Neonatal jaundice

NICE guideline

Draft for consultation, August 2009

If you wish to comment on this version of the guideline, please be aware that all the supporting information and evidence is contained in the full version.

Contents

Introduction

Jaundice is one of the most common conditions needing medical attention in newborn babies. Jaundice refers to the yellow colouration of the skin and the sclerae caused by the accumulation of bilirubin in the skin and mucous membranes. Jaundice is caused by a raised level of bilirubin in the circulation, a condition known as hyperbilirubinaemia.

Approximately 60% of term and 80% of preterm babies develop jaundice in the first week of life, and about 10% of breastfed babies are still jaundiced at 1 month of age. In most babies with jaundice there is no underlying disease, and this early jaundice (termed ‘physiological jaundice’) is generally harmless.

Breastfed babies are more likely than bottle-fed babies to develop physiological jaundice within the first week of life. Prolonged jaundice, that is jaundice persisting beyond the first 14 days, is also seen more commonly in these babies. The condition appears to be generally harmless.

Jaundice may also have other causes, including blood group incompatibility (most commonly rhesus or ABO incompatibility), other causes of haemolysis, sepsis, bruising and metabolic disorders.. Deficiency of a particular enzyme, glucose-6-phosphate-dehydrogenase (G-6-PD), can cause severe neonatal jaundice. G-6-PD deficiency is more common in certain ethnic groups and is familial.

In young babies, unconjugated bilirubin can penetrate the membrane that lies between the brain and the blood (the blood-brain barrier). Unconjugated bilirubin is potentially toxic to neural tissue (brain and spinal cord). Entry of unconjugated bilirubin into the brain can cause both short-term and long-term neurological dysfunction (bilirubin encephalopathy). The term kernicterus is used to denote the clinical features of acute or chronic bilirubin encephalopathy, as well as the yellow staining in the brain associated with the former. The risk of kernicterus is increased in term babies with extremely high bilirubin levels. Kernicterus is also known to occur at lower levels of bilirubin in term babies who have risk factors, and in preterm babies.

Clinical recognition and assessment of jaundice can be difficult. This is particularly so in babies with darker skin. Once jaundice is recognised, there is uncertainty about when to treat, and there is widespread variation in the use of phototherapy and exchange transfusion. There is a need for more uniform, evidence-based practice, and for consensus-based practice where such evidence is lacking. This guideline provides guidance regarding the recognition, assessment and treatment of neonatal jaundice, The advice is based on evidence where this is available, and on consensus based practice where it is not.

Patient-centred care

This guideline offers best practice advice on the care of babies with neonatal jaundice.

Treatment and care should take into account parents' preferences. Parents of babies with neonatal jaundice should have the opportunity to make informed decisions about their babies' care and treatment, in partnership with their healthcare professionals. If parents do not have the capacity to make decisions, healthcare professionals should follow the Department of Health guidelines – 'Reference guide to consent for examination or treatment' (2001) (available from www.dh.gov.uk). Healthcare professionals should also follow the code of practice that accompanies the Mental Capacity Act (summary available from www.publicguardian.gov.uk).

Healthcare professionals should follow the guidelines in 'Seeking consent: working with children' (available from www.dh.gov.uk).

Good communication between healthcare professionals and parents is essential. It should be supported by evidence-based written information tailored to the parent's needs. Treatment and care, and the information parents are given about it, should be culturally appropriate. It should also be accessible to people with additional needs such as physical, sensory or learning disabilities, and to people who do not speak or read English.

Families and carers should also be given the information and support they need.

Key priorities for implementation

Information

- Offer parents or carers information about jaundice which should include:
  - risk factors
  - how to check a baby for jaundice
  - the importance of monitoring the baby
  - what to do and where to go if jaundice is suspected
  - the importance of recognising jaundice in the first 24 hours and of seeking urgent medical advice.

This should consist of a verbal discussion with parents or carers backed up by written information.

