Prolonged jaundice in neonates

Subject:	Prolonged jaundice in neonates
Policy Number	N/A
Ratified By:	Clinical Guideline Committee
Date Ratified:	November 2008, reviewed with minor change January 2015
Version:	2.0
Policy Executive Owner:	WCF Divisional Director
Designation of Author:	Dr R Blumberg (Consultant)
Name of Assurance Committee:	As above
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Review Date:	3 years hence
Target Audience:	Paediatric Nurses & Midwives
Key Words:	Prolonged jaundice, neonates, paediatrics

Version Control Sheet

Version	Date	Author/ Reviewer	Status	Comment
Version 1	Nov 08	Dr H Mackinnon (Consultant Paediatricican) Dr S Depani (SHO)	OFF LINE	New guideline, reviewed at CGC
Version 2	Jan 15	Dr Raoul Blumberg (Consultant Neonatologist)	LIVE	Reviewed with minor change: • Updated appendix • Change of telephone contact number

Criteria for use

Clinical jaundice persisting beyond 14 days of age in a term infant and beyond 21 days in a pre-term infant

Background/ introduction

- Prolonged jaundice is common.
- The large majority of babies are well and thriving and in these the cause is usually unconjugated breast milk jaundice which is benign and self-resolving.
- All babies have Thyroid Stimulating Hormone (TSH checked by the Newborn Blood Spot Screening (Guthrie test).
- The most important condition to diagnose is **biliary atresia** which is characterised by **conjugated hyperbilirubinaemia** (1)
- Most cases have been shown to be well managed by the nurse-led prolonged jaundice clinic at the Whittington Hospital (2)
- Babies who are unwell or not thriving should be referred to a doctor for assessment and consideration of further investigations.

Differential diagnosis

Unconjugated hyperbilirubinaemia	Conjugated hyperbilirubinaemia
Breast milk jaundice Prematurity ABO/Rhesus incompatibility G6PD deficiency Hereditary spherocytosis Hypothyroidism (tested on Guthrie) Infection (UTI) Gilbert/Crigler-Najar	Biliary atresia Choledochal cyst Neonatal hepatitis (infection/a-1 antitrypsin deficiency) Galactosaemia Total Parental Nutriton (TPN) related

Clinical features

Breast milk jaundice: Most infants with prolonged jaundice have breast milk jaundice and are asymptomatic and thriving.

Haemolytic disease: (e.g. ABO/Rhesus incompatibilty, hereditary spherocytosis, G6PD deficiency). Tend to develop early jaundice with steeply rising bilirubin levels. They may have anaemia/ low Packed Cell Volume (PCV).
G6PD deficiency often has a milder clinical course which can present with asymptomatic prolonged jaundice. It is more common in babies of African or Mediterranean descent.

Congenital hypothyroidism: is screened for by the Newborn Blood Spot Screening heel prick test taken on day 5 by measuring TSH levels. (NB Newborn Blood Spot Screening does not screen for hypopituitary hypothyroidism. This is very rare.)

I**nfection:** particularly Urinary Tract Infection (UTI) may present with non-specific symptoms including failure to thrive, poor feeding, vomiting and pyrexia. It would be unusual for there to be an underlying infection in a well thriving baby.

Biliary atresia: Conjugated hyperbilirubinaemia leads to pale stools and dark urine. The baby may otherwise appear healthy.
Conjugated hyperbilirubinaemia is where the conjugated bilirubin level is greater than 20% of the total or an absolute value > 30μmol/l. These babies MUST be reviewed by a senior paediatrician.

Clinical management

All infants presenting with jaundice beyond day 14 of age who appear well should be referred to the nurse-led prolonged jaundice clinic (via Clinic 4D Telephone 020 7288 5882/3)
Babies referred must be seen within 28 days of age. The nurse will fill out a proforma (see appendix 1) and take a heel prick sample of blood (0.2ml) for total and conjugated bilirubin. The results are recorded on the proforma.

The following key information is ascertained on the proforma:

- Age of infant (in days)
- Breast or bottle fed
- **Regained birth weight** (if not, suggests failure to thrive)
- **Premature**
- **Infant unwell** e.g. large vomits, poor feeding, breathless, sweaty etc
- **Mother rhesus negative** (risk of haemolytic anaemia)
- **Mother known to have atypical antibodies** (risk of haemolytic anaemia)
- **Consanguineous parents** (increased risk of metabolic disorders)
- Newborn Blood Spot Screening done (if not, must be sent)
- Total bilirubin level: **significant if > 300 μmol/l**
- Conjugated bilirubin: **significant if >30 μmol/lor > 20% of total bilirubin**

If any of the features highlighted in bold are present, the case must be discussed promptly with a doctor.
If total or conjugated bilirubin levels approaching high levels, consider repeating total and conjugated bilirubin in 2-3 days time to ensure not rising.

ALL forms must be signed by a CONSULTANT paediatrician

Parents should be contacted with the results by the nurses within one week of testing and this should be recorded on the proforma.

Infants referred to paediatricians by the midwife/GP should be re-directed to the nurse-led clinic if the baby is well.

If a doctor sees a baby with prolonged jaundice, he/she should complete the proforma and use it to guide management.

In a baby presenting with asymptomatic prolonged jaundice additional tests such as urine MC+S, urine reducing substances, Thyroid Function Tests (TFTs), alpha-1-antitrypsin levels are NOT indicated.

