Ashford and St. Peter's Hospitals
NHS Foundation Trust

Neonatal Jaundice

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Guideline History		
Date	**Comments**	**Approved By**
November 2021	**New guideline**	
February 2024	**Reviewed**	

Patients first • Personal responsibility • Passion for excellence • Pride in our team

Contents

1. Introduction

- Neonatal Hyperbilirubinemia (jaundice) is very common and affects approximately 50% of full term infants and 80% of preterm infants in the first three days of life. It accounts for up to 75% of all hospital readmissions in the first week after birth.

- Jaundice is a sign of elevated levels of bilirubin in the blood. The baby presents with a yellowish appearance resulting from the accumulation of bilirubin in the skin, mucous membranes and conjunctiva.

- Clinical recognition and assessment of jaundice can be difficult, particularly in babies with darker skin tones. Treatment varies depending on the level of hyperbilirubinemia, taking into account the postnatal age and the gestational age of the baby at birth.

2. Background

- Hyperbilirubinemia occurs when there is an imbalance between bilirubin production, conjugation and elimination. There are two different types of jaundice-'Pathological' and 'Physiological'.

- The most common type of jaundice affecting neonates though is physiological. This is a result of breakdown of red blood cells (RBC) and haemoglobin. Unconjugated bilirubin binds to albumin and is transported to the liver where it is converted to conjugated bilirubin. Conjugated bilirubin is water soluble and able to be eliminated via urine and faeces. Unbound unconjugated bilirubin is lipid soluble and can cross the blood-brain barrier.

- Pathological jaundice is that which is considered to be outside of the normal process such as that which arises within 24 hours after birth or after 14 days of age. It is as a result of factors which interfere with the usual processes involved in bilirubin metabolism such as in the case of blood incompatibilities or metabolic disorders.

3. Types of Jaundice

- **Early** (< 24 hrs), always pathological and usually due to the following:
  - Rhesus isoimmunisation
  - ABO and other blood group incompatibilities
  - Infection e.g. Sepsis - hepatitis
  - Rarer causes of Haemolysis e.g. (red cell enzyme defects & red cell membrane defects)
- **Normal** (>72 hrs), very common occurrence and can be subdivided into:
  - Physiological - Uncomplicated
  - Physiological - Complicated
- **Prolonged Neonatal Jaundice** lasting more than 14 days (term) or 21 days (preterm)

Bilirubin encephalopathy is a neurological condition that occurs with high risk if:

- A serum bilirubin level greater than 340 micromole/litre in babies with a gestational age of 37 weeks or more
- A rapidly rising bilirubin level of greater than 8.5 micromole/litre per hour
- Illnesses : Hypoxia – acidosis – sepsis – hypothermia – hypoalbuminemia
- Clinical features of acute bilirubin encephalopathy
  - Early signs : Lethargy, Hypotonia, Poor feeding
  - Arching of head, neck and back (opisthotonia)
  - Altered tone and seizures

4. Investigations

- Detailed history is recorded in Badger net highlighting the following points:

- Maternal blood group and antibody status
- Baby's blood group and direct antibody test (DAT) if available
- Feeding history
- Colour of stools/urine
- Neonatal vitamin K administration
- Onset of neonatal jaundice
- Antenatal history
- Any risks for antenatal acquired infections
- Family history (any history of splenectomies or severe jaundice)

