

**VENTURA COUNTY MEDICAL CENTER
SANTA PAULA HOSPITAL**

Associated with the UCLA School of Medicine

PROCEDURE: HYPERBILIRUBINEMIA: EVALUATION OF NEWBORNS AT RISK AND USE OF THE TRANSCUTANEOUS BILI METER (TCB)		POLICY NO: H.12	PAGE 1 OF 4
SUBJECT:			
DEPARTMENT: OB	EFFECTIVE DATE: 2/2023	REVIEW DATES:	
AFFECTS:			
APPROVED BY:		REVISION DATES:	
<p>I. POLICY It is the policy of VCMC/SPH to evaluate and treat newborns at risk for hyperbilirubinemia, bilirubin toxicity and kernicterus. Evaluation and treatment is based on American Academy of Pediatrics Guidelines.</p> <p>II. MAJOR RISK FACTORS FOR HYPERBILIRUBINEMIA</p> <ul style="list-style-type: none"> A. Jaundice* observed in the first 24 hours. B. Previous jaundiced sibling who received phototherapy. C. Gestation 35-36 weeks. D. Exclusive breastfeeding with weight lost greater than 10%. E. Asian race. F. Significant bruising and/or cephalohematoma. <p>* Jaundice is a yellowing of the skin and subcutaneous tissue that progresses in a cephalocaudal direction (from head to the trunk.)</p> <p>III. NURSING EVALUATION AND PROCESS</p> <ul style="list-style-type: none"> A. Maternal prenatal testing should include ABO and Rh typing and screen for isoimmune antibodies. B. If mother is Rh negative, or prenatal blood grouping is not available, newborn testing should include: <ul style="list-style-type: none"> 1. Type and Rh 2. Direct antibody testing (DAT) C. Jaundice can be visually assessed by blanching the skin with digital pressure on the forehead or upper chest, revealing the underlying color of the skin and subcutaneous tissue. D. A visual assessment of Jaundice is defined as: <ul style="list-style-type: none"> 1. Slight or Mild - face/head only 2. Moderate - face/head and trunk E. Breastfeeding infants who are jaundiced need to be breastfed 8 to 12 times per day. F. Parents are to be educated regarding jaundice and written information on jaundice provided. G. The Bhutani curve (nomogram) is used to plot bilirubin results and determine hyperbilirubinemia. <i>See attached graph.</i> 			

IV. PROCEDURE

- A. Nursing assessment to include:
1. Review of infants risk factors.
 2. Assessment for signs and symptoms of hyperbilirubinemia.
 - a. Feeding difficulty
 - b. Apnea
 - c. Temperature instability
 3. Assessment for signs and symptoms of kernicterus.
 - a. Vomiting
 - b. Lethargy
 - c. High-pitched cry
 - d. Hypotonia
 - e. Decreased reflexes
 - f. Opisthotonos
 - g. Spasticity
 - h. Apnea
 - i. Seizures
 - j. Deafness
 4. Assessment of infant feeding patterns, especially breastfed babies.
 - a. Frequency
 - b. Amount
 5. In the MCU, every 12 hours infants greater than 35 weeks gestations are to be assessed for jaundice by using the Transcutaneous Bili (TCB) meter (JM-103).
 6. In the NICU, jaundice is documented every shift on the nursing flowsheet. Any change in assessment of jaundice will be reported to the physician as identified.
- B. Managing Bilirubin on the Bhutani curve (nomogram)
1. Each TCB measurement is to be plotted on the nomogram according to the age of the infant (in hours).
 2. If at any time the TCB measurement falls into the high intermediate or high risk zone, a serum total bilirubin level will be drawn.
 3. Plot the serum total bilirubin level on the nomogram according to the age of the infant (in hours).
 4. If at any time the serum total bilirubin level falls into the high intermediate or the high risk zone, call the physician with the bilirubin result and risk level.
- C. The nurse must notify the physician of the serum total bilirubin and risk level per nomogram **when the risk level falls in the high intermediate or high-risk zone. Serum total bilirubin levels plotted in the high-risk zone are considered a "critical value"**.
- D. If at any time the TCB measurement falls into the high intermediate or high risk zone, and mother's blood is O+, in addition to a total bilirubin level, an order should be obtained to send cord blood to lab for cord blood work-up (type, Rh, and DAT). Physician to be called STAT if DAT is positive.
- E. If serum total bilirubin risk level is in the high intermediate or high-risk zone, obtain an order for phototherapy and/or neonatal consult for potential NICU transfer (see Phototherapy Policy).

