

Neonatal Jaundice Management

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Approved by: Neonatal Guidelines Group August 2019

Review date: 25/07/2021

Version: 11

Management of jaundice and charts to plot bilirubin values.

Also see:

- Jaundice Chart preterm chart 2011



- Jaundice Chart term chart 2011



Documents to aid management of babies referred and reviewed for Prolonged Jaundice

[\(Link Below\) Prolonged unconjugated jaundice pathway](#)

[\(Link Below\) Referrals for review of babies with prolonged unconjugated jaundice](#)

[\(Link below\) Prolonged Jaundice clinic proforma](#)

[\(Link Below\) Prolonged unconjugated jaundice - GP letter](#)

Neonatal Jaundice

NICE Clinical Guideline Number 98

Scope

This guideline covers the management of babies with jaundice in the first weeks of life in maternity, community and paediatric settings.

Background

Jaundice in babies is extremely common. Many term infants and almost all preterm infants become visibly jaundiced during the first week of life. Babies are born with immature enzymes in the liver, a high burden of red blood cells and increased intestinal reabsorption of bilirubin. This combination means that all babies have a transient rise in their serum bilirubin over the first days of life usually peaking around day 4 and settling during the 2nd week of life.

A wide range of factors can make individual babies more likely to develop significant jaundice. It is particularly important to be aware of babies who are born preterm, babies who have had a sibling with neonatal jaundice requiring treatment and babies who are exclusively breast fed. Excellent support to all women who intend to breast feed is extremely important.

Babies identified as potentially at high risk of haemolytic jaundice before birth

There are a number of babies whom are deemed at a higher risk of haemolytic jaundice due to the antibody profile of the mother.

Maternal anti D titres greater than 20 signify a higher level of risk (rhesus haemolytic disease). For other antibodies the titre does not necessarily correlate with the level of risk to the baby but the report from blood transfusion in mother's record may give some indication. Antenatal plan may indicate need to involve neonatal team in timing of delivery.

When a risk of haemolytic disease has been identified cord bloods must be taken immediately after birth and sent for a group and DCT (direct Coombs test), FBC and bilirubin. For babies where only a low risk of haemolysis is identified, a FBC and bilirubin may not be needed.

Baby should be seen at birth to assess general condition / clinical jaundice / anaemia / hepatosplenomegaly etc. It is the midwifery teams' job to take the samples and send them urgently to the lab. **As a neonatal team our role is expedite the processing of high risk samples (ie those where the risk of HDN is more than "low".** The transfusion lab receives hundreds of samples each day, we need to call them on 4204 and identify samples which need processing urgently.

If the DCT result is positive, in a baby who was identified as high risk of haemolysis, or who has other features suggestive of ongoing haemolysis:

- Check a transcutaneous bilirubin and consider a blood gas to get a (not always accurate) gas bilirubin, and an estimation of Hb.
- Ensure a generous recent sample for bilirubin is in progress, or that you know the result. Plan further testing.
- Admit to TCU or NNU for immediate intensive double surface phototherapy.
- If unsure, discuss with seniors.

It is important to separate the above babies from rarely significant, often weakly +ve DCT in Rhesus +ve babies of Rhesus-ve women where only exposure is to antenatal prophylactic Anti D – routine investigation in these babies is NOT needed unless clinically jaundiced.

Babies with visible jaundice in the first 24 hours

NICE guidance section 4.1

Jaundice within the first day is an important, urgent problem. Medical review is needed – phone the neonatal team – don't wait for their next routine visit. In addition to clinical assessment a blood test to measure serum bilirubin urgently is always needed and must be plotted on the appropriate chart at the exact age in hours that the blood sample was taken.

Babies with visible jaundice in the first 24 hours who are already at home should be referred back to paediatrics urgently for assessment. It is not appropriate for the community midwife to just check a bilirubin as the time taken to obtain the result may delay urgently needed treatment.

Transcutaneous bilirubin measurement should never be used in the first 24 hours of life.