Risk factors for hyperbilirubinaemia

- Identify babies who are at increased risk of developing hyperbilirubinaemia if they have one or more of the following risk factors:
  - gestational age under 38 weeks
  - history of a previous sibling with jaundice requiring treatment
  - mother's intention exclusively to breastfeed
  - visible jaundice in babies under 24 hours.

Risk factors for kernicterus

- Identify babies with hyperbilirubinaemia who are at increased risk of developing kernicterus if they have one or both of the following risk factors:
  - high bilirubin levels (greater than 340 micromol/litre in term babies)
  - rapidly rising bilirubin levels (greater than 8.5 micromol/litre/hour).

Recognition

- Assess, especially in the first 72 hours, all newborn babies for the presence of jaundice at every opportunity.
  - Visually inspect the naked baby in good, preferably natural, light. Examination of the sclera, gums and blanched skin is useful across all skin tones

  - Do not rely on visual inspection alone to estimate the level of bilirubin in a baby who appears jaundiced
  - Do not use icterometers.

- If the visual inspection suggests the baby is jaundiced, measure and record bilirubin urgently (within 6 hours) – also see recommendation 1.3.2:
  - use transcutaneous bilirubinometers to determine the bilirubin level in term babies who are more than 24 hours of age (if transcutaneous bilirubinometers are not available, use serum bilirubin measurement)
  - use serum bilirubin measurement to determine the bilirubin levels in babies who are visibly jaundiced in the first 24 hours of life
  - use serum bilirubin to determine bilirubin level in preterm babies.

- Refer jaundiced babies with pale chalky stools for further investigation, which should include laboratory estimation of conjugated bilirubin.

Formal assessment

- Carry out all of the following tests alongside the clinical examination in babies who present with hyperbilirubinaemia requiring treatment:
  - serum bilirubin (to set baseline bilirubin level so treatment effectiveness can be monitored accurately)
  - blood group and Coombs' test
  - blood packed cell volume.

When interpreting the result of a Coombs' test, take into account the strength of the reaction, and whether or not the mother received prophylactic anti-D immunoglobulin during pregnancy.

- Consider the following tests when clinically indicated:
  - microbiological cultures of blood, urine and cerebrospinal fluid (if infection is suspected)
  - glucose-6-phosphate dehydrogenase levels (if the baby's ethnic origin warrants a test)
  - full blood count and examination of blood film.

- Carry out all the following tests in babies with prolonged jaundice (jaundice persisting for more than 14 days in term babies and 21 days in preterm babies):
  - serum bilirubin with estimation of conjugated bilirubin
  - examination of stool colour.

- Ensure that routine metabolic screening (which includes screening for congenital hypothyroidism) has been performed.

Treatment

- Use the following bilirubin thresholds to manage hyperbilirubinaemia. If bilirubin levels continue to rise:
  - initiate multiple phototherapy
  - in cases of rhesus haemolytic disease initiate multiple phototherapy and prepare for an exchange transfusion.

Table 1 Serum bilirubin thresholds for phototherapy or exchange transfusion in term babies (micromol/litre)

Age (hours)	Repeat transcutaneous bilirubin/serum bilirubin (6–12 hrs)	Consider phototherapy	Phototherapy	Exchange transfusion
0			> 100	> 100
6	> 100	> 112	> 125	> 150
12	> 100	> 125	> 150	> 200
18	> 100	> 137	> 175	> 250
24	> 100	> 150	> 200	> 300
30	> 112	> 162	> 212	> 350
36	> 125	> 175	> 225	> 400
42	> 137	> 187	> 237	> 450
48	> 150	> 200	> 250	> 450
54	> 162	> 212	> 262	> 450
60	> 175	> 225	> 275	> 450
66	> 187	> 237	> 287	> 450
72	> 200	> 250	> 300	> 450
78	> 212	> 262	> 312	> 450
84	> 225	> 275	> 325	> 450
90	> 237	> 287	> 337	> 450
96 +	> 250	> 300	> 350	> 450

Preterm babies

Use the following formula to calculate the threshold levels for initiating phototherapy in preterm babies:

- For babies 72 hours and older: gestational age (weeks) x 10 minus 100.
- For babies younger than 72 hours: use phototherapy at lower bilirubin levels.

