Royal Cornwall Hospitals
NHS Trust

Transcutaneous Bilirubinometer (TCB) Clinical Guideline

V4.0

April 2025

1. Aim/Purpose of this Guideline

1.1. This guideline gives guidance on bilirubin measurement of the neonate by Transcutaneous Bilirubinometer (TCB) within the community/ hospital setting.

- Reduce the need for invasive and painful blood sampling for determining bilirubin levels.
- Reduce the inconvenience for families in travelling to hospital with new-born babies.
- Babies benefit from timely transfer into hospital for further assessment if treatment level reached or TCB above 250umol.

1.2. This version supersedes any previous versions of this document.

Data Protection Act 2018 (UK General Data Protection Regulation – GDPR) Legislation.

The Trust has a duty under the Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 to ensure that there is a valid legal basis to process personal and sensitive data. The legal basis for processing must be identified and documented before the processing begins. In many cases we may need consent; this must be explicit, informed, and documented. We cannot rely on opt out, it must be opt in.

Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 is applicable to all staff; this includes those working as contractors and providers of services.

For more information about your obligations under the Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 please see the Information Use Framework Policy or contact the Information Governance Team.

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2. The Guidance

2.1. Clinical Indications for TCB:

- TCB screening is recommended after the first 24 hours of life in all visibly jaundiced babies of 35 weeks gestation or greater.
- Babies who are less than 24 hours old must have a blood test performed within 2 hours of jaundice being identified.
- If jaundiced is suspected by either family member or healthcare professional it should be checked with a TCB within 6 hours. It is not acceptable to wait for the next day to have a TCB performed.

2.2. TCB Screening should not be used on:

- Babies **under 35/40** completed weeks gestation.
- Babies who appear Jaundiced **under 24 hours** of life.

- Babies aged **over 14 days**.
- Babies who have received phototherapy. Serum Bilirubin must be used for all subsequent measurements.

2.3. Measuring the TCB.

- Before use, clean the measuring probe with an alcohol wipe.
- Set the power switch to the 'ON' position.
- Wait for n-1 to appear on the display.
- Ensure that the 'Ready' lamp illuminates.
- Place the measuring probe vertically against infant's sternum.
- Avoid any bruises or birth marks.
- Do not press the measuring probe when it is directed toward the infant's or caregiver's eyes.
- Push the measuring probe gently until a click sounds.
- The instrument's lamp flashes momentarily.
- The TCB machine will then flash n-2 and so repeat the process, then n-3 for the third measurement.
- The average of the three measurements will be displayed on the TCB screen.
- Set the power switch to the 'Off' position and return monitor to the TCB charger.

2.4. Documentation of Results.

- Plot (Δ) result on the correct Treatment Threshold chart 1 (please note the different chart for every gestation from 22 weeks to >38 weeks as there is a significant difference in threshold for phototherapy). Get the result double signed by another staff member. Initial that you have checked the result at the bottom of the threshold chart not near the line as this can cause confusion.
- Once chart commenced the baby will remain on this chart for 14 days irrespective of the gestation when you commence chart.

2.5. Refer to the Neonatal SHO (Senior House Officer)/ ANNP (Advanced Neonatal Nurse Practitioner) if:

- TCB measurement over 250 micromol/ litre.
- TCB measurement over the treatment threshold for baby's gestational age.
- If the baby has previously received phototherapy then SBR needs to be undertaken in place of TCB for all subsequent measurements.

- TCB result appears inconsistent with anticipated result or the baby's condition.
- TCB is not available.
- Baby is also unwell, has weight loss or poor feeding.
- If the TCB is above the exchange line then baby needs urgent SBR and should commence phototherapy whilst awaiting the result.
- If the TCB is unrecordably high, then baby needs urgent SBR and should commence phototherapy whilst awaiting the result.

2.6. If results are within acceptable parameters.

- Undertake an infant feeding assessment and document.
- Any concerns undertake a Newborn Early Warning Score (NEWS) assessment.
- Continue with personalised post-natal visit plan.