Care of babies more than 24 hours old

NICE guidance section 5.1

Babies with visible jaundice after the first 24 hours should have a bilirubin level recorded. On the postnatal ward this is the responsibility of the midwife. For babies of 35 weeks' gestation or more a transcutaneous bilirubinometer can be used and the result plotted on the appropriate chart. Provided the result falls into the area marked "transcutaneous bilirubin in this area equals no further action" the result should be clearly recorded in the baby's notes but no blood test is needed. If during continuing care there is more concern about bilirubin, repeat assessment will be needed. Clearly if babies remain visibly jaundiced to 14 days investigation as per the prolonged jaundice pathway will be required.

Babies with visible jaundice in the Neonatal Unit and community should have serum bilirubin measurements obtained and plotted on the appropriate gestation specific chart. Babies in the community needing phototherapy should be referred to Children's Assessment Unit (CAU) on 01274 382311. After being seen the paediatric team will decide if they are essentially well babies needing phototherapy when admission to transitional care may well be appropriate if bed available. Some of these babies may be unwell with other conditions e.g. sepsis requiring acute paediatric care so admission direct to transitional care not appropriate.

38/40 and above, 37 and 36 week charts at end of guideline for reference

Phototherapy

NICE guidance section 7.1

When the bilirubin value is rising rapidly (more than 8.5 micromols/litre/hour) or the bilirubin value is within 50 micromols of the threshold for exchange transfusion, the baby needs to be admitted to neonatal care for double surface intensive phototherapy treatment.

For other babies single surface phototherapy is appropriate. Phototherapy is most effective when the maximum area of skin is exposed. Babies should be nursed in a supine position. Eye protection is required for overhead phototherapy. Baby's temperature will need to be monitored at least 6 hourly and the observation recorded. It will be important to support feeding and hydration should be assessed both by monitoring the number of wet nappies and by daily weighing.

Babies admitted to neonatal care for intensive phototherapy

NICE guidance section 7.2.1

Double surface phototherapy is best delivered with a bilisoft below and Neoblue overhead phototherapy unit set on full power. Effectiveness of phototherapy is increased by reducing the distance between the baby and the overhead phototherapy unit. This can be achieved in a cot by setting the basinet on its highest setting and using 2 mattresses while lowering the Neoblue to its lowest setting, or by nursing the baby on a platform with the heater turned off and the Neoblue directly above the baby. It does not increase the intensity of phototherapy to use 2 Neoblue phototherapy units as they have to be further away from the infant. During intensive phototherapy baby's temperature should be monitored continuously as both hypo and hyperthermia can occur. This is most easily managed using either the temperature probe from the platform or for babies in a cot using a temperature probe and the multi parameter monitors.

Do not remove the baby from intensive phototherapy for feeds / cares but give appropriate enteral or intravenous feeds – it is important to give lactation support and use expressed breast milk if available when enteral feeding possible. Treat or avoid dehydration but over hydrating with IV fluids does not increase bilirubin elimination and should be avoided. Once bilirubin level known to be moving away from exchange threshold care can be normalised e.g. baby brought out from phototherapy for breast feeds etc.

Blood tests after starting phototherapy

NICE guidance section 7.2.3

Serum bilirubin should be measured 6 hours after initiating phototherapy.

All babies needing phototherapy should have a full blood count and group and Coombs test performed. For many babies this could conveniently be done with the 2nd bilirubin measurement.

Other tests and interventions will clearly be needed if clinical assessment suggests sepsis. Checking glucose 6 phosphate dehydrogenase will be needed for some babies taking into account ethnic origin. Increased risk in families of Mediterranean, African, Middle Eastern and some of Asian origin.

Serum bilirubin should be checked again after approximately 12 hours when the serum bilirubin is stable or falling.

Phototherapy should be stopped when the serum bilirubin level is at least 50 micromols/litre below the phototherapy threshold.

A check bilirubin off phototherapy will be needed 12-18 hours after stopping.

Intravenous immunoglobulin

NICE guidance section 7.4

Use intravenous immunoglobulin (500 mgs/kg over 4 hours – but follow manufacturers guidance on exact timing of administration) as an adjunct to continuous multiple phototherapy in cases of rhesus haemolytic disease or ABO haemolytic disease when bilirubin continues to rise by more than 8.5 micromols/litre/hour. Decision to use intravenous immunoglobulin will be taken at senior level. Although prior approval is not needed for the use of immunoglobulin in haemolytic disease of the newborn, an appropriate immunoglobulin recording sheet must be completed for each patient. Parents will need to be informed but formal written consent is not needed.