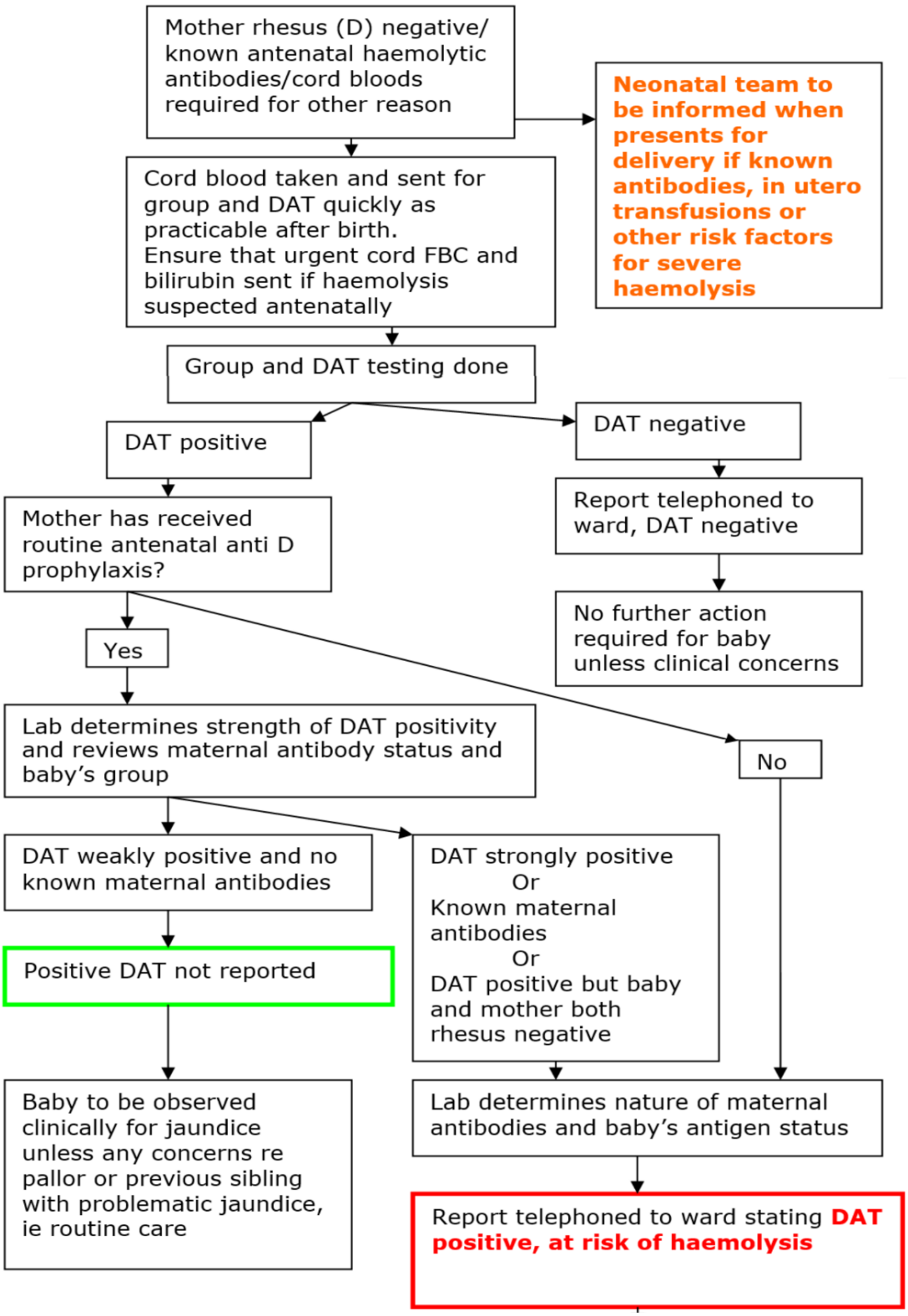
- Transcutaneous bilirubinometry (TCBR) can be used as an immediate screening test on infants above 35 weeks gestation who appear jaundiced after 24 hours of age.

- SBR to be undertaken if the TCBR shows a value of within 50 µmol/L of the threshold for the relevant phototherapy threshold for the particular baby.

- The following investigations should be considered if suspected pathological jaundice:

  - Blood Group - DAT
  - Full blood count (FBC) - Blood Film - Reticulocyte Count
  - Blood glucose-6-phosphate dehydrogenase level, taking account of ethnic origin
  - Liver function test (LFT) with split serum bilirubin - Urea and electrolytes
  - Investigations for sepsis in unwell babies if clinically indicated

5.0 Approach to maternal haemolytic antibodies



5.1 JAUNDICE MANAGEMENT POSTNATAL WARD AND COMMUNITY

Maternity teams start babies on day 0 on DOB/ NICU start babies on day 1 DOB irrespective of time of day – the following charts relates to maternity classification.

Well Term Baby PREVENTION

Keep warm - Skin to skin

Responsive feeding **PLUS** additional hand expressed colostrum between breastfeeds from birth - 72 hours

Check effective feeding before discharge:
Breastfeed Observation Checklist
Feeding assessment

Documented management plan - Documented feeding plan

Well, Term baby Bobble pack explained to parents

Visual jaundice check before discharge

VISIBLE JAUNDICE WITH 24 HRS REQUIRES AN IMMEDIATE SBR CHECK

Highlight additional risk factors for jaundice:

- < 38 weeks gestation
- Previous sibling requiring phototherapy
- Exclusive breastfeeding

TCBR for all babies > 24hours prior to discharge

VISIBLE JAUNDICE

Check the naked baby in bright and preferably natural light

Examine the sclerae and gums, and press lightly on the skin to check for signs of jaundice in 'blanched' skin.

