1. Introduction and Who Guideline applies

This guideline applies to all staff working in the maternity unit and community.

NICE clinical guideline 98: Jaundice in Newborn babies under 28 days was published in May 2010 and updated in 2020.

This guideline:
- Aligns with the national NICE guidelines
- Is written for hospital and community based staff
- Clarifies decision tool flow charts for hospital and community staff.

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2. Guideline Standards and Procedures

- All babies identified with jaundice in both hospital and community setting please follow the flow chart on page 2.
2.1 Use of Transcutaneous Bilirubinometers (TcB) in all areas for babies ≥35 weeks gestation and over 24 hours

Assessment requested for possible jaundice/parental request for assessment

YES

Is baby otherwise well?

YES

Does the baby look visibly jaundiced?

YES

- Check jaundice level with bilirubinometer
  (If baby has received phototherapy before, needs serum bilirubin so refer to ANNP clinic)
- Use average of 3 readings & refer to NICE treatment thresholds
- Review feeding
  Any baby with a TCB reading of ≥250mmols OR ‘no’ reading on the bilirubinometer must have a serum bilirubin

TcB above treatment level

NO TcB available

TcB below treatment level

NO

Is the baby over 14 days old? (>21 days old if born at <37 weeks)

YES

Refer to prolonged jaundice clinic at Paediatric Day Unit for prolonged jaundice screen (0116 2586317)

Babies at higher risk of significant jaundice
- Maternal antibodies predisposing to haemolysis
- Previous baby needing exchange transfusion
- Jaundice in first 24 hours (discuss with Paediatric Registrar)
- Baby very bruised

If a baby is referred for a TcB or serum bilirubin measurement and does not attend notify the community midwifery office on 01162584834 or email uhl-tr.communitymidwifeoffice@nhs.net

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2.2 Assessment of jaundiced babies

- Please use this guidance in conjunction with the NICE guideline (link in references).

- If a baby with a gestational age of ≥35 weeks and who is over >24 hours old looks jaundiced check using a transcutaneous bilirubin (TcB) level (use of Bilirubinometer is covered on page 10) unless they have previously received phototherapy in which case arrange a serum bilirubin.

- If in the process of a telephone assessment by the community midwife or if parents are concerned about a baby appearing jaundiced conduct a full face to face clinical assessment. (see page 7 for full details)

- If there are additional clinical concerns about babies on the post-natal wards who are otherwise under midwifery led care, these babies should be discussed with the neonatal team. If no other concerns follow the midwifery led jaundice pathway (flow chart page 2 and Table 1).

- If the baby is over 24 hours of age and this is the first time identifying jaundice always conduct a TcB with your overall assessment.

- TcB measurements should be plotted on the appropriate treatment threshold chart. (Examples on pages 12 to 16). Plot results with each block representing 6 hours in age and time of birth written at point '0'.

- A copy of the bilirubin chart should be sent out with baby on discharge to the community if a bilirubin was done in hospital, this should also be documented on electronic records discharge.

- Charts for each gestation for use in the community can be photocopied from template at base office.

- It is important to note that the flow chart on page 2 uses treatment thresholds based on the NICE treatment threshold charts. Note that the threshold charts are gestational age specific.

- 50 micromols is 5 small boxes, so >50micromol below the treatment line is >5 small boxes away from the treatment line.

- If a transcutaneous bilirubinometer is not available arrange a serum bilirubin

- If a Bilirubinometer gives a reading level of ≥250 micromol/litre, or a reading of zero arrange a serum bilirubin; be aware that if no reading is given the bilirubin level may be very high. Both readings require clarification with SBR due to the relative inaccuracy of the Bilirubinometer at high levels (≥250 micromol/litre) as per both NICE and manufacturer’s guidance.

- Use serum bilirubin measurement in babies receiving phototherapy. Babies that have previously received phototherapy are not candidates for TCB.
• If a baby appears jaundiced and has previously received phototherapy they will continue to appear jaundiced for several days following treatment. If there are ongoing concerns about jaundice following phototherapy treatment, further measurements should be by SBR.

