Clinical Standard Operating Procedure (SOP)

BILIRUBIN MONITORING OF INFANTS BY COMMUNITY MATERNITY SUPPORT WORKERS & MIDWIVES

SETTING	Community settings including the home and postnatal clinics
FOR STAFF	Maternity Support Workers and Midwives working in the community
PATIENTS	Neonates over 24 hours old and over 35 weeks gestation

Standard Operating Procedure

To provide a standard operating procedure for bilirubin monitoring including the use of transcutaneous bilirubin meters and serum bilirubin sampling within the community setting by midwives and maternity support workers. This SOP supports, and should be used alongside, the clinical guideline [redacted] in the detection of jaundice in its early stages to prevent kernicterus in newborn infants.

Transcutaneous Bilirubinometer

The Transcutaneous Serum Bilirubinometer is a non-invasive tool which allows the operator to read the bilirubin of the baby quickly and easily. A transcutaneous bilirubinometer can be used in babies from 35 weeks gestation at birth and >24hours of age. The accuracy of transcutaneous bilirubinometers has been adequately demonstrated in term babies (bilirubin less than 250 micromol/litre).

The meter is **not** suitable for use in newborn infants who:

- Are less than 35 week gestational age at birth
- Are more than 14 days old
- Are less than 24 hours old
- Have undergone blood transfusion
- Have undergone phototherapy

The Dräger JM 105 transcutaneous bilirubinometer takes measurements automatically when the probe is gently pressed against the infant skin. It is recommended that measurements are only taken on the infant's sternum.

Flowchart of how to use

1) Clean the tip of the probe with an alcohol swab
2) Press the power switch on – Green “ready” light should illuminate
3) Select MENU, select MEASURE, and press OK – on some meters you may be asked to input patient details – insert baby’s hospital or NHS number to continue

4) Place measuring probe vertically against babies’ sternum.

5) Push probe gently until a click is heard.
6) Wait until the ‘READY’ light illuminates between measurements and repeat a further 2 times – total of 3 measurements taken.
7) The average measured value will appear on the display – Record this value in patient notes and plot on gestation appropriate chart ** Note If value >250 baby will require SBR (serum bilirubin) to be taken
8) Slide power switch to ‘off’ and clean measuring probe with Clinell wipe.
9) Place Jaundice Meter back on the charger unit.

Plotting of Result

Accurate plotting on **gestation appropriate chart** is essential for identification of neonates at need of treatment or further follow up.

Results should be plotted on careflow maternity on the neonate's own bilirubin graph. This allows trends to be analysed by professionals in community and hospital, and ensures the chart is gestation specific.

For guidance on how to input result on careflow maternity see the medway maternity information hub, found within the digital services training hub on connect.

If IT access is not available at time of testing, a gestation specific paper chart can be used to not delay identification of treatment needs.

Charts available are by gestational week: >35 weeks, >36 weeks, >37 weeks, >38 weeks. Charts can be printed from the clinical guideline titled "[redacted]" found within the DMS on connect.

Example: a neonate born at 36+3 weeks should always have results plotted on a >36 weeks chart. A neonate born at 41+1 weeks would be on >38 weeks chart.

Please refer to Neonatal Jaundice Guideline for action of result and follow up plan.

Testing Procedure:

Prepare the Jaundice Meter JM 105 for Use – Perform the Daily Operational Checker Procedure

1. Remove the Jaundice Meter JM-105 from the docking station

2. Press the power switch on

3. Select CHECKER and touch OK to save selection

4. Open the checker lid on the charging unit

5. When the green READY light illuminates, place the tip of the Jaundice Meter perpendicular on the reading checker circle. Press down until you hear a click

6. The display screen shows the "L" (long), "S" (short), and Delta values. The meter must read within the reference values posted under the checker lid. If so, the unit is ready to use. If not, clean the tip and repeat. If values are still out of range, do not use the unit

Appendix 1 – Basic skills checklist for Transcutaneous Bilirubinometer and SBR taking

Maternity support workers must be signed off as competent by a registered midwife who is familiar and practiced in undertaking bilirubin measurements at UHBW prior to use of bilirubinometer and SBR sampling. This signed checklist should be returned to the community midwifery matron for records.

This checklist for bilirubinometer focuses on the Dräger Medical product JM 105 Transcutaneous Bilirubinometer. It is not intended as a substitute for the instructions for use.

