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

Reference no.: NIC ME 03

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. Causes of neonatal hyperbilirubinaemia (list is 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 Paediatric registrar to review

- Not growing well
- Abnormal colour of stools and/or urine at any age
- Is unwell and/or is not progressing as normal.

Request First line investigations:

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

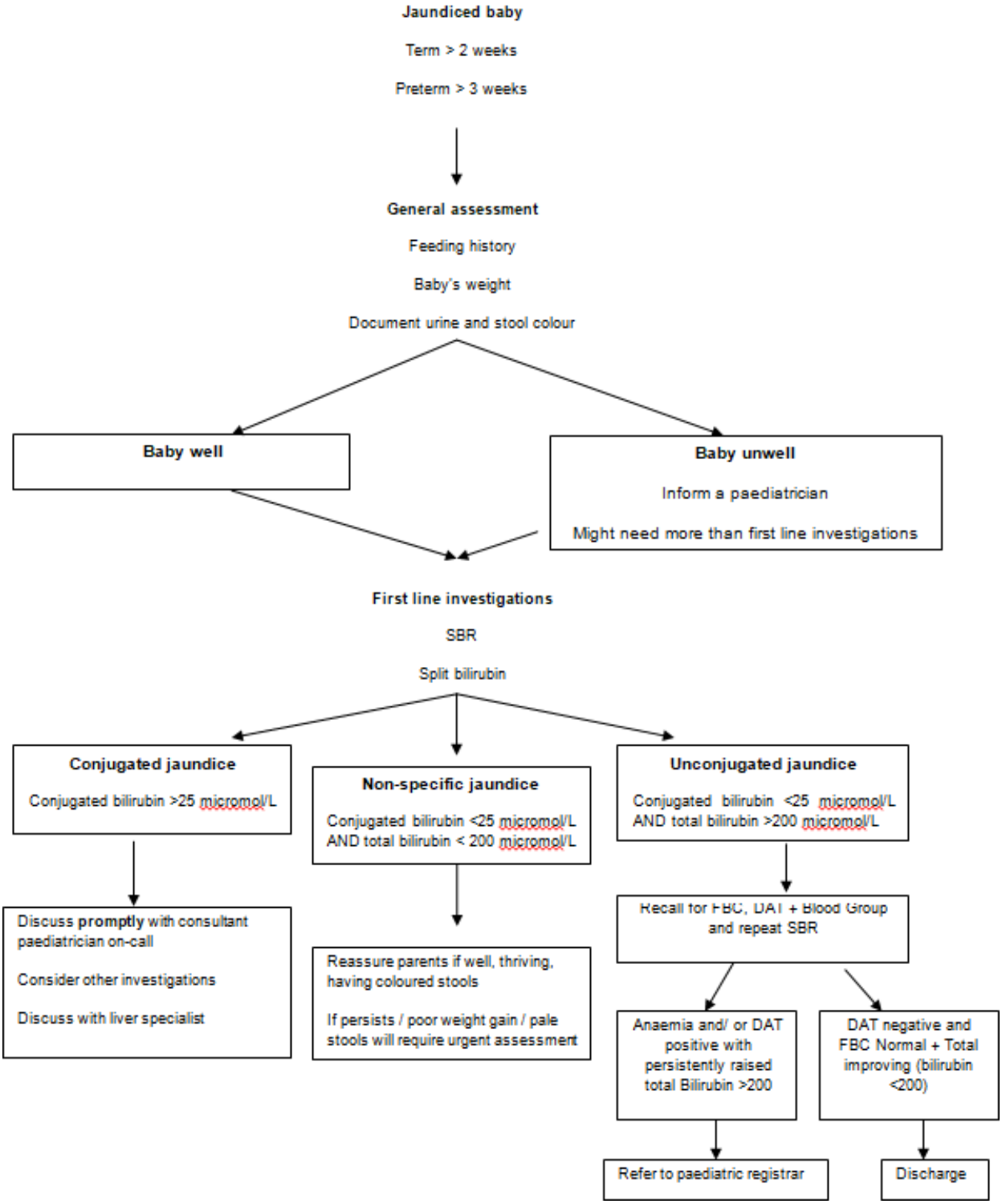
A) If the conjugated bilirubin is > 25 micromol/l: Patient should be discussed promptly with a paediatrician and investigated for **Conjugated hyperbilirubinemia** (as per conjugated hyperbilirubinemia guideline). Following investigations, further management and follow up should be organised with Paediatric consultant and Paediatric liver team at Birmingham Children's Hospital (switchboard: 0121 333 9999, ask for on call liver registrar)

B) If total bilirubin is high (> 200 micromol/l) and the conjugated fraction is <25 micromol/l: Inform Paediatric registrar 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 clean catch urine culture, if there is clinical suspicion of a urinary tract infection (fever, poor weight gain, vomiting, loose stools, or poor feeding)
- Ensure that routine metabolic screening (including screening for congenital hypothyroidism) has been performed and confirm "Gutherie test / newborn blood spot screening " has been performed.

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

Prolonged jaundice algorithm



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

- Jaundice in newborn under 28 days, National Institute of Health and Clinical Excellence (2010), Last updated: 31 October 2023
- Children's Liver 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.

5. Documentation Controls

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<tr><td>Reference Number
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Final</td><td>Author: Dr G Joshi
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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 cephalhematoma 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 ☐

NEONATAL SCREENING (blood spot test) Performed

Yes ☐ No ☐

EXAMINATION

Signs of dehydration: Sunken fontanelle ☐ Reduced skin turgor ☐ dry tongue ☐ Bruising/ cephalohematoma ☐

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						
Consider Senior review, septic screen and urine culture if clinical suspicion						

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