• Babies in the community who need to be assessed and are unwell should be referred to Paediatric ED via the Paediatric registrar (contact - 07960 873483)

• Babies in the community who are otherwise well but need to be assessed can be referred to the ANNP clinic Mon-Fri 10am-5pm (contact - 07779 556 441) Babies discharged from ANNP clinic will have documented discharge plans provided.

• Babies who did not need phototherapy but were close to treatment levels may receive up to 4 further reviews by the ANNP clinic before being discharged with a plan around feeding and follow-up if required.

• Babies with a gestational age of ≥37 weeks who are visibly jaundiced on day 14, and babies with a gestational age of <37 weeks with jaundice lasting more than 21 days will be referred to the prolonged jaundice clinic directly without the need for a TcB.

### 3. Education and Training

• Awareness of babies at higher risk of significant jaundice
• General assessment of neonatal jaundice
• Plotting of bilirubin results on appropriate treatment threshold graph
• Training provided on HCSW induction and annual update as well as face to face sessions if required with regard to all aspects.
• Training for midwives and support staff on essential to job role training day
• To raise awareness of appropriate escalation for further testing and treatment.
• To raise awareness of the signs of Bilirubin Encephalopathy
• Completion of annual jaundice assessment

### 4. Monitoring Compliance

<table>
<thead>
<tr>
<th>What will be measured to monitor compliance</th>
<th>How will compliance be monitored</th>
<th>Monitoring Lead</th>
<th>Frequency</th>
<th>Reporting arrangements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competence in assessing TCB</td>
<td>By line manager</td>
<td>N/A</td>
<td>As required</td>
<td></td>
</tr>
<tr>
<td>Competence in plotting results on graph</td>
<td>By line manager</td>
<td>N/A</td>
<td>As required</td>
<td></td>
</tr>
<tr>
<td>Completion of self-assessment competency</td>
<td>By line manager</td>
<td>N/A</td>
<td>As required</td>
<td></td>
</tr>
</tbody>
</table>
5. References

- https://www.nice.org.uk/guidance/cg98

- Treatment threshold graphs available for download at: https://www.nice.org.uk/guidance/cg98/resources/treatment-threshold-graphs-excel-544300525 press the tab at the bottom that specifies treatment graphs.

- Community threshold graphs for recording TCB templates available from team leads for photocopying.

6. Key Words

Physiological jaundice of the newborn, Assessment of neonatal jaundice, Transcutaneous bilirubin, Serum bilirubin. Treatment threshold charts, Referral pathway for newborn jaundice.

The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs. As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

<table>
<thead>
<tr>
<th>Contact and review details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guideline Lead (Name and Title)</td>
</tr>
<tr>
<td>H Field, Clinical Educator</td>
</tr>
<tr>
<td>Details of Changes made during review: V3 December 2021</td>
</tr>
<tr>
<td>Clarified clinical circumstances when SBR is recommended rather than TCB</td>
</tr>
<tr>
<td>Changed review action from ‘repeat next morning’ to repeat within 18 hours/first available appointment next day in cases babies presenting with jaundice 35-37/risk factors when previous TcB ≤50 of treatment level</td>
</tr>
<tr>
<td>Clarified actions to be taken when jaundice continues following initial treatment/follow-up</td>
</tr>
<tr>
<td>Clarified that consideration should be taken to the rate of rise in of levels in relation to treatment line</td>
</tr>
<tr>
<td>Added consideration when assessing skin colour for jaundice in babies from black, Asian &amp; ethnic minority backgrounds</td>
</tr>
<tr>
<td>Added link to NICE treatment threshold graphs</td>
</tr>
<tr>
<td>ANNP clinic times changed from 09:00-17:00 to 10:00-17:00</td>
</tr>
</tbody>
</table>

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Table 1: When does a TcB need repeating in the community?