Exchange transfusion is indicated when the serum bilirubin level is in the exchange zone on the chart and not rapidly improving with phototherapy and for all babies with clinical features of bilirubin encephalopathy. Low haemoglobin at birth a marker of possible need for exchange transfusion regardless of bilirubin. Take urgent senior advice on potential need to prepare for exchange while very closely monitoring bilirubin level. Do not stop intensive phototherapy pending and after exchange transfusion until the bilirubin level is known to be safe. Continue phototherapy during exchange transfusion – overhead phototherapy may need to be switched off to allow access. Bilisoft phototherapy should be continued throughout.

[Link to exchange transfusion protocol \(see below\).](#)



Neonatal Exchange transfusion checklist



Exchange Transfusion Protocol



Exchange 2 vessel technique[1].doc

Follow up

Babies with significant haemolysis (where immunoglobulin given, exchange considered or carried out) will need folic acid until seen in clinic and should have approx. 500micrograms / kg/ day (that's 1ml / kg of standard liquid form)

Timing of clinic review and follow up blood tests to be confirmed on consultant ward round but many babies will need FBC at 2 week – this can be arranged by sending haematology form to the children's phlebotomists POPD at St Lukes. Give the family a suggested date for attendance – any Mon - Thursday 0900-1200 and 1400-1600 are OK. It's a 'drop in' service so they don't need an exact time but often helpful to agree a specific day.

Prolonged jaundice

NICE guidance section 6.2

Background

By definition this is when jaundice persists in babies with a gestational age of 37 weeks for more for 14 days and in preterm babies more than 21 days. Although many of these babies will have innocent 'breast milk' jaundice they all need further assessment to rule out other very important causes.

Important pointers can be pale chalky stools and /or dark urine that stains the nappy but all babies with prolonged jaundice need further tests. Unwell babies need urgent paediatric assessment.

Community Midwife Role

Check total and conjugated bilirubin – at least 0.5mls in gel separator (yellow) bottle requested on biochemistry form. Make sure result chased the same day.

Prolonged Jaundice Pathway for midwives

All unwell babies or any baby with conjugated bilirubin level **>25micromols** or total bilirubin **>350micromols** need urgent paediatric assessment – ring Children's Assessment Unit on 01274 382311 to arrange admission today.

Breast fed babies who are well with total bilirubin **<250** and conjugated bilirubin **<25** do **NOT** need to be seen. Unless other concerns they can be passed on the health visitors.

Babies with prolonged jaundice - total bilirubin **250-350** and conjugated bilirubin **<25** - need further assessment but this is less urgent. This can usually be accommodated in a neonatal outpatient clinic at Children's Outpatients, St Luke's Hospital within the next week (usually on Wednesday or Thursday).

- o Ring the neonatal secretaries on 01274 364524 / 382020 / 382668 to make a referral. Demographic details for baby and mum, a contact telephone number for the family and the hospital number and where

the baby was discharged home from will be needed. It is helpful to know when the 'Guthrie' test was done.

- Once the referral has been approved by the neonatal consultant and an appointment has been made, the neonatal secretaries will ring you and the family to confirm.
- Typically we will also ask the family to bring the baby to St Luke's on a Tuesday (09:30-12:30 or 14:00-16:00) for a blood test (FBC and Direct Antibody test). This is so the result can be ready for when they are seen in clinic on Weds / Thurs. The baby can have the blood test done at the same time as the clinic visit but results will then not be available on the day.
- At the review the neonatologist will take a full history and examine baby. During the clinic visit all babies will need to have a urine sample collected so warn parents that the visit may last over an hour.
- Some babies may need further follow up – this will be discussed with the family at the clinic appointment. Following clinic review a letter will be sent to you and baby's GP.
- Occasionally an outpatient appointment might not be appropriate (no available clinic space / bilirubin near treatment line). The neonatal secretaries will ring you to explain an alternative plan if this is felt necessary.

For detailed advice on process of prolonged jaundice review, GP letter and parents info see please see separate documents.