Bilirubinometer Competence:	**Self assessment**	**Assessor sign & date**
Perform Daily Check prior to use – ensuring appropriate range for use		
Perform Cleaning procedure prior to use		
Locate and press power switch on		
Ensure correct unit of measurement (micromols/litre)		
Explain where on body reading will be taken		
Demonstrate how to take reading		
Record correctly on age specific chart		
Demonstrate knowledge of associated neonatal jaundice guideline and next steps for follow up of results		
Turn unit off, clean and replace on charging cradle		
Explain signs of jaundice and how you would identify a jaundiced baby		
Explain the information you would provide to parents including signs of worsening jaundice and who they should contact if concerns		

SBR Sampling Competence: Additional Competencies to be signed off prior to SBR taking	**Self assessment**	**Assessor sign & date**
Identify all equipment needed for procedure		
Explain how to request sample on ICE correctly or obtain ICE label		
Explain how you would identify patient		
Explain how you would gain consent from parents		
Demonstrate where you would prick the foot		
Demonstrate correct sampling into bottle		
Explain how and where you would deliver sample		
Explain who will follow up results and how you will communicate this		

Appendix 2 : Actioning of result when Initial Measurement of Transcutaneous Bilirubin is Performed by Maternity Support Worker

- This refers to the **first** test this infant has of bilirubin

Result LESS THAN 250 *and* OVER 50 below treatment line:

- Complete full assessment of baby including feeding pattern and ability/weight if indicated/alertness/behaviour/urine and stool output and document
- Plot measurement on careflow maternity/age-appropriate chart
- Record measurement in handheld and office held notes
- Inform midwife same day of result
- Inform parents of causes of concern and contact numbers to report to
- No further action needed unless worsening jaundice/clinical concerns or prolonged jaundice review required

Result LESS THAN 250 *but* WITHIN 50 below treatment line:

- Complete full assessment of baby including feeding pattern and ability, weight if indicated, alertness, behaviour, urine and stool output - document
- Plot measurement on careflow maternity/age-appropriate chart and document in notes
- Discuss with midwife as soon as possible - telephone if at home visit. Midwife to discuss full clinical picture and ensure parents are given full information re follow up plan, causes for concern with numbers to contact
- Midwife to see baby at earliest opportunity that day - can be at home or in clinic to perform clinical assessment of baby and document plan in hand held notes
- Clearly document in notes all discussions and follow up plan

Result OVER 250 *and/or* ABOVE treatment line:

- Complete full assessment of baby including feeding pattern and ability, weight if indicated, alertness, behaviour, and urine and stool output - document
- Plot measurement on careflow maternity/age-appropriate chart and document in notes
- Discuss with midwife as soon as possible - telephone if at home visit. Midwife to discuss full clinical picture and ensure parents are given full information re follow up plan, causes for concern and numbers to contact
- MSW to take SBR and deliver to the lab – mark as urgent
- MSW to inform midwife to follow up result
- Midwife is responsible for chasing results of SBR and follow up plan
- Midwife to see baby at earliest opportunity that day - can be at home or in clinic to perform clinical assessment of baby and document plan in handheld notes
- Clearly document in notes all discussions and follow up plan

***Example 1**: If TCB result = 200 and treatment line =190, SBR must be taken and midwife informed urgently as this baby will require phototherapy if SBR confirms bilirubin level to be above treatment line.*
***Example 2**: If TCB result 260 and treatment line 350, SBR must be taken as transcutaneous bilirubinometer is not accurate above 250.*

Appendix 3: Taking of repeat bilirubin tests by maternity support worker

For planned repeat tests following a previous result:

A midwife will have already reviewed this baby following initial test as per appendix 2

- It is therefore appropriate for MSW to see the baby and perform repeat TCB or SBR

- TCB should be plotted on careflow maternity to show ongoing trend – an age-appropriate paper chart can be used at time of test if no IT access
- IF SBR is taken this must be communicated with a midwife and it will be the midwife's responsibility to chase and action the result – including plotting on careflow maternity
- **MSW must inform a midwife immediately (by telephone or face to face) in the following scenarios:**
    - Jaundice visibly worsening
    - New clinical concerns – lethargy, poor feeding, poor urine/stool output or any other new or worsening clinical concerns
    - The result of TCB is above treatment line or trending nearer to treatment line than previous result
        - In these circumstances on discussion with midwife - the midwife must instruct the MSW of plan to be relayed to parents and documented and to arrange to see the baby face to face herself at the earliest opportunity that same day – not delaying SBR or hospital admission if necessary. MSW can take SBR if indicated

- <u>If TCB **over** 250 but **more than** 50 below treatment **and** a stable or downwards trend away from treatment line:</u>
    - it is acceptable for MSW to take SBR and for midwife to follow up SBR result