Check TBR if visible jaundice identified.

FEEDING ASSESSMENT CRITICAL

Check SBR within 6hrs if TBR above 250

ADVISE ADDITIONAL BREASTMILK BETWEEN FEEDS

COMMUNITY VISIT DAY 2/3 and DAY 5

Feeding assessment
Breastfeed observation checklist
D5 Weight check

TCBR for all babies discharged from PNW @< 24hours, or for babies discharged from other hospitals, on 1st community visit

5.2

Vulnerable Baby PREVENTION

WARMS - Skin to skin

Modified responsive feeding = **PLUS** additional hand expressed colostrum after **EVERY** breastfeed from at least birth – 72 hours
Breast pump to stimulate and maximise lactation from birth

Check effective feeding before discharge:
Breastfeed Observation Checklist
Feeding assessment

Documented feeding plan - Documented management plan

Vulnerable baby bobble pack explained to parents

VISIBLE JAUNDICE WITH 24 HRS REQUIRES AN IMMEDIATE SBR CHECK

D3 (> 72 hours) weight check and TCBR check before discharge

JAUNDICE CHECKS

Daily check the naked baby in bright and preferably natural light

Examine the sclerae and gums, and press lightly on the skin to check for signs of jaundice in 'blanched' skin.

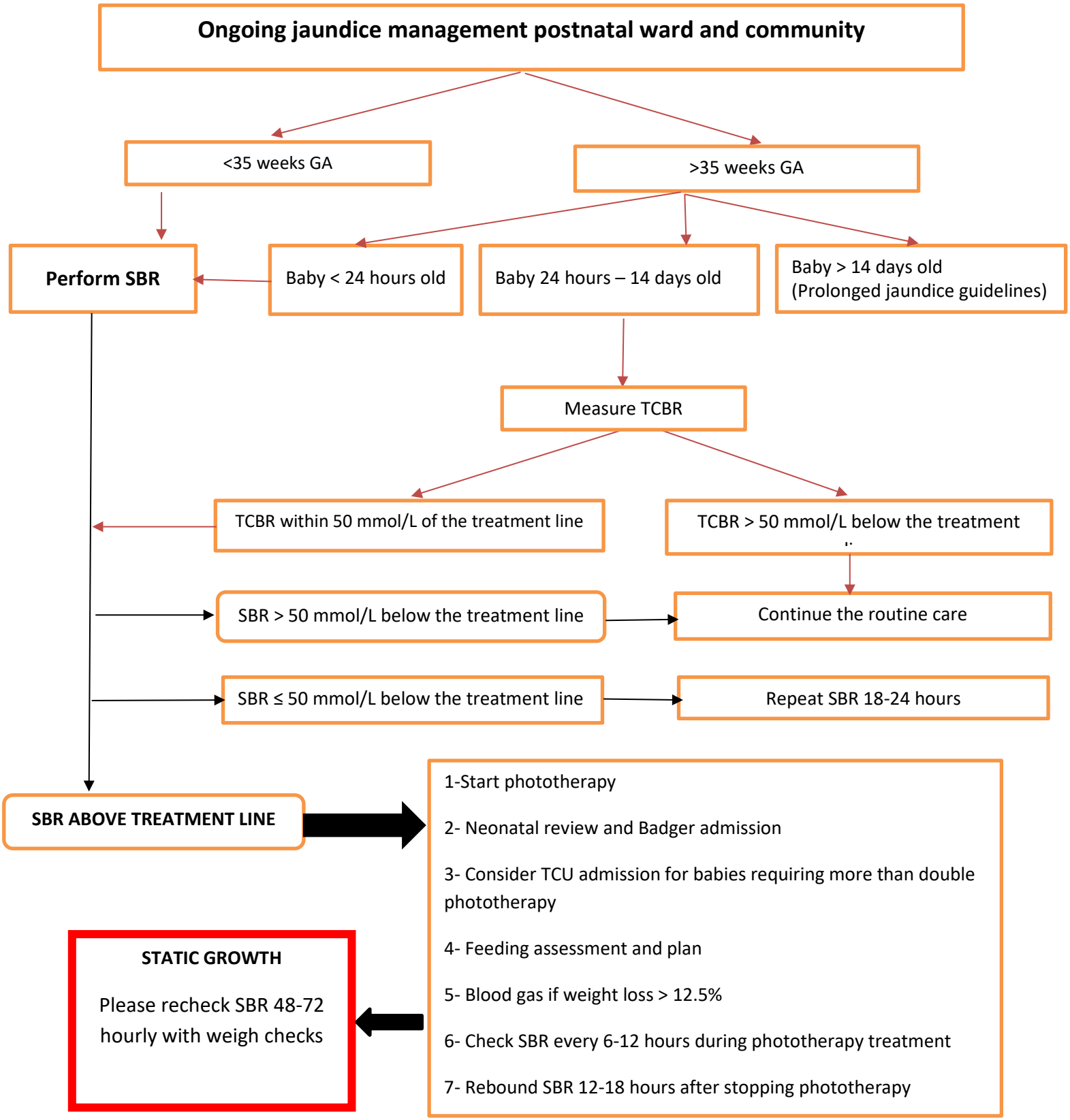
Check TBR if visible jaundice identified.
(SBR check for all babies <35 weeks)
Escalate babies with raised TCBR/ SBR to Neonatal SHO/ ANNP for **ongoing management plan (overleaf)**