Name _____

DOB _____

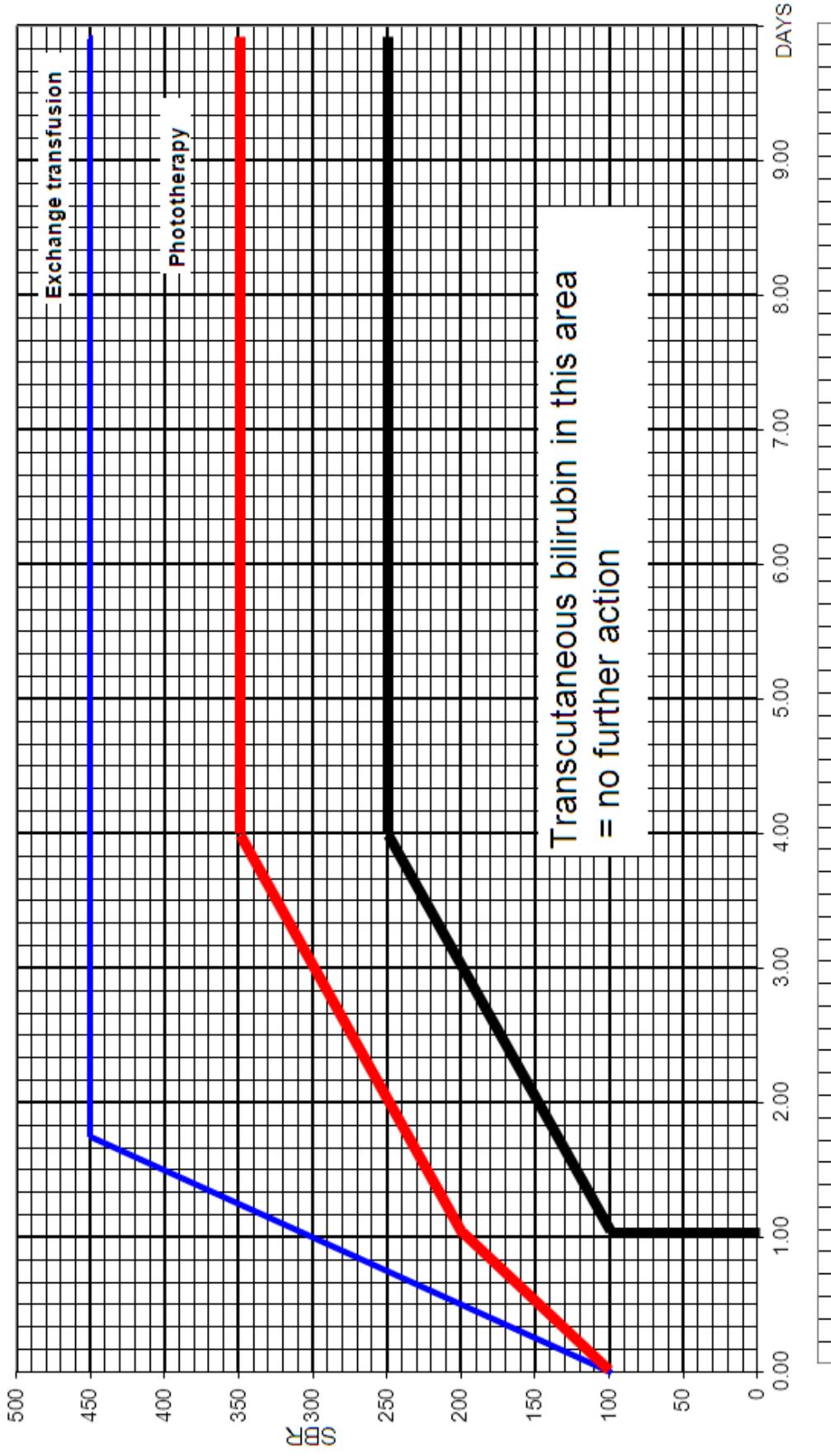
Blood Group _____

Mothers Group _____

No. _____

DATE _____

38 weeks gestation and above



Phototherapy (Please Shade)