1 Guidance

The following guidance is based on the best available evidence. The full guideline ([add hyperlink]) gives details of the methods and the evidence used to develop the guidance.

1.1 Information

1.1.1 Offer parents or carers information about jaundice which should include:

- risk factors
- how to check a baby for jaundice
- the importance of monitoring the baby
- what to do and where to go if jaundice is suspected
- the importance of recognising jaundice in the first 24 hours and of seeking urgent medical advice.

This should consist of a verbal discussion with parents or carers backed up by written information.

1.2 Risk factors

Risk factors for hyperbilirubinaemia

1.2.1 Identify babies who are at increased risk of developing hyperbilirubinaemia if they have one or more of the following risk factors:

- gestational age under 38 weeks
- history of a previous sibling with neonatal jaundice requiring treatment
- mother's intention exclusively to breastfeed
- visible jaundice in babies aged under 24 hours.

1.2.2 Ensure adequate support is offered to all women, especially those who intend exclusively to breastfeed. Refer to 'Routine postnatal

care of women and their babies' (NICE clinical guideline 37) for information on breastfeeding support.

Risk factors for kernicterus

1.2.3 Identify babies with hyperbilirubinaemia who are at increased risk of developing kernicterus if they have one or both of the following risk factors:

- high bilirubin levels (greater than 340 micromol/litre in term babies)
- rapidly rising bilirubin levels (greater than 8.5 micromol/litre/hour).

1.3 Prediction

1.3.1 Measure serum bilirubin urgently (within 2 hours) in any baby who presents with visible jaundice in the first 24 hours of life.

1.3.2 If a baby has a serum bilirubin greater than 100 micromol/litre in the first 24 hours:

- repeat the serum bilirubin measurement between 6 and 12 hours, start phototherapy according to thresholds in table 1 and
- consider exchange transfusion at the threshold levels in table 1.

1.3.3 Conduct an urgent medical review (within 6 hours) to exclude pathological causes of jaundice (see recommendations 1.5.1 and 1.5.2).

1.3.4 Assess babies with gestational age greater than 36 weeks for their risk of developing hyperbilirubinaemia soon after birth, at their routine clinical examinations and at the time of discharge from hospital.

1.3.5 Use all of the following to reassess babies aged under 48 hours who are not visibly jaundiced but who have risk factors for developing hyperbilirubinaemia (gestational age less than

38 weeks, history of a previous sibling with neonatal jaundice requiring treatment, mother's intention to breastfeed exclusively):

- risk assessment
- clinical examination - including a check for jaundice.

1.3.6 Use all of the following tests to reassess babies aged under 72 hours who are not visibly jaundiced and who do not have risk factors:

- risk assessment
- clinical examination - including a check for jaundice.

1.3.7 Interpret bilirubin levels according to the baby's postnatal age in hours and manage any hyperbilirubinaemia as in table 1.

1.3.8 Do not use any of the following to predict hyperbilirubinaemia:

- umbilical cord bilirubin
- end-tidal carbon monoxide (ETCOc) measurement
- Coombs' testing.

1.3.9 Do not measure pre-discharge bilirubin levels routinely in babies who are not visibly jaundiced.

1.4 Recognition

1.4.1 Assess, especially in the first 72 hours, all newborn babies for the presence of jaundice at every opportunity.

- Visually inspect the naked baby in good, preferably natural, light. Examination of the sclera, gums and blanched skin is useful across all skin tones.
- Do not rely on visual inspection alone to estimate the level of bilirubin in a baby who appears jaundiced.
- Do not use icterometers.

1.4.2 If the visual inspection suggests the baby is jaundiced, measure and record bilirubin urgently (with 6 hours) – also see recommendation 1.3.2:

- use transcutaneous bilirubinometers to determine the bilirubin level in term babies who are more than 24 hours of age (if transcutaneous bilirubinometers are not available, use serum bilirubin measurement)
- use serum bilirubin measurement to determine the bilirubin levels in babies who are visibly jaundiced in the first 24 hours of life
- use serum bilirubin to determine the bilirubin level in preterm babies.