<table>
<thead>
<tr>
<th>Assessment number</th>
<th>Gestation</th>
<th>Amount Bilirubin is below treatment threshold</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Community reading</td>
<td>≥38 weeks</td>
<td>≤ 50</td>
<td>Repeat within 24 hours or 18 hours/first available appointment next day if risk factors present</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 50</td>
<td>Repeat not needed</td>
</tr>
<tr>
<td></td>
<td>35-37 completed weeks</td>
<td>≤ 50</td>
<td>Repeat within 18 hours/first available appointment next day</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 50</td>
<td>Repeat within 24 hours or 18 hours/first available appointment next day if risk factors present</td>
</tr>
<tr>
<td>2nd Community reading</td>
<td>≥38 weeks</td>
<td>≤ 50</td>
<td>Repeat within 24 hours or 18 hours/first available appointment next day if risk factors present</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 50</td>
<td>Repeat not needed</td>
</tr>
<tr>
<td></td>
<td>35-37 completed weeks</td>
<td>≤ 50</td>
<td>Repeat within 18 hours/first available appointment next day</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 50</td>
<td>Repeat not needed</td>
</tr>
<tr>
<td>3rd Community reading</td>
<td>Any</td>
<td>Below treatment threshold</td>
<td>Result still &lt; treatment level and baby well - repeat reading if visibly jaundiced and review on Day 14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Advise parents to make contact if they have any concerns prior to this</td>
</tr>
</tbody>
</table>

- Any baby with jaundice in the first 24 hours needs to be discussed with the Paediatric registrar and referred via the single front door or referred to duty team in hospital, these babies require an urgent SBR
- Any baby with jaundice levels above treatment level needs to be referred to the ANNP clinic or Paediatric Registrar (out of hours) following a face to face assessment
- ANNP clinic runs Mon-Fri 10am-5pm, outside these times referral go via the single front door
- Consider previous jaundice levels when making your assessment and assess the rate of rise in relation to treatment levels and consider how rapidly levels are likely to rise. Plot on the NICE threshold chart and contact ANNP or Paediatric Registrar (outside of ANNP clinic hours) if concerned.
- Conduct a full clinical assessment (page 7) if either you or baby's parents have concerns
- Be aware of risk factors that might make bilirubin levels rise faster than usual

If unsure what to do at any stage discuss with ANNP
Face to Face Clinical Assessment of Neonatal Jaundice

Take a full history from parents asking open ended questions on the following:

- Feeding history: does the baby wake spontaneously for feeds, how long does the baby feed for, does baby suck consistently, how long does the baby sleep between feeds, how many feeds has the baby taken in the last 24 hours.

- Elimination history: Voids - frequency in the last 24 hours and colour. Stools – frequency and colour

- Neurological state - general alert state and tone, visual assessment of baby’s colour.

  Awareness of the signs of Bilirubin Encephalopathy:
  - Listlessness or lack of tone
  - Difficulty waking baby
  - High-pitched crying
  - Poor sucking or feeding
  - Backward arching of the neck and body
  - Fever

- Check the baby’s skin in bright and preferably natural light and observe the baby when naked, observe colour and how far down the body you can see any change in colour. Consideration should be made when assessing babies from black, Asian and ethnic minority backgrounds.

- Consider any risk factors

- Examine the sclera and gums, and press lightly on the skin to check for signs of jaundice in ‘blanched’ skin (NICE 2020).

- Educate parents in what to look for with regards to worsening jaundice - ensure they know to keep baby well hydrated by initiating and encouraging early, regular feeds – this may include waking a sleepy baby to feed and stimulating the baby to ensure frequent feeding;

- Explain about observing the baby for signs of lethargy.

- Do not advise putting baby in the sunlight

- If the baby is less than 24 hours old refer in for Serum Bilirubin within 2 hours

- If the baby is over 24 hours of age and this is the first time identifying jaundice always conduct a TCB with your overall assessment.
Dear Doctor/Clinician,

As per UHL guidelines I am referring this____ day old baby to you

Birth Weight:________ Kg

There were born (circle)
Preterm (<30 weeks), Preterm (30-33 week), Preterm (34-36 week), Term (37+ weeks)

Observations

Temp: Heart rate: Resp Rate:

Urine: Bowels:

Behaviour (circle) : Floppy Jittery Irritable Appropriate

Feeding (circle): Breast Formula Mixed

They are presenting with (Check all that apply)

- Weight Loss

Today’s weight..................  % loss................

