Prolonged Jaundice in a Neonate - Full Paediatric Clinical Guideline – Joint Derby & Burton

Reference no.: NIC ME 03/Oct 20/v004

1. Introduction

To ensure a standardised approach to investigating neonates referred from the community with prolonged jaundice. The setting of this would be in the most age appropriate area.

2. Aim and Purpose

To ensure that the neonates with prolonged jaundice get adequately investigated by medical staff.

Babies who have obstructive jaundice need **urgent** investigation and treatment. This protocol suggests guidelines for initial investigation.

The aim should be to refer all babies with obstructive jaundice to a tertiary centre for further investigation by the age of 3 weeks.

3. Main body of Guidelines

Background

Prolonged jaundice is defined as:

- jaundice lasting more than 14 days in term (≥ 37 weeks) babies
- jaundice lasting more than 21 days in preterm (< 37 weeks) babies

Urine and stool colour

- Normally a baby's urine is colourless
- Persistently yellow urine which stains the nappy can be a sign of liver disease
- Normally a baby's stools are green or yellow
- Persistently pale coloured stools may indicate liver disease

Table 1. Differential diagnoses of neonatal hyperbilirubinaemia (list not exhaustive)

Hyperbilirubinaemia type	Haemolysis present	Haemolysis absent
Unconjugated	**Common** • Blood group incompatibility: ABO, Rh factor, minor antigens • Infection **Rare** • Haemoglobinopathies: thalassemia • Red blood cell enzyme defects: G6PD, pyruvate kinase • Red blood cell membrane disorders: spherocytosis, ovalocytosis	**Common** • Breast milk jaundice • Physiologic jaundice • Infant of mother with diabetes • Internal haemorrhage • Polycythaemia **Rare** • Hypothyroid • Immune thrombocytopaenia • Mutations of glucuronyl transferase (i.e., Crigler-Najjar syndrome,Gilbert syndrome) • Pyloric stenosis
Conjugated	**Common** CMV infection, hyperalimentation cholestasis (secondary to parenteral nutrition), neonatal hepatitis, sepsis, TORCH infection, urinary tract infection **Rare** Biliary atresia, hypothyroid, cystic fibrosis, hepatic infarction, inborn errors of metabolism (e.g. galactosaemia, tyrosinosis), Alagile syndrome, alpha-1-antitrypsin deficiency	

Adapted from Gowen CW Jr. Anemia and hyperbilirubinemia. In: Kliegman R. Nelson Essentials of Pediatrics. *5th ed. Philadelphia, Pa.: Elseiver Saunders; 2006:318.*

Management of babies with prolonged jaundice

In preterm and term babies with prolonged jaundice (see definition above) perform the following assessment:

- feeding history including whether breast or bottle-fed
- weight
- document stool and urine colour

- ensure that routine newborn blood spot screening has been performed

If the baby has any of the following, ask the Registrar to review

- Not growing well
- Abnormal colour of stools and/or urine at any age
- Is unwell and/or not progressing normally

Request the following first line investigations:

- **Serum bilirubin (SBR)**
- **Split bilirubin (conjugated and unconjugated bilirubin)**

A) If the conjugated bilirubin is greater than 25 micromol/l, the baby should be discussed promptly with a paediatrician as this is *conjugated hyperbilirubinaemia.*

Conjugated hyperbilirubinaemia should be investigated. Please follow the conjugated hyperbilirubinemia guideline for further investigation. Following investigations, further discussions on management and follow up should be organised with senior paediatrician and paediatric liver team at Birmingham Children's Hospital (switchboard: 0121 333 9999, ask for on call liver registrar

B) Where the total bilirubin is high (> 200 micromol/l) and the conjugated fraction is <25 micromol/l, inform a paediatrician and consider further investigations for *unconjugated hyperbilirubinaemia.*