1.4.3 Do not rely on transcutaneous bilirubinometers at bilirubin levels above 250 micromol/litre.

1.4.4 Use serum bilirubin measurement at levels above 250 micromol/litre.

1.4.5 Once treatment has been started, use serum bilirubin measurement for all subsequent assessments until the baby has been discharged.

1.4.6 Refer jaundiced babies with pale chalky stools for further investigation, which should include laboratory estimation of conjugated bilirubin.

1.4.7 Encourage mothers of a breastfed baby with jaundice to breastfeed frequently, and to wake the baby for feeds if necessary.

1.4.8 Provide lactation/feeding support to breastfeeding mothers whose baby is visibly jaundiced.

1.5 Formal assessment

1.5.1 Carry out all of the following tests alongside the clinical examination in babies who present with hyperbilirubinaemia requiring treatment:

- serum bilirubin (to set baseline bilirubin level so treatment effectiveness can be monitored accurately)
- blood group and Coombs' test
- blood packed cell volume.

When interpreting the result of a Coombs' test, take into account the strength of the reaction, and whether or not the mother received prophylactic anti-D immunoglobulin during pregnancy.

1.5.2 Consider the following tests when clinically indicated:

- microbiological cultures of blood, urine and cerebrospinal fluid (if infection is suspected)
- blood glucose-6-phosphate dehydrogenase levels (if the baby's ethnic origin warrants a test)
- full blood count and examination of blood film.

1.5.3 Use serum bilirubin measurement to determine treatment of hyperbilirubinaemia in babies 14 days of age and under (see table 1).

1.5.4 Carry out all the following tests in babies with prolonged jaundice (jaundice persisting for more than 14 days in term babies and 21 days in preterm babies):

- serum bilirubin with estimation of conjugated bilirubin
- examination of stool colour.

1.5.5 Ensure that routine metabolic screening (which includes screening for congenital hypothyroidism) has been performed.

1.5.6 Do not subtract conjugated bilirubin from total serum bilirubin when making decisions about the management of hyperbilirubinaemia.

1.5.7 Do not routinely use the bilirubin/albumin ratio to modify treatment thresholds for hyperbilirubinaemia.

1.6 Treatment

1.6.1 Offer parents or carers information about treatment, including:

- treatment alternatives
- anticipated duration of treatment
- reassurance that, usually, breastfeeding and physical contact with the baby can continue.

Phototherapy

1.6.2 Offer parents verbal and written information on all of the following:

- why phototherapy is being considered
- the reasons why phototherapy is helpful in hyperbilirubinaemia
- the possible adverse effects of phototherapy
- the need for eye protection and routine eye care
- the anticipated duration of treatment
- the fact that interruptions will be allowed for feeding, nappy changing and cuddles as long as the bilirubin levels are not significantly elevated
- what should happen if phototherapy fails
- information on rebound jaundice
- potential long-term adverse effects of phototherapy.

1.6.3 Use conventional phototherapy as first-line treatment for hyperbilirubinaemia in term babies.

1.6.4 Use conventional phototherapy as the treatment of choice when phototherapy is indicated for hyperbilirubinaemia.

1.6.5 Do not use fibreoptic phototherapy alone as first-line treatment for hyperbilirubinaemia in term babies.

1.6.6 Do not use sunlight to treat hyperbilirubinaemia.

1.6.7 Use multiple phototherapy to treat jaundiced babies who:

- fail to respond to conventional phototherapy treatment (that is, serum bilirubin does not fall within 6 hours of starting conventional phototherapy)
- have rapidly rising serum bilirubin levels (more than 8.5 micromol/litre/hour)
- have a serum bilirubin at a level for which exchange transfusion is being considered (see table 1).

1.6.8 Use fibreoptic phototherapy alone as first-line treatment of hyperbilirubinaemia in preterm babies. If fibreoptic phototherapy is not available, use conventional phototherapy.