2.7. Care of TCB machine.

- The upper limit of the TCB meter measurement range is 340 µmol/L (20mg/dl).
- Above this measured level, the display will show "---".
- Store the TCB monitor on the charging unit with the display facing forward.
- Use medicinal alcohol swabs to clean the measuring probe.
- Change battery when battery light is flashing.
- Perform a daily calibration check. If the battery discharges when the monitor is left off the charging base it will take 36 hours to recharge. Check daily the light output of the device and before the first usage in each 24-hour period. If the light check fails, do not use device and report fault immediately to Medical Physics.
- If the instrument is inactive for more than 60 seconds, the background light on the display goes out.

3. Monitoring compliance and effectiveness

Information Category	Detail of process and methodology for monitoring compliance
Element to be monitored	Appropriate use of Transcutaneous Bilirubinometer for babies within the community/hospital setting.
Lead	Neonatal Guidelines Lead.

Information Category	Detail of process and methodology for monitoring compliance
Tool	Audit using Word/ Excel document of the following questions: • Was TCB performed under 6 hours of a review where jaundice is suspected? • Was the baby aged between 24 hours and 14 days? • Was the baby over 35 weeks gestation? • Were the results documented correctly? • Was the follow-up management of the baby appropriate?
Frequency	As dictated by audit findings.
Reporting arrangements	All Community Midwives.
Acting on recommendations and Lead(s)	Newborn Care Lead.
Change in practice and lessons to be shared	Required changes to practice will be identified and actioned within an agreed time frame and shared via Maternity Patient Safety Newsletter/ Neonatal POP email.

4. Equality and Diversity

4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the Equality Diversity And Inclusion Policy or the Equality and Diversity website.

4.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.

Appendix 1. Governance Information

Information Category	Detailed Information
Document Title:	Transcutaneous Bilirubinometer (TCB) Clinical Guideline V4.0
This document replaces (exact title of previous version):	Transcutaneous Bilirubinometer (TCB) Clinical Guideline V3.0
Date Issued/Approved:	April 2025
Date Valid From:	April 2025
Date Valid To:	April 2028
Directorate / Department responsible (author/owner):	Sarah Tabrett; Advanced Neonatal Nurse Practitioner
Contact details:	01872 252668
Brief summary of contents:	This guideline gives guidance on bilirubin measurement of the neonate by Transcutaneous Bilirubinometer (TCB) within the community setting.
Suggested Keywords:	TCB, Bilirubin, serum, jaundice, neonatal, baby, new, born, community, midwife, transfer, NEWS.
Target Audience:	**RCHT:** Yes **CFT:** No **CIOS ICB:** No
Executive Director responsible for Policy:	Chief Medical Officer
Approval route for consultation and ratification:	Neonatal Audit and Guidelines group
Manager confirming approval processes:	Caroline Chappell
Name of Governance Lead confirming consultation and ratification:	Tamara Thirlby
Links to key external standards:	None required
Related Documents:	G30(P) Transcutaneous bilirubin levels >250µmol in the community: feasible and safe pathway with community midwives obtaining heel prick samples for serum bilirubin | Archives of Disease in Childhood.

Information Category	Detailed Information
	Find guidance | NICE. Transcutaneous bilirubinometry is not influenced by term or skin color in neonates - ScienceDirect.
Training Need Identified?	Yes, operational use of the bilirubinometer
Publication Location (refer to Policy on Policies – Approvals and Ratification):	Internet and Intranet
Document Library Folder/Sub Folder:	Clinical/ Newborn Care

Version Control Table

Date	Version Number	Summary of Changes	Changes Made by
February 2016	V1.0	Initial issue.	Teresa Phillips.
November 2016	V1.1	Point 2.2 changed from previous TCB monitoring to received phototherapy and flow chart added as appendix.	Judith Clegg, ANNP. Sarah-Jane Pedler, Practice Development Midwife.
January 2019	V2.0	Full review of guideline. Amendment to Guideline Aim.2.5 New referral instruction and criteria.	Judith Clegg, ANNP. Trudie Roberts, Community Matron.
December 2021	V3.0	Update on indications for serum bilirubin. Updated governance within newborn care.	Sarah Tabrett; ANNP and Chris Bell; Neonatal Consultant.
April 2025	V4.0	Section 2.1 updated re. suspicion of jaundice. Section 2.3 updated re. avoiding bruising or birth marks and averages of measurements. Section 2.4 updated re. double signing and initialling documentation.	Sarah Tabrett; ANNP.

