual HCP.
 2. Infants in the high risk zone require a treatment plan.
 3. General guidelines for treatment are adapted based on findings for the individual infant.
 4. Infants who are in the high risk zone on the hour specific bilirubin nomogram and have rising bilirubin levels in spite of treatment with phototherapy require consultation with a neonatologist.

V. REFERENCES

- A. American Academy of Pediatrics, Subcommittee on Hyperbilirubinemia. (2004). Management of hyperbilirubinemia in the newborn infant 35 or more weeks of gestation. *Pediatrics*, 114(1), 297-316.
- B. American Academy of Pediatrics and American College of Obstetricians and Gynecologists. *Guidelines for Perinatal Care* (7th Edition).
- C. Bhutani, V.K., Johnson, L.H., Schwoebel, A. & Gennaro, S. (2006). A systems approach for neonatal hyperbilirubinemia in term and near-term newborns. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 35(4), 444-455.



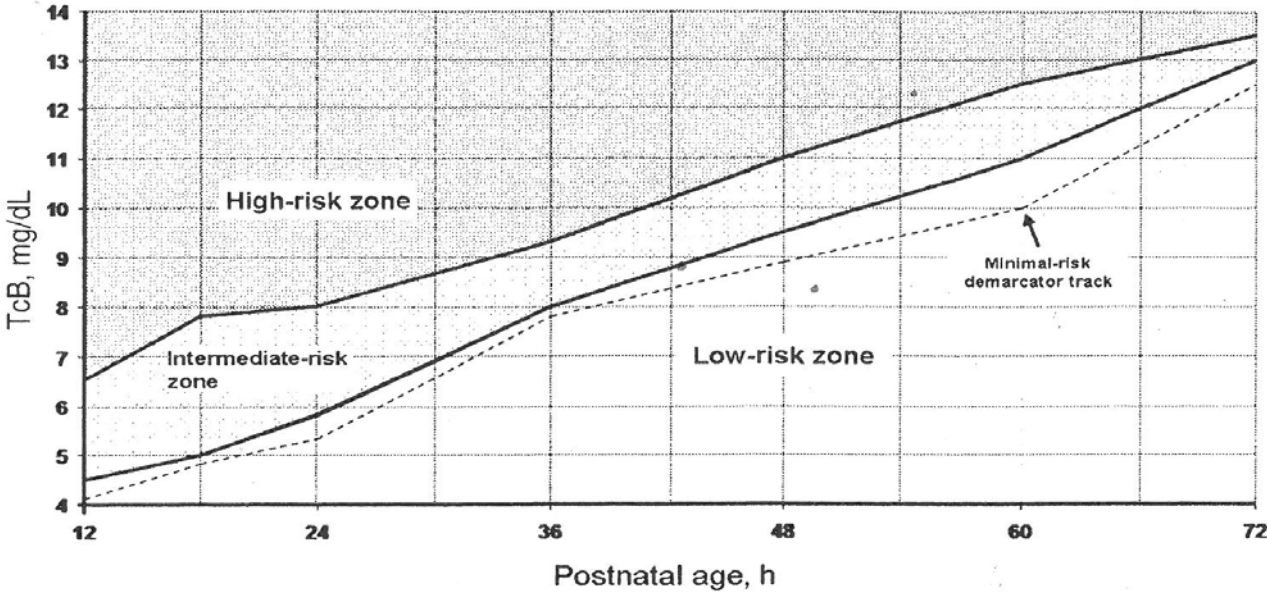
V. REFERENCES (CONT.)

- D. Bhutani, V.K., Vilms, R.J., & Hamerman-Johnson, L. (2010). Universal bilirubin screening for severe neonatal hyperbilirubinemia. *Journal of Perinatology*, 30,s6-s15.
- E. Keren, R., Luan, X., Friedman, S., Saddlemire, S., Cnaan, A. & Bhutani, V.K. (2008). A comparison of alternative risk-assessment strategies for predicting significant neonatal hyperbilirubinemia in term and near-term infants. *Pediatrics*, 124(4), e170-e179.
- F. National Assotiation of Neonatal Nurses(NANN) Board of Directors(2010). NANN Position Statement 3049 Prevention of acute bilirubin encephalopathy and kernicterus in newborns. *Advances in Neonatal Care*, 10(3), 112-118.
- G. Newmann, T.B. (2009). Universal bilirubin screening, guidelines and evidence. *Pedoatroc*s, 124(4), 1199-1202.
- H. Rice-Simpson, Kathleen, and Creehan, Patricia. AWHONN's Perinatal Nursing, (Lippincott, Philadelphia), third edition, AWHONN, 2014, 671-676.
- I. Varvarigou, A., Fouzas,S., Skylogianni, E., Mantagou, L., Bougioukou, D., & Mantagos, S.(2009). Transcutaneous bilirubin nomogram for prediction of significant neonatal hyperbilirubinemia. *Pediatrics*, 124(4), 1052-1059.