1.6.9 Use phototherapy to treat preterm babies according to threshold levels based on the consensus, a calculation using (gestational age x 10) – 100 to generate the threshold level after 72 hours.

1.6.10 Use multiple phototherapy to treat preterm babies using the same criteria as for term babies (see recommendation 1.6.7).

1.6.11 During phototherapy, position term babies according to usual clinical practice.

1.6.12 During conventional phototherapy:

- stop phototherapy for up to 30 minutes every 3 to 4 hours to allow feeds
- continue lactation/feeding support
- do not give additional fluids or feeds routinely.

Maternal expressed milk is the additional feed of choice if available, and when additional feeds are indicated.

1.6.13 During multiple phototherapy:

- do not interrupt phototherapy for feeding but continue administering intravenous/oral feeds
- continue lactation/feeding support so that breastfeeding can start again when treatment stops.

Maternal expressed milk is the additional feed of choice if available, and when additional feeds are indicated.

1.6.14 Use eye protection and give routine eye care to the baby during phototherapy.

1.6.15 Use tinted headboxes or shields as an alternative to eye protection during phototherapy.

1.6.16 Do not use white curtains routinely with phototherapy.

1.6.17 Ensure all equipment is maintained and used according to the manufacturers' guidelines.

1.6.18 During phototherapy:

- apply treatment to the maximum area of skin
- maintain a thermo-neutral environment
- support parents by encouraging interaction with their baby.

1.6.19 Use the following bilirubin thresholds to manage hyperbilirubinaemia. If bilirubin levels continue to rise:

- initiate multiple phototherapy
- in cases of rhesus haemolytic disease initiate multiple phototherapy and prepare for an exchange transfusion.

Table 1 Serum bilirubin thresholds for phototherapy or exchange transfusion in term babies (micromol/litre)

Age (hours)	Repeat transcutaneous bilirubin/serum bilirubin (6–12 hours)	Consider phototherapy	Phototherapy	Exchange transfusion
0			> 100	> 100
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42	> 137	> 187	> 237	> 450
48	> 150	> 200	> 250	> 450
54	> 162	> 212	> 262	> 450
60	> 175	> 225	> 275	> 450
66	> 187	> 237	> 287	> 450
72	> 200	> 250	> 300	> 450
78	> 212	> 262	> 312	> 450
84	> 225	> 275	> 325	> 450
90	> 237	> 287	> 337	> 450
96+	> 250	> 300	> 350	> 450

Preterm babies

- Use the following formula to calculate the threshold levels for initiating phototherapy in preterm babies:
  - For babies 72 hours and older: gestation age (weeks) X 10 minus 100.
  - For babies younger than 72 hours: use phototherapy at lower bilirubin levels.

1.6.20 Use incubators or bassinettes according to clinical need and availability.

1.6.21 Ensure that babies are kept hydrated during conventional phototherapy.

1.6.22 Do not use phototherapy in babies whose bilirubin does not exceed the threshold levels in table 1.

1.6.23 In babies whose bilirubin falls into the 'repeat transcutaneous bilirubin/serum bilirubin' category in table 1 repeat transcutaneous bilirubin/serum bilirubin in 6–12 hours.

1.6.24 In babies whose serum bilirubin falls into the 'consider phototherapy' category repeat serum bilirubin in 6 hours whether or not phototherapy is started.

1.6.25 During phototherapy:

- repeat serum bilirubin 4–6 hours after initiating phototherapy
- repeat serum bilirubin every 6–12 hours when serum bilirubin is stable or falling.

1.6.26 Stop phototherapy once serum bilirubin has fallen to a level at least 50 micromol/litre below the appropriate phototherapy threshold.

1.6.27 Check for rebound with a repeat serum bilirubin measurement between 12 and 18 hours after stopping phototherapy.

Exchange transfusion

1.6.28 Offer parents or carers information on exchange transfusion including:

- why an exchange transfusion is being considered
- reasons why an exchange transfusion is helpful in treating significant hyperbilirubinaemia
- the possible adverse effects of exchange transfusions

- when parents will be allowed to see and hold the baby after the exchange transfusion.