- Jaundice

Transcutaneous bilirubin level (TCB): ............................................

Thank you for seeing this baby,

Yours sincerely,

Sign........................................ Print......................................... Midwife / MCA

Contact Number........................................................................
Using the Drager JM-103 Transcutaneous Bilirubinometer

**Preparation**
- Ensure bilirubinometer is charged
- Complete once daily light check
- Ensure measurements are in umol/l

**Power light on, battery indicator not low**
- Press ‘on’ and ‘reset’ buttons simultaneously for 5 seconds.
- Put meter into light check area on stand. Check the 2 light readings are in normal range.
- Record result
- Press ‘on’ and ‘reset’ buttons simultaneously for 15 seconds to change from mg/dl to umol/l

**Use**
- Check probe is Clean
- Set to average Of 3 readings
- Press probe 3 times on forehead or sternum
- Record reading in umol/l
- Follow flow chart

**Probe can be cleaned with an Clinell wipe. Clean before each patient use.**
- Switch on. Press ‘reset’ for 5 seconds, wait until display says n-3 & release ‘reset’
- Avoid bruised or very Hairy/downy skin

**Reset**
- Clean probe
- Recharge
- Store safely

**Probe can be cleaned with a Clinell wipe**
- Recharge by replacing on stand. Plug stand in.
Transcutaneous Bilirubin concentration measurement

Competency Statement – Self Assessment
Proceed with caution after advice/guidance from a trained user

Surname: 
Forename(s): 
Title (Mr/Mrs/Miss/etc) Assignment number:

Job Title/Designation:
Directorate/ CBU/ Team

In order to become competent in the monitoring of transcutaneous bilirubin concentration measurement you should read the product manual, familiarise yourself with the UHL standard operating procedure for Jaundice in the newborn and receive practical instruction from a competent person. Self-verification of competence is undertaken by assessment against the following statements:

These statements are designed to indicate competence to use this device. Responsibility for use remains with the user so if you are in any doubt regarding your competence to use this device you should speak to your Team Lead.

Carry out an initial assessment. You must be able to answer “Yes” to all the questions before considering yourself to be competent. Please tick ( ) all the appropriate boxes. If you are not competent, instigate learning and then repeat self-verification.

Questions to ask yourself: 

Are you safe using this device? Can you: 

Please tick

1. Identify clinical application for this device? O O
2. Identify when the device is not to be used? O O
3. Explain how to safely store the device? O O
4. Demonstrate how the device’s calibration is checked and the frequency? O O
5. Explain what pre-use safety checks/precautions are required? O O
6. Explain the importance of battery life and charging/recharging? O O
7. Explain the required unit of measurement? O O
8. Explain how the device is cleaned prior to use? O O
9. Explain the number of average measurements required? O O
10. Demonstrate how to take a reading on a baby? O O
11. Explain error messages and action needed? O O
12. Demonstrate how to plot the results on the appropriate chart? O O
13. Act appropriately on results? O O
14. Explain how to decontaminate the device? O O
15. Explain how to report any faults on the device? O O

Statement: I certify that I am aware of my professional responsibility for continuing professional development and that I realise I am accountable for my actions. With this in mind, I make the following statement:

I am competent to use the product without further training.

Signature: Date:

Signature of Manager: Date:

To sign on receipt of completed competency sheet.

Ensure that your Manager has seen and signed this form, taken a copy for your personal file and send a copy to the women’s and children’s education department.
NICE Treatment threshold graphs
( Link- https://www.nice.org.uk/guidance/cg98/resources)
Treatment threshold graph for babies with neonatal jaundice

Baby's name ___________________________ Date of birth ___________________________

Hospital number ___________ Time of birth ______ Direct Antiglobulin Test ______

Shade for phototherapy ___________ Baby's blood group ___________ Mother's blood group ___________

[Graph showing total serum bilirubin levels over days from birth.]

Click below and choose gestation

>=38 weeks gestation

Multiple

Single

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