V. USE OF THE TRANSCUTANEOUS BILI METER (JM-103 JAUNDICE METER)

A. Indications for Use

1. Jaundice Meter is to be used on infants >35 weeks gestation pre-phototherapy.
2. Jaundice Meter is **not** to be used on infants for whom phototherapy treatments have been initiated or that have undergone an exchange transfusion

Note

The JM 103 is intended to be a "sequential use" screening device seeking to offer measurement of TcB changes occurring to the infant as hyperbilirubinemia progresses. Documentation of these consecutive readings provides a trend of what is happening with the infant.

B. Daily Operational Procedure

1. Remove JM-103 from the charging base, power OFF if in ON position.
2. Holding down the blue-gray RESET button turn the meter to the ON position. The letters "CHE" appear in the screen, release the RESET button.
3. Open the checker cover located on the rear portion of the charging base. Note the standard checker values are referenced. The L value stands for the long wavelength value and the S value stands for the short wavelength value.
4. To verify proper light output, press the measuring probe firmly onto the checker until it clicks. The display screen will first exhibit the measurement for the L Value (represented by a DOT in the top left corner), and then changes to display the S value estimation. Confirm values fall within the parameters listed on the cover for accuracy in patient readings.
5. Once the verification process is completed, power the meter OFF and back ON to return to normal operating mode.
6. Verification should be performed daily, by the MCU charge nurse, each shift and may be required more frequently with excessive daily use.

C. Set-Up

1. The JM103 allows the Clinician to perform either a single measurement or to take an average reading from 1-5 samples.
2. For a single measurement no setup is required and upon power up the screen will read N-1. VCMC/SPH will do a single measurement every 12 hours.

D. Operation

1. The forehead is the site used for obtaining all measurements.
2. To perform a measurement remove the meter from the base, power ON, the green READY light will illuminate indicating it is ready for use. Press the probe tip of the meter perpendicular (flat) against the infant's skin at the forehead. There will be a flash of white light and the green READY light will temporarily disappear.
3. For a single measurement once the value is displayed, you can power OFF.
4. After completing a measurement on an infant, either place the meter back in the charger or press the RESET key to start the process on another infant.
5. Meter may be left in the ON position in the charger base at all times when not in use.
6. Ensure meter is positioned correctly in charger base with the LCD display facing forward the green charge light on the front of the unit will be illuminated with proper placement.

Note

The JM 103 measurement displayed is a “calculated” bilirubin concentration. It may be different from a total serum lab analysis (TSB). Statistical data has shown that the JM103 is usually within ± 1 standard deviation (1.5mg/dl) and 80-90% of the time within 2 standard deviations of the TSB value.

E. Cleaning

1. Between each infant, wipe down the measuring probe with Sani-wipes.
2. The calibration checker should also be cleaned with Sani-wipes.

VI. REFERENCES

- A. American Academy of Pediatrics Subcommittee on Neonatal Hyperbilirunemia. Neonatal Jaundice and Kernicterus. *Pediatrics*. 2004
- B. Maisels MJ, Ostrea EM. Evaluation of a New Transcutaneous Bilirubinometer. *Pediatrics*. 2004; 113: 1628-1635.
- C. Engle WD, Jackson GL, Stehel EK, Sendelback DM, and Manning MD. Evaluation of a Transcutaneous Jaundice Meter following Hospital Discharge in Term & Near-Term Neonates. *Journal of Perinatology* 2005: 25486-490.