1.6.29 Use double-volume exchange transfusion with whole blood to treat babies:

- with or at risk of significant hyperbilirubinaemia
- with hyperbilirubinaemia that fails to respond to phototherapy.

1.6.30 Do not use the following to treat hyperbilirubinaemia:

- single-volume exchange transfusions
- albumin priming
- routine intravenous calcium during exchange transfusions.

Intravenous immunoglobulin

1.6.31 Use intravenous immunoglobulin (IVIG) as an adjunct to multiple phototherapy in rhesus haemolytic disease when serum bilirubin continues to rise by more than 8.5 micromol/litre/hour.

1.6.32 Give parents or carers information on IVIG including:

- why IVIG is being considered
- reasons why IVIG is helpful in significant hyperbilirubinaemia
- the possible adverse effects of IVIG
- when parents or carers will be allowed see and hold the baby.

Other

1.6.33 Do not use any of the following to treat hyperbilirubinaemia:

- agar
- albumin
- barbiturates
- charcoal
- cholestyramine
- D-penicillamine
- glycerin

- manna
- riboflavin
- traditional Chinese medicine
- acupuncture
- homeopathy.

2 Notes on the scope of the guidance

NICE guidelines are developed in accordance with a scope that defines what the guideline will and will not cover. The scope of this guideline is available from http://guidance.nice.org.uk/CG/Wave14/82/Scope.

This guideline covers all babies with jaundice from birth up to 28 days of age. Special attention was given to the recognition and management of neonatal jaundice in babies with dark skin tones.

It does not cover babies with jaundice that lasts beyond the first 28 days of life, babies with jaundice that requires surgical treatment to correct the underlying cause and babies with conjugated hyperbilirubinaemia.

How this guideline was developed

NICE commissioned the National Collaborating Centre for Women's and Children's Health to develop this guideline. The Centre established a guideline development group (see appendix A), which reviewed the evidence and developed the recommendations. An independent guideline review panel oversaw the development of the guideline (see appendix B).

There is more information about how NICE clinical guidelines are developed on the NICE website (www.nice.org.uk/guidelinesprocess). A booklet, 'How NICE clinical guidelines are developed: an overview for stakeholders, the public and the NHS' (fourth edition, published 2009), is available from NICE publications (phone 0845 003 7783 or email publications@nice.org.uk and quote reference N1739).

3 Implementation

NICE has developed tools to help organisations implement this guidance (see www.nice.org.uk/CGXX)'.

4 Research recommendations

The Guideline Development Group has made the following recommendations for research, based on its review of evidence, to improve NICE guidance and patient care in the future. The Guideline Development Group's full set of research recommendations is detailed in the full guideline (see section 5).

4.1 Risk factors

What are the factors that underlie the association between breastfeeding and jaundice?

Why this is important

There is good evidence that bilirubin levels are higher in breastfed babies than in those who are formula fed. This has been known for many years, yet the reasons for it have never been fully elucidated. The promotion of breastfeeding is a high priority for the NHS, and better understanding of the factors involved would assist in targeting intervention and support to those at highest risk.

4.2 Prediction

Good-quality prospective studies are needed to determine whether universal pre-discharge transcutaneous bilirubin screening reduces jaundice-related neonatal morbidity and hospital readmissions.

Why this is important

There is good evidence from some studies that a risk assessment that combines the result of a timed transcutaneous bilirubin level with risk factors for hyperbilirubinaemia is effective at preventing later significant hyperbilirubinaemia and hospital readmission. This promising strategy needs evaluation in large and diverse populations. More work is needed to determine whether or not the inclusion of risk factors is needed for an accurate risk assessment and, if so, which are the most valuable.

4.3 Recognition

Good-quality studies are needed to evaluate the accuracy of transcutaneous bilirubinometers in babies with:

- a gestational age under 37 weeks
- dark skin tones
- high levels of bilirubin.