FEEDING ASSESSMENT/ FEEDING PLAN CRITICAL

COMMUNITY VISIT DAY 5

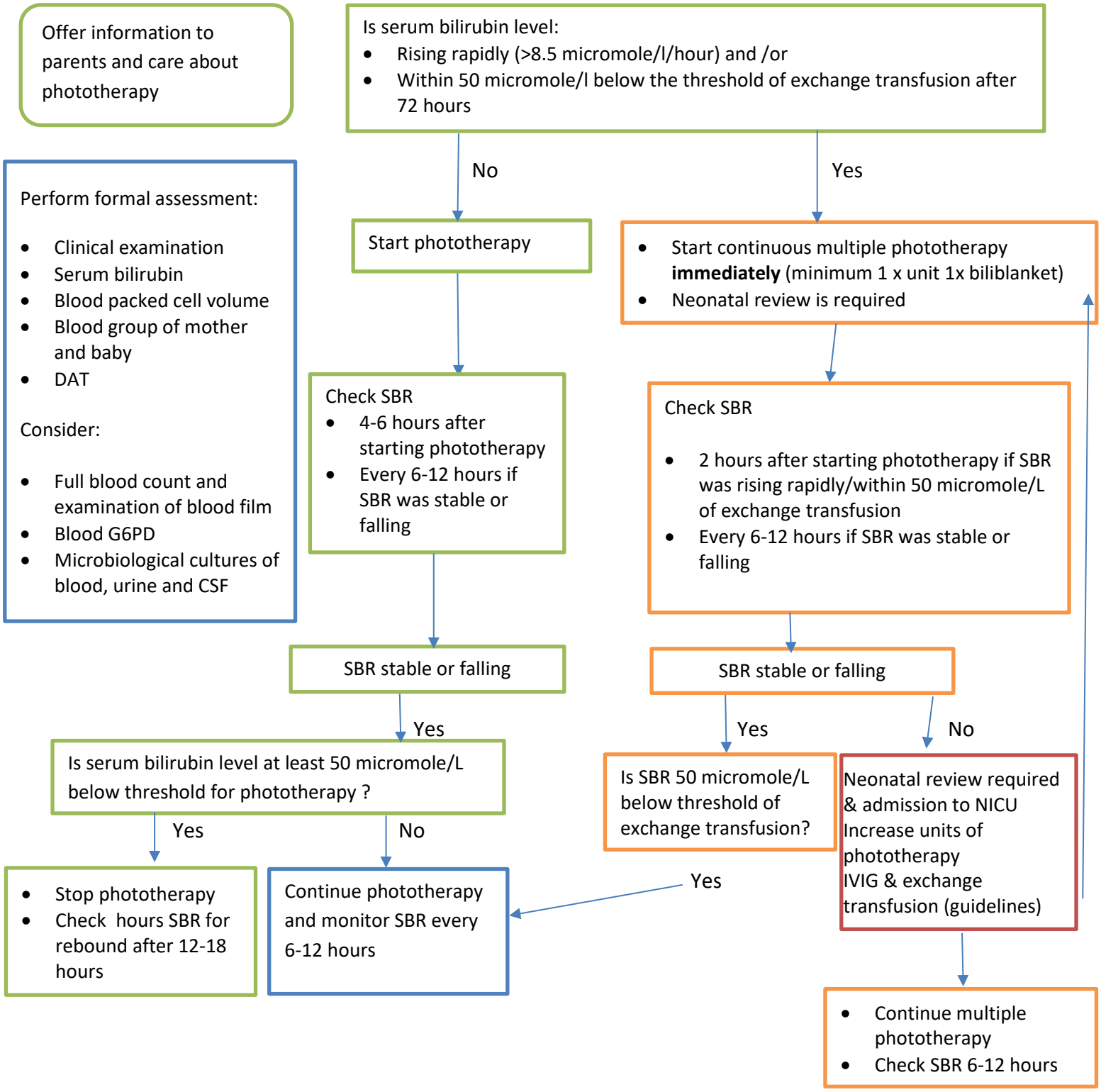
Feeding assessment
Breastfeed observation checklist
D5 Weight check
TCBR check