All or part of this document can be released under the Freedom of Information Act 2000.

All Policies, Strategies and Operating Procedures, including Business Plans, are to be kept for the lifetime of the organisation plus 6 years.

This document is only valid on the day of printing.

Controlled Document.

This document has been created following the Royal Cornwall Hospitals NHS Trust The Policy on Policies (Development and Management of Knowledge Procedural and Web Documents Policy). It should not be altered in any way without the express permission of the author or their Line Manager.

Appendix 2. Equality Impact Assessment

Section 1: Equality Impact Assessment (EIA) Form

The EIA process allows the Trust to identify where a policy or service may have a negative impact on an individual or particular group of people.

For guidance please refer to the Equality Impact Assessment Policy (available from the document library) or contact the Equality, Diversity, and Inclusion Team rcht.inclusion@nhs.net

Information Category	Detailed Information
Name of the strategy / policy / proposal / service function to be assessed:	Transcutaneous Bilirubinometer (TCB) Clinical Guideline V4.0
Directorate and service area:	Neonatal
Is this a new or existing Policy?	Existing
Name of individual completing EIA (Should be completed by an individual with a good understanding of the Service/Policy):	Neonatal Audit and Guidelines Group
Contact details:	01872 252668

Information Category	Detailed Information
1. Policy Aim - Who is the Policy aimed at? (The Policy is the Strategy, Policy, Proposal or Service Change to be assessed)	To provide guidance on the assessment of serum bilirubin levels using a Transcutaneous Bilirubinometer Monitor within the community setting.
2. Policy Objectives	Early identification and appropriate management of a baby that appears jaundiced within the community setting.
3. Policy Intended Outcomes	Reduction of hyperbilirubinemia-induced neurological damage (Kernicterus) in the neonate. Reduction of unnecessary hospital admissions leading to improved patient experience.
4. How will you measure each outcome?	Compliance Monitoring Tool.
5. Who is intended to benefit from the policy?	All new-born babies within the community setting.

Information Category	Detailed Information
6a. Who did you consult with? (Please select Yes or No for each category)	• Workforce: Yes • Patients/ visitors: No • Local groups/ system partners: No • External organisations: No • Other: No
6b. Please list the individuals/groups who have been consulted about this policy.	**Please record specific names of individuals/ groups:** Neonatal Audit and Guidelines Group.
6c. What was the outcome of the consultation?	Approved.
6d. Have you used any of the following to assist your assessment?	**National or local statistics, audits, activity reports, process maps, complaints, staff, or patient surveys:** No.

7. The Impact

Following consultation with key groups, has a negative impact been identified for any protected characteristic? Please note that a rationale is required for each one.

Where a negative impact is identified without rationale, the key groups will need to be consulted again.

Protected Characteristic	(Yes or No)	Rationale
Age	No	
Sex (male or female)	No	
Gender reassignment (Transgender, non-binary, gender fluid etc.)	No	
Race	No	Any information provided should be in an accessible format for the parent/ carer needs- i.e., available in different languages if required/ access to an interpreter if required.

Protected Characteristic	(Yes or No)	Rationale
Disability (e.g. physical or cognitive impairment, mental health, long term conditions etc.)	No	Those parent/ carer with any identified additional needs will be referred for additional support as appropriate- i.e., to the Liaison Team or for specialised equipment. Written information will be provided in a format to meet the family's needs e.g., easy read, audio etc.
Religion or belief	No	All staff should be aware of any beliefs that may impact on the decision to treat and should respond accordingly.
Marriage and civil partnership	No	
Pregnancy and maternity	No	
Sexual orientation (e.g. gay, straight, bisexual, lesbian etc.)	No	

A robust rationale must be in place for all protected characteristics. If a negative impact has been identified, please complete section 2. If no negative impact has been identified and if this is not a major service change, you can end the assessment here.

I am confident that section 2 of this EIA does not need completing as there are no highlighted risks of negative impact occurring because of this policy.

Name of person confirming result of initial impact assessment: Neonatal Audit and Guidelines Group.

If a negative impact has been identified above OR this is a major service change, you will need to complete section 2 of the EIA form available here:
Section 2. Full Equality Analysis.