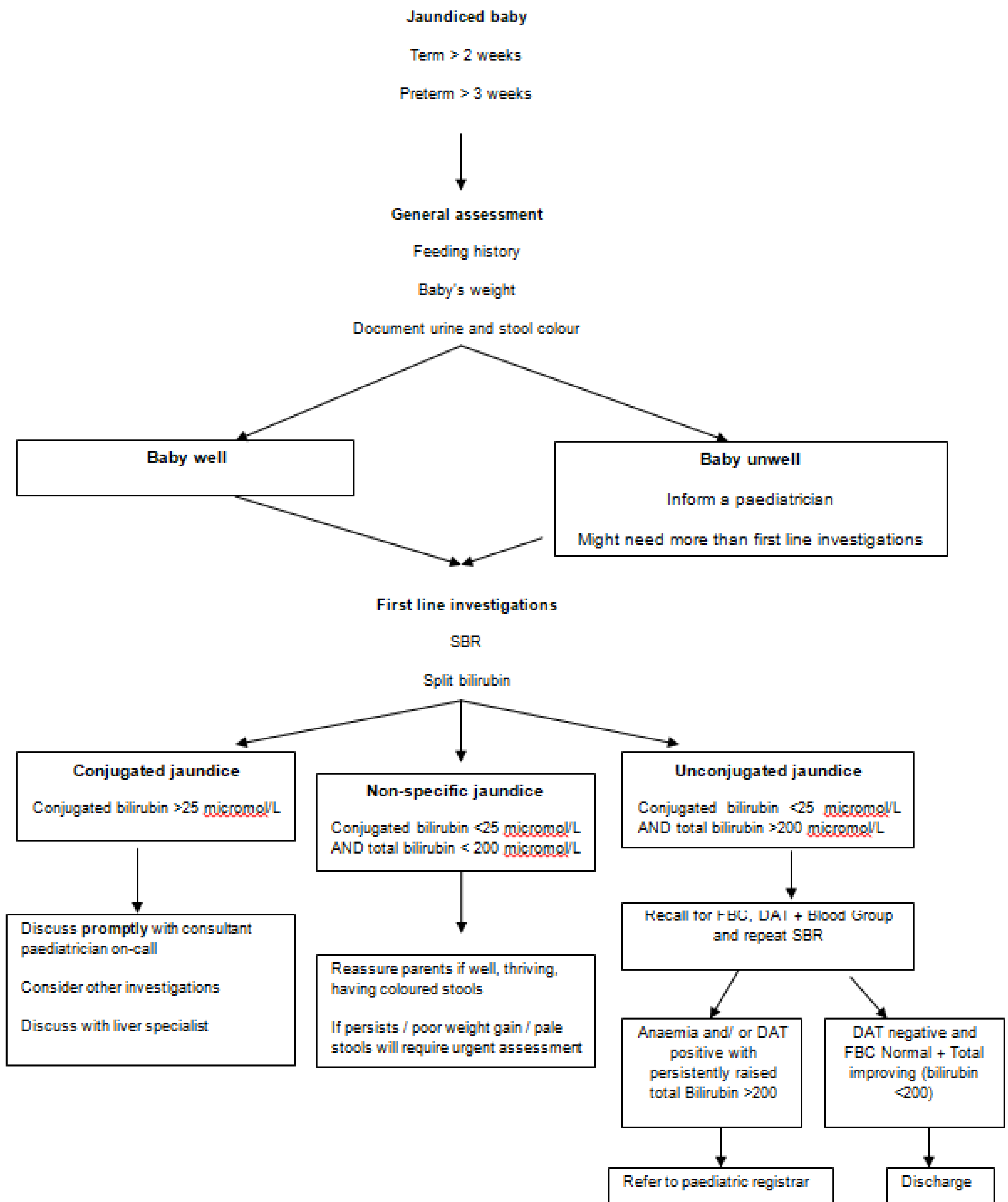
These include:

- **Full blood count (consider reticulocyte count and film for haemolysis)**
- **Blood group**
- **Direct antiglobulin test (DAT) or Coombs test**

Consider Urine clean catch for culture (only if there are concerns that might suggest a urinary tract infection such as fever, poor weight gain, vomiting, loose stools, or poor feeding)

C) If the conjugated bilirubin is < 25 micromol/l and the total bilirubin is < 200 micromol/l, the parent(s)/guardian(s) can be generally reassured particularly if the baby is thriving and producing coloured stools. Further investigations rarely required. If the jaundice persists or worsens and/or if there is suboptimal weight gain, pale stools or other symptoms they should be referred *urgently* to paediatric outpatients.

Prolonged jaundice algorithm



4. References (including any links to NICE Guidance etc.)

- Children's Liveer Disease Foundation. (2011, Oct). *Yellow Alert.* Retrieved March 27, 2012, from Children's Liver Disease Foundation: www.yellowalert.org/file_download.aspx?id=7359
- Jr, G. C. (2006). Anemia and hyperbilirubinemia . In K. R, *Nelson Essentials of Pediatrics* (p. 318). Philedelphia: Elseiver Saunders.
- National Institute of Health and Clinical Excellence. (2010). *Neonatal Jaundice CG98.* National Institute of Health and Clinical Excellence.