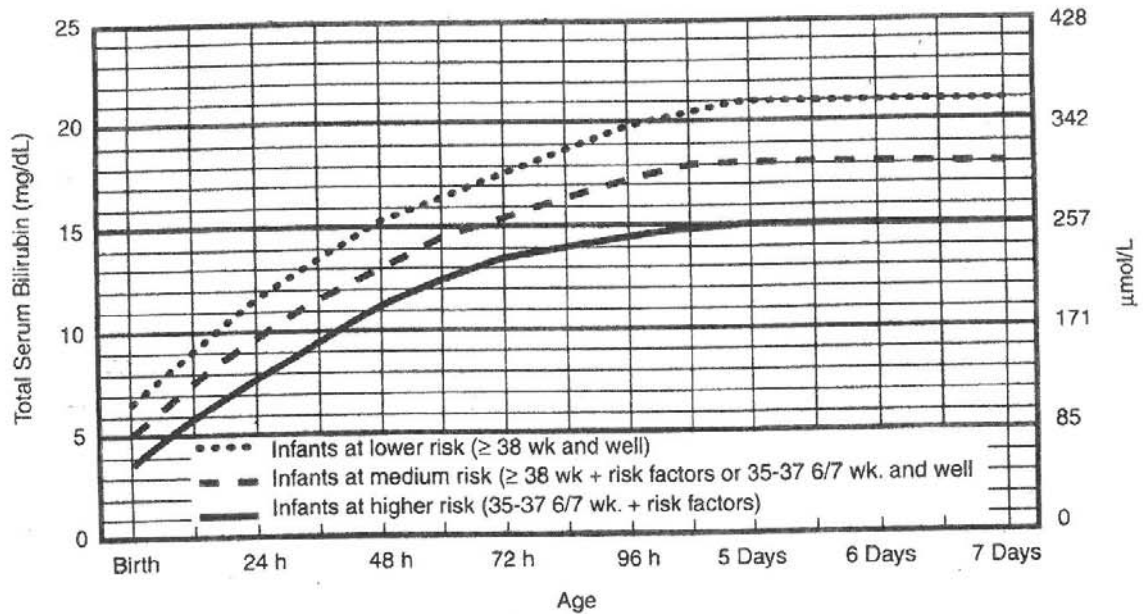
Staff Accountability:

Executive Director, Women's and Children's Services
Medical Director, Newborn Nursery
Manager, Women's Services
Clinical Education Coordinator, Women's Services
Staff Nurses, Women's Services

Hour Specific Bilirubin Nomogram



TcB nomogram for assessing the risk of subsequent significant hyperbilirubinemia in healthy term and near-term newborns. The high-risk zone is defined by the track of TcB values with positive LR of ≥ 10 and the low-risk zone by the track of TcB values with negative LR of ≤ 0.1 . The minimal-risk demarcator track (negative LR of 0) is also presented (dotted line). The nomogram was developed by using a total of 10 382 TcB measurements from 2039 neonates with gestational ages of ≥ 35 weeks and birth weights of ≥ 2000 g. From Varvarigou et al, 2009.



- 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 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.

Fig 3. Guidelines for phototherapy in hospitalized infants of 35 or more weeks' gestation.

Note: These guidelines are based on limited evidence and the levels shown are approximations. The guidelines refer to the use of intensive phototherapy which should be used when the TSB exceeds the line indicated for each category. Infants are designated as "higher risk" because of the potential negative effects of the conditions listed on albumin binding of bilirubin,⁴⁵⁻⁴⁷ the blood-brain barrier,⁴⁸ and the susceptibility of the brain cells to damage by bilirubin.⁴⁸