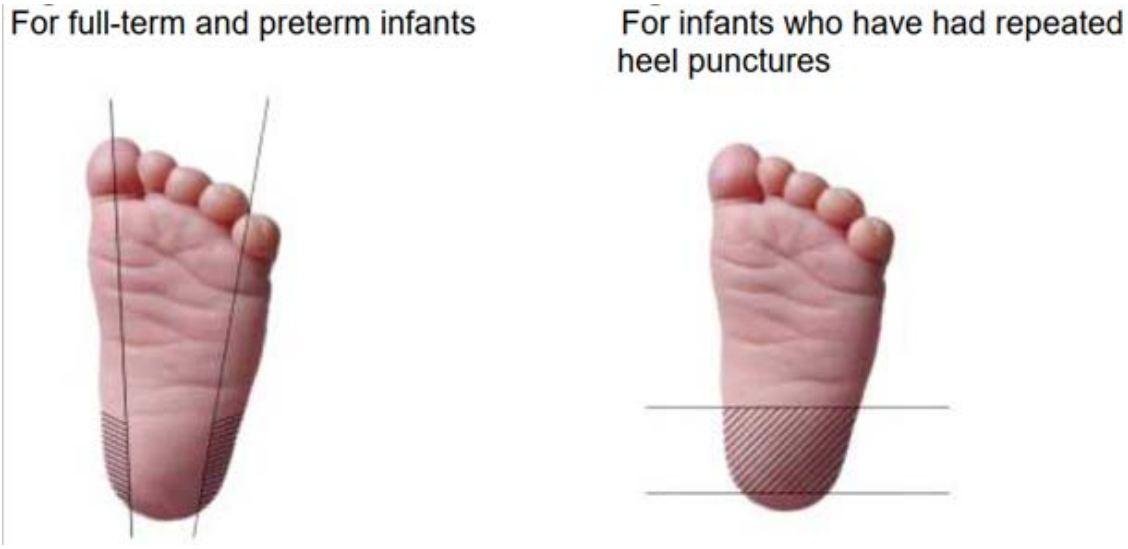
- <u>If TCB less than 250 but **within** 50 below treatment line and a stable or downwards trend away from treatment line:</u>
    - Discuss with midwife and midwife to follow guidance of neonatal jaundice guideline. A midwife should review baby prior to discontinuing bilirubin monitoring if remains within 50 of treatment line

If no plan for repeat bilirubin measurement but baby appears more jaundiced a repeat TCB or SBR should be taken and appendix 2 should be followed

Appendix 4: Procedure for collection of SBR

**** note for infants under care of North Bristol NHS Trust SBRs are not to be taken in community – refer into Southmead where SBR will be taken. Southmead Flow midwife: [redacted]. For Royal United Hospitals Bath infants call: [redacted]**

- Identify the infant – ask parents/carers to confirm name and date of birth
- Explain the procedure to parent / carer and obtain verbal consent
- Ensure heel is as warm as possible prior to procedure
- If appropriate encourage parent/carer to give baby a feed during procedure as provides pain relief to baby
- Wash hands
- Arrange equipment and place on clean tray, wash hands and put on gloves
- Ensure the infant is held securely and comfortably
- Sample the heel from the shaded areas shown below. Avoid posterior curve of the heel



- Clean the baby's heel with plain water using cotton wool/gauze
- Hold heel in circle between thumb and index finger, apply puncture device to the selected area and depress firmly

For infants over 2.5kg use:

For infants under 2.5kg use:

- Gently remove the first drop of the blood with the gauze
- Allow the heel to hang down to assist blood flow
- Do not squeeze the foot in an attempt to increase blood flow
- If the blood flow ceases the congealed blood should be wiped away firmly with cotton wool or gauze
- Drop the blood into the blood bottle – filling to the line marked 400

- If the baby is not bleeding, you will need to make a second puncture. This should be performed on a different part of the same foot or on the other foot
- Once the required amount of blood has been obtained, apply direct pressure to the puncture site with gauze, until bleeding stops
- If needed, apply a spot plaster and remind the parents to remove it in a few hours.
- Discard all sharps immediately into sharps container.
- Secure lid onto bottle and apply ICE label – checking correct patient details with parent/name band.
- Transport sample to laboratory – pod system suitable for use within the hospital. In community settings samples should be hand delivered to the lab at the BRI or at Weston General Hospital (when using Weston ICE). In the community be mindful of careful transportation to minimise risk of a haemolysed sample. Transport samples in an opaque envelope as sun light can affect result

Table A

RELATED DOCUMENTS AND PAGES	Clinical Guidelines: NEONATAL JAUNDICE CHARTS FOR GESTATIONAL AGE [redacted] NEONATAL JAUNDICE [redacted]
AUTHORISING BODY	Postnatal Working Party
SAFETY	There are no unusual or unexpected safety concerns (to staff or patient)
QUERIES AND CONTACT	Practice Education Facilitators (PEF) team for Midwifery. Bleep [redacted]