Why this is important

There is good evidence that transcutaneous bilirubinometers are reliable in babies whose serum bilirubin level is below 250 micromol/litre. However, the lack of data on the reliability of transcutaneous estimation of bilirubin at levels above 250 micromol/litre, or in preterm babies, means that recommendations on transcutaneous bilirubinometry are necessarily limited. The method is noninvasive and it is important to know if its wider use could be supported.

4.4 Recognition

Studies are needed directly comparing the performance of different transcutaneous bilirubinometers.

Why this is important

There is good evidence that transcutaneous bilirubinometers are reliable in babies whose serum bilirubin level is below 250 micromol/litre. Transcutaneous bilirubinometers produced by different manufacturers vary in design and in cost, and various claims have been made about their performance, particularly when used in babies with dark skin tones. These can only be resolved by head-to-head comparative studies on large, diverse populations with a wide range of bilirubin levels.

4.5 National registries

National registries are needed of cases of significant hyperbilirubinaemia, kernicterus and exchange transfusions.

Why this is important

There is good evidence that kernicterus is a lifelong, devastating, disabling condition. There is some evidence (from US data) that the prevalence of kernicterus increased in the early 1980s. But there is also evidence that, since the adoption of the revised American Academy of Pediatrics guideline on hyperbilirubinaemia in 1994, both the prevalence of kernicterus and the use of exchange transfusion to treat hyperbilirubinaemia have declined. Given the rarity of kernicterus and the decline in the use of exchange transfusion it is essential that national data are collected to inform the future development of management strategies for neonatal hyperbilirubinaemia and the revision of this guideline. Recording all cases of significant hyperbilirubinaemia (for example, above 450 micromol/litre) would allow a more reliable estimate of the risk of developing kernicterus to be calculated.

5 Other versions of this guideline

5.1 Full guideline

The full guideline, 'Neonatal jaundice' contains details of the methods and evidence used to develop the guideline. It is published by the National Collaborating Centre for Women's and Children's Health, and is available from www.ncc-wch.org.uk and our website (www.nice.org.uk/CGXXfullguideline). **[Note: these details will apply to the published full guideline.]**

5.2 Quick reference guide

A quick reference guide for healthcare professionals is available from www.nice.org.uk/CGXXquickrefguide

For printed copies, phone NICE publications on 0845 003 7783 or email publications@nice.org.uk (quote reference number N1XXX). **[Note: these details will apply when the guideline is published.]**

5.3 'Understanding NICE guidance'

A summary for patients and carers ('Understanding NICE guidance') is available from www.nice.org.uk/CGXXpublicinfo

For printed copies, phone NICE publications on 0845 003 7783 or email publications@nice.org.uk (quote reference number N1XXX). **[Note: these details will apply when the guideline is published.]**

We encourage NHS and voluntary sector organisations to use text from this booklet in their own information about neonatal jaundice.

6 Related NICE guidance

Published

- Diabetes in pregnancy: management of diabetes and its complications from pre-conception to the postnatal period. NICE clinical guideline 63 (2008). Available from www.nice.org.uk/CG63
- Antenatal care: routine care for the healthy pregnant woman. NICE clinical guideline 62 (2008). Available from www.nice.org.uk/CG62
- Intrapartum care: care of healthy women and their babies during childbirth. NICE clinical guideline 55 (2007). Available from www.nice.org.uk/CG55
- Routine postnatal care of women and their babies. NICE clinical guideline 37 (2006). Available from www.nice.org.uk/CG37

7 Updating the guideline

NICE clinical guidelines are updated so that recommendations take into account important new information. New evidence is checked 3 years after publication, and healthcare professionals and patients are asked for their views; we use this information to decide whether all or part of a guideline needs updating. If important new evidence is published at other times, we may decide to do a more rapid update of some recommendations.

Appendix A: The Guideline Development Group

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Appendix B: The Guideline Review Panel

The Guideline Review Panel is an independent panel that oversees the development of the guideline and takes responsibility for monitoring adherence to NICE guideline development processes. In particular, the panel ensures that stakeholder comments have