5. Documentation Controls

Reference Number NIC ME 03	**Version:** 4.0.0		**Status** Final	**Author:** Dr G Joshi **Job Title:** Consultant
Version / Amendment History	Version	Date	Author	Reason
	4.0.0	Oct 2020	Dr G Joshi in consultation with Neonatal Consultants. Paediatric Head of Nursing	Review and update. Merged into UHDB guideline.
Intended Recipients: State who the Clinical Guideline is aimed at – staff groups etc.				
Training and Dissemination: How will you implement the Clinical Guideline, cascade the information and address training				
Linked Documents: State the name(s) of any other relevant documents				
Keywords:				
Business Unit Sign Off			**Group:** *Paediatric Business Unit Guidelines Group* **Date:** 22/10/2020	
Divisional Sign Off			**Group:** *Women and Children's Division* **Date:** 22/10/2020	
EIRA Stage One Stage Two	Completed Yes / No Completed Yes / No		*Delete as appropriate* *Delete as appropriate*	
Date of Approval			Oct 2020	
Review Date and Frequency			Oct 2023, every 3 years – Extended to April 24	
Contact for Review			Dr G Joshi	
Lead Executive Director Signature				

6. Appendices – Next page

Appendix 1

Prolonged Jaundice pathway

AFFIX LABEL HERE

Consultant	**Date**
Ward/Department	**Time**
Parent/Carer's names	
Parent/Carer's Contact number	

If there are any concerns highlighted in any section, ask for Registrar or Senior review

Gestation				**Initials**
Day of life		**CGA**		
Birth Weight	**Kg**	**Centile**		
Current Weight	**Kg**	**Centile**		
Head Circumference	**cm**	**Centile**		
Length	**cm**	**Centile**		
Appropriate tracking on centiles? **Yes** ☐ **No** ☐		**Percentage Weight loss ---------------%**		

NB: Prolonged jaundice= babies with a gestational age of 37 weeks or more with jaundice lasting more than 14days and in babies with a gestational age of less than 37 weeks and jaundice lasting more than 21 days.

DELIVERY

SVD: Yes ☐ No ☐ Instrumental (Type)

Any cephalhaematoma or other concerns noted:

FEEDING ASSESSMENT

Breast fed ☐ Bottle fed ☐ Mixed ☐ Details

Number of feeds per day: Wakes for feeds: Yes ☐ No ☐

No. of wet nappies per day: Urate in the nappy: Yes ☐ No ☐ Colour of Urine:

Frequency of stools: Colour of the stools: Stool Consistency:

Breast Feeding:

Breast fullness Pre-feed: Breast relief post-feed: Latching on technique:

Length of feeds:

Bottle or NGT feeding

Amount per feed: ml Total in 24 hours = ml/kg/day

SEPSIS RISK ASSESSMENT

Group B Strep in previous Pregnancy: Yes ☐ No ☐

Group B Strep in Urine or HVS after 36 /40 gestation: ☐ Yes ☐ No

Fever in Labour: Yes ☐ No ☐ Maternal antibiotics in labour: Yes ☐ No ☐

Neonatal Fever : Yes ☐ No ☐ PROM >24 Hours : Yes ☐ No ☐

BLOOD INCOMPATIBILITY SCREENING

Maternal Blood group: Maternal antibodies Baby's Blood group if known:

Maternal Anti-D given in pregnancy: Yes ☐ No ☐ Maternal Anti-D given post- delivery: Yes ☐ No ☐

DAT/Coombs result (If Known): Jaundice within 24hrs of life: Yes ☐ No ☐

EXAMINATION

Signs of dehydration: Sunken fontanelle ☐ Reduced skin turgor ☐ dry tongue ☐ dry eyes ☐

CVS:

Chest:

Abdomen: Enlarged Liver or spleen : Yes ☐ No ☐

CNS: Good central tone ☐ Good peripheral tone ☐ Good suck ☐ Symmetrical Moros reflex ☐ Handles well ☐

INVESTIGATIONS:

Test	Date completed	Initials	Date Result seen	Informed parents	Result/Action taken	Initials
FIRST LINE						
Total Bilirubin					**Use NICE Jaundice threshold graphs**	
Conjugated bilirubin					**>25micro mol/L Urgent discussion with Senior**	
SECOND LINE						
FBC						
DAT +Blood Group						
Repeat Split Bilirubin						
THIRD LINE						
Refer to Conjugated jaundice guideline if Conjugated Bilirubin > 25micro mol/L after discussion with senior and Birmingham Liver team						
Senior review and Consider septic screen if clinically unwell						

Pathway Completed by: Name ----------------------------------- Signature -----------------------------Designation --------------------