In a well infant with persistent prolonged jaundice (> 4 weeks) or at risk of a haemolytic condition, the following investigations should be considered: full blood count/ packed cell volume (FBC/PCV), blood film, Group and Direct Antiglobulin Test (DAT), G6PD.

Infants with prolonged jaundice who are unwell with suspected infection/sepsis should have a septic screen and metabolic conditions such as galactosaemia should be considered.

Infants found to have a conjugated hyperbilirubinaemia should have LFTs (including albumin and gamma glutamyltransferase), clotting profile, blood glucose and abdominal ultrasound scan (USS) performed urgently and be discussed with the paediatric liver unit at Kings College Hospital.

Prompt treatment of conditions such as biliary atresia significantly improves prognosis.

Compliance monitoring

- Annual Audit of Patient Documentation
- Annual Audit of patients requiring medical referral
- Results reported to paediatric audit group
- Non compliance reported through incident reporting procedure

Contacts (inside and outside the Trust including out-of-hours contacts)

- Consultant Paediatrician on-call (via switchboard)
- On-call Paediatric Liver SpR, Kings College Hospital

References (evidence upon which the guideline is based)

Childrens Liver Disease Foundation (2005) 'Jaundice Protocol: Early identification and referral of liver disease in infants' www.childliverdisease.org

Depani, S (2007) 'Audit on the management of prolonged jaundice at the Whittington Hospital'

Hannam S et al (2000) 'Investigation of prolonged neonatal jaundice' Acta Paediatr ;89(6):694-7

Appendix 1 **Prolonged Jaundice Screen Proforma**

Name: _____
Hospital Number: _____
DOB: _____

Address:
_____
_____

Patient Tel/ Contact no._____

GP name: _____

Address:_____
_____
_____
MW/HV_____
_____
_____
_____

Today's DATE _____ **Age in days _____**

Birth weight _____ **Weight Today _____**

Regained Birth weight by 14 days? Yes/No **Feeding**: Breast / Bottle/ Mixed

Parent given advice leaflet? Yes/No **Newborn Blood Spot Screening Done?** Yes/No

Urine Colour **Stool Colour**

This form completed by : (Print) _____

QUESTIONS	Yes	No
1. Was baby premature (< 37 weeks)		
2. Is baby unwell ? (e.g. sweating, breathless, lethargic, poor feeding, large vomits)		
3. Are parents related by blood ?		
4. Is mother Rhesus –ve ?		
5. Did mother have antibodies in pregnancy ?		

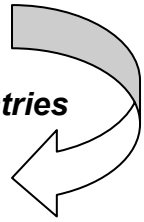
Results: Total Bilirubin _____ (refer if > 300umol/L)
Conjugated Bilirubin _____(*refer if > 30umol/l or > 20% of total bilirubin)*

Nurses name(Print) _____ Signature _____ Date _____

Refer to Doctors : if answers **YES** to any question **1- 5** □
If jaundiced for more than 28 days □
If baby has not had Newborn Blood Spot Screening (Guthrie) **SEND NOW** □
(Camelia Botnar Laboratories – 020-7813 8383)

Doctors name (Print)_____ Signature _____ Date _____
All forms shoud be signed by a Consultant)

Parents contacted with results : Date _____ Time _____
Copy of Form sent to notes □ Health Visitor □ Jaundice Folder □



For CONTINUING NOTES TURN OVER THE PAGE : Please sign and date all entries

Date	*Notes and plans*	*Name*

Appendix A

Plan for Dissemination and implementation plan of new Procedural Documents

To be completed and attached to any document which guides practice when submitted to the appropriate committee for consideration and approval.

Acknowledgement: University Hospitals of Leicester NHS Trust

Title of document:	**Prolonged jaundice in neonates**		
Date finalised:	**November 2008 (update January 2015)**	**Dissemination lead: Print name and contact details**	
Previous document already being used?	**Yes**		
If yes, in what format and where?	**Paper copy in clinic 4D** **Electronic copy on paediatric shared drive**		
Proposed action to retrieve out-of-date copies of the document:	**Remove paper copy from 4D Delete** **from Paediatric shared drive**		

To be disseminated to:	**How will it be disseminated/implemented, who will do it and when?**	**Paper or Electronic**	**Comments**
Paediatric Nurses clinic 4D	**Email/ staff meeting**	**Electronic**	
Is a training programme required?	**Yes, ongoing for all new nursing staff**	**Paper**	**Included on standard induction training for clinic 4d nurses**
Who is responsible for the training programme?	**Paediatric Matron / Practice Development Nurse**		

Appendix B

Equality Impact Assessment Tool

To be completed and attached to any procedural document when submitted to the appropriate committee for consideration and approval.

Impact (= relevance) 1 Low 2 Medium 3 High	Evidence for impact assessment (monitoring, statistics, consultation, research, etc	Evidential gaps (what info do you need but don't have)	Action to take to fill evidential gap	Other issues
Race 1	**None**	**None**		
Disability 1	**None**	**None**		
Gender 1	**None**	**None**		
Age 1	**None**	**None**		
Sexual Orientation 1	**None**	**None**		
Religion and belief 1	**None**	**None**		

Once the initial screening has been completed, a full assessment is only required if:

- The impact is potentially discriminatory under equality or anti-discrimination legislation
- Any of the key equality groups are identified as being potentially disadvantaged or negatively impacted by the policy or service
- The impact is assessed to be of high significance.

If you have identified a potential discriminatory impact of this procedural document, please refer it to relevant Head of Department, together with any suggestions as to the action required to avoid/reduce this impact.