Managing well babies with Prolonged Jaundice

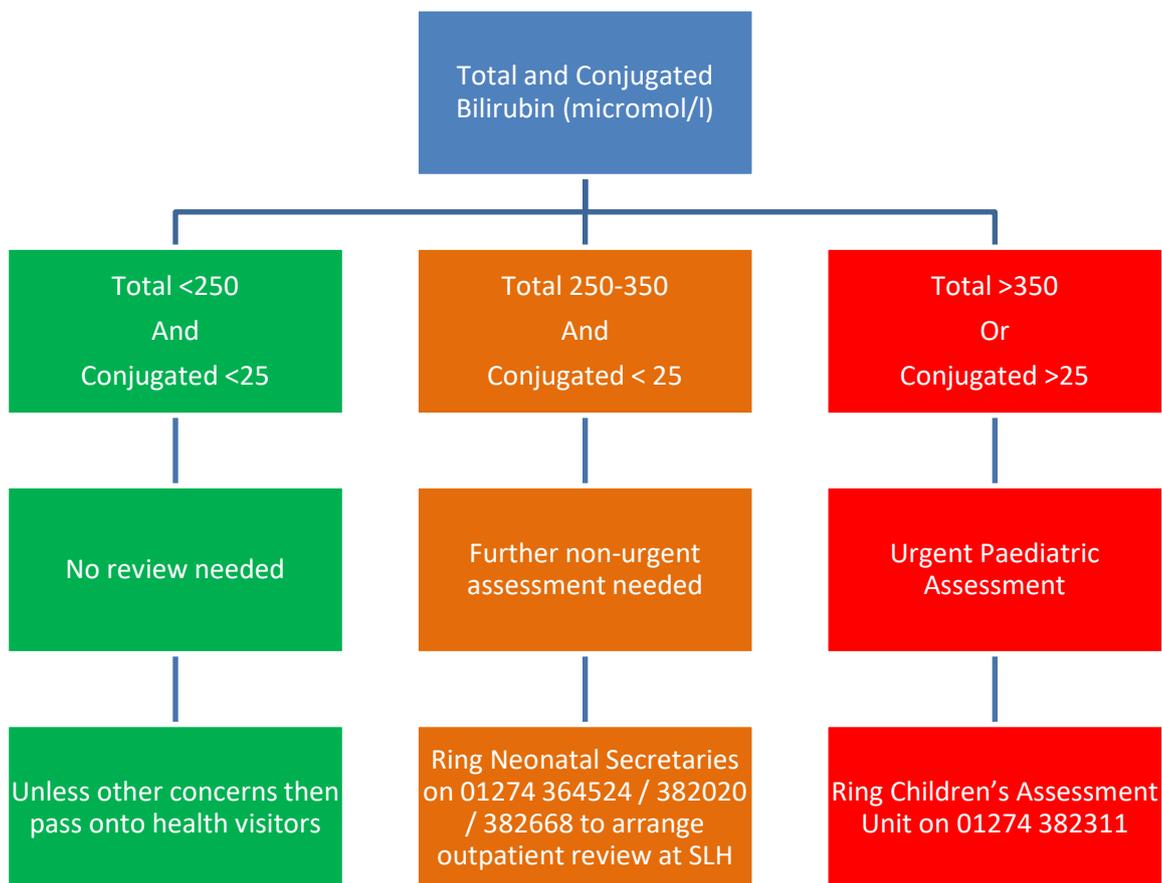
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Sam Wallis

Consultant Neonatologist

November 2016

Updated February 2018

Prolonged Jaundice Clinic Referral

When complete please fax to Paed Outpatients SLH, who will then pass onto clinic nurses to complete blood form

Bradford Teaching Hospitals 

NHS Foundation Trust

Department of Neonatology
Bradford Royal Infirmary
Duckworth Lane
Bradford
BD9 6RJ

01274 364524 / 382020 / 382668

Referral Date:

Time:

Referring Midwife:

Contact Tel No:

Name of Child:

Gender:

Date of birth:

Contact Tel No:

RAE / NHS number:

Name of Parent:

Address:

Language issues: Y / N

Bilirubin *

Total Bilirubin level (micromol/l)	
Conjugated Bilirubin level (micromol/l)	
Date of Sample	
Any concerns? Unwell / poor feeding / pale stools	Yes / No

*All babies who are **Unwell** or with conjugated bilirubin level **>25micromols** or total bilirubin **>350micromols** need urgent paediatric assessment – ask midwife to ring Children’s Assessment Unit on 01274 382311 to arrange admission today. **Do not** book these babies into Prolonged Jaundice Clinic.