5.3


Ongoing jaundice management postnatal ward and community
<35 weeks GA
>35 weeks GA
Perform SBR
Baby < 24 hours old
Baby 24 hours – 14 days old
Baby > 14 days old
(Prolonged jaundice guidelines)
Measure TCBR
TCBR within 50 mmol/L of the treatment line
TCBR > 50 mmol/L below the treatment
SBR > 50 mmol/L below the treatment line
Continue the routine care
SBR ≤ 50 mmol/L below the treatment line
Repeat SBR 18-24 hours
SBR ABOVE TREATMENT LINE
1-Start phototherapy
2- Neonatal review and Badger admission
3- Consider TCU admission for babies requiring more than double phototherapy
4- Feeding assessment and plan
5- Blood gas if weight loss > 12.5%
6- Check SBR every 6-12 hours during phototherapy treatment
7- Rebound SBR 12-18 hours after stopping phototherapy
STATIC GROWTH
Please recheck SBR 48-72 hourly with weigh checks

5.4

Phototherapy NICU review pathway



6. Supporting References

1. NICE (2010) Neonatal Jaundice. National institute for health and clinical excellence. www.nice.uk/guidance/CG98 NICE (2016) Addendum to NICE (2010) Neonatal Jaundice. National Institute for health and clinical excellence

2. American Academy of Pediatrics (2004) Clinical practice guidelines subcommittee on hyperbilirubinaemia. Management of hyperbilirubinaemia in the newborn infant. Pediatrics 114:1, 297-316

3. Ramachandran A. Neonatal hyperbilirubinaemia. Paediatrics and Child Health 2015;26(4):162-8

4. Ullah S, Rahman K, Hedayati M. Hyperbilirubinaemia in neonates: Types, causes, clinical examinations, preventative measures and treatments: A narrative review article. Iranian Journal of Public Health 2016;45(5):558-68.

5. Ullah S, Rahman K, Hedayati M. Hyperbilirubinaemia in neonates: Types, causes, clinical examinations, preventative measures and treatments: A narrative review article. Iranian Journal of Public Health 2016;45(5):558-68.

6. Wells C. Strategies for neonatal hyperbilirubinaemia: A literature review. The American Journal of Maternal and Child Nursing 2013;38(6):377-82.

7. National Blood Authority Australia. Patient Blood Management Guidelines: Module 6-Neonatal and Paediatrics. 2016 [cited 2017 May 5]; Available from: https://www.blood.gov.au/pbm-guidelines

8. Mishra S, Chawla D, Agarwal R et al. (2009) Transcutaneous bilirubinometry reduces the need for blood sampling in neonates with visible jaundice. Acta Paediatrica 98: 1916–9.

7. Supporting relevant trust guidelines:

1. https://ashfordstpeters.net/Guidelines_Neonatal/PJS%20Guideline%20Sep%202021.pdf
2. https://ashfordstpeters.net/Guidelines_Neonatal/Investigation%20of%20Neonatal%20Conjugated%20Jaundice%20Dec%202016.pdf
3. https://ashfordstpeters.net/Guidelines_Neonatal/Management%20of%20Neonatal%20Jaundice%20in%20the%20Community%20Jun%202019.pdf
4. https://ashfordstpeters.net/Guidelines_Neonatal/Transcutaneous%20Bilirubinometer%20Use%20Feb%202019.pdf
5. https://ashfordstpeters.net/Guidelines_Neonatal/Jaundice%20Exchange%20Transfusion%20and%20Immunoglobulin%20Feb%202019.pdf
6. https://ashfordstpeters.net/Guidelines_Neonatal/Stool_Chart.pdf

8. Guideline Governance

a. Scope

This guideline in relevant to all staff caring for babies across neonatal intensive care, transitional care and maternity.

b. Purpose

i. This guidelines aims to facilitate a common approach to the management of babies admitted under neonatal care. At times deviation from the guideline may be necessary, this should be documented and is the responsibility of the attending consultant.

ii. This guideline is subject to regular review to ensure ongoing evidence based practice.

c. Duties and Responsibilities

What is expected from the health care professionals using this guideline to look after infants.

d. Approval and Ratification

This guideline will be approved and ratified by the Neonatal Guidelines Group.

e. Dissemination and Implementation

i. This guideline will be uploaded to the trust intranet 'Neonatal Guidelines' page and thus available for common use.
ii. This guideline will be shared as part of ongoing education within the Neonatal Unit for both medical and nursing staff.
iii. All members of staff are invited to attend and give comments on the guideline as part of the ratification process.

f. Review and Revision Arrangements

a. This policy will be reviewed on a 5 yearly basis.
b. If new information comes to light prior to the review date, an earlier review will be prompted.
c. Amendments to the document shall be clearly marked on the document control sheet and the updated version uploaded to the intranet. Minor amendments will be ratified through the Neonatal Guidelines Group. A minor amendment would consist of no major change in process, and includes but is not limited to, amendments to documents within the appendices.

g. Equality Impact Assessment

Background • Who was involved in the Equality Impact Assessment
Methodology • A brief account of how the likely effects of the policy was assessed (to include race and ethnic origin, disability, gender, culture, religion or belief, sexual orientation, age) • The data sources and any other information used • The consultation that was carried out (who, why and how?)
Key Findings • Describe the results of the assessment • Identify if there is adverse or a potentially adverse impacts for any equalities groups
Conclusion • Provide a summary of the overall conclusions
Recommendations • State recommended changes to the proposed policy as a result of the impact assessment • Where it has not been possible to amend the policy, provide the detail of any actions that have been identified • Describe the plans for reviewing the assessment

h. Document Checklist

To be completed (electronically) and attached to any document which guides practice when submitted to the appropriate committee for approval or ratification.

Title of the document:

Policy (document) Author:

Executive Director:

		Yes/No/ Unsure/NA	Comments
1.	**Title**		
	Is the title clear and unambiguous?		
	Is it clear whether the document is a guideline, policy, protocol or standard?		
2.	**Scope/Purpose**		
	Is the target population clear and unambiguous?		
	Is the purpose of the document clear?		
	Are the intended outcomes described?		
	Are the statements clear and unambiguous?		
3.	**Development Process**		
	Is there evidence of engagement with stakeholders and users?		
	Who was engaged in a review of the document (list committees/ individuals)?		
	Has the policy template been followed (i.e. is the format correct)?		
4.	**Evidence Base**		
	Is the type of evidence to support the document identified explicitly?		

		Yes/No/ Unsure/NA	Comments
	Are local/organisational supporting documents referenced?		
5.	**Approval**		
	Does the document identify which committee/group will approve/ratify it?		
	If appropriate, have the joint human resources/staff side committee (or equivalent) approved the document?		
6.	**Dissemination and Implementation**		
	Is there an outline/plan to identify how this will be done?		
	Does the plan include the necessary training/support to ensure compliance?		
7.	**Process for Monitoring Compliance**		
	Are there measurable standards or KPIs to support monitoring compliance of the document?		
8.	**Review Date**		
	Is the review date identified and is this acceptable?		
9.	**Overall Responsibility for the Document**		
	Is it clear who will be responsible for coordinating the dissemination, implementation and review of the documentation?		
10.	**Equality Impact Assessment (EIA)**		
	Has a suitable EIA been completed?		

Committee Approval (Neonatal Guidelines Committee)			
If the committee is happy to approve this document, please complete the section below, date it and return it to the Policy (document) Owner			
Name of Chair		**Date**	
Ratification by Management Executive (if appropriate)			
If the Management Executive is happy to ratify this document, please complete the date of ratification below and advise the Policy (document) Owner			
Date: n/a			