Triage

Next available space in clinic	Date:	
Consultant Triage	Appropriate for routine clinic: Yes / No Signature: Date:	If “No” then document plan overleaf
Arrange pre-clinic FBC / Direct Antibody Test	Yes / No Date attending:	Usually Tuesdays 09:30-12:30 or 14:00-16:00. Ring 5085 and request Jaundice blood form to be completed by clinic nurses
Clinic Appointment	Consultant: Time / Date:	Book appointment but ask family to attend 30 minutes prior to appointment time
Notify Family	Midwife contacted: Yes / No Family contacted: Yes / No Secretaries Signature: Date:	Notify m/wife and family of plan. If can only notify m/wife then make sure they know to pass on information

Baby not appropriate for identified routine clinic

Plan	Action
Overbook earlier clinic <input type="checkbox"/> Time / Date:	Complete rest of referral form on p1 <input type="checkbox"/>
Refer for acute paediatric assessment <input type="checkbox"/>	Ring Children's Assessment Unit on 01274 382311/ bleep Paediatric Registrar. <input type="checkbox"/> Notify M/wife and Family <input type="checkbox"/>
M/wife to repeat Bilirubin level and notify us of result <input type="checkbox"/> Date of repeat:	Ring M/wife and explain plan <input type="checkbox"/>
Other	Ring M/wife and Family and explain plan <input type="checkbox"/>

When complete please fax to Paed Outpatients SLH, who will then pass onto nurses to complete blood form

Consultant Signature:

Date:

Secretaries Signature:

Date:

Dr Sam Wallis

Consultant Neonatologist

November 2016

Prolonged Unconjugated Jaundice Clinic

Date:

Name:
DOB:
Hospital No:

Referral Criteria:

<37/40 Jaundiced at 21 days
 >37/40 Jaundiced at 14 days
AND
 Conjugated bilirubin <20% & <25 micromol/L
AND

Bilirubin at referral: (enter any previous / cumulative results into table overleaf)
Date taken:
Total: **Conjugated:**

History:
Gestation at birth: **Current age in days:**
Birth weight : **Current weight:** **Net % gain / loss :**
Birth History: (instrumental / bruising etc.) **Maternal blood group:**
History of jaundice: (timing of onset / worsening / improving / previous treatment etc.)
Stool colour: (circle) **pigmented / pale** **urine colour:** (circle) **dark / pale**
Feeding Mode: (circle) **breast / bottle / mixed**
Amounts:
Family History: (previous siblings with jaundice / known pathology etc.)
Ethnicity: consider if testing needed for G6PD in Mediterranean / African / Asian patients – **not** routine!

Examination:
General Appearance:
Respiratory: **Cardiovascular:**
Abdominal: **Tone/Handling:**

Impression & Provisional plan: e.g. breast feeding associated jaundice, discharge if results normal / ?UTI / requires admission etc.
 Prior to discharge, ensure Guthrie OK, urine dip results are recorded & information leaflet given to parents – tick box overleaf).

Blood Results:

Urine Results:

Plan after results review: e.g. discharge / repeat bloods / urine / clinic follow-up etc.

Signed:

Date:

CC letter to Community M/wife

NHS number
Hospital number RAE

Department of Neonatology
Bradford Royal Infirmary
Duckworth Lane
Bradford
BD9 6RJ
Tel: 01274 382020

Date:

Dear Dr

Re:

This baby was seen today in clinic following referral from community midwifery. Prolonged (>14 days) unconjugated jaundice had been identified on a blood test carried out by the midwives in line with NICE guidance. Baby's conjugated bilirubin was less than 25 micromols making liver disease very unlikely.

Baby is well and thriving. The current weight is..... There is no relevant family history. Neonatal screening for hypothyroidism was carried out at the appropriate time and was normal.

Clinical examination showed no new findings.

We have checked baby's FBC, Blood group, Coombs test and urine dipstix. These are all normal.

The family have been given written information explaining that this form of jaundice is innocent. Although most babies with this form of jaundice are breast fed the condition is not a cause of concern and it is not an indication to stop feeding.

Further clinic follow up not indicated. Please contact us on extension 01274 382020 if you have any questions.

Yours sincerely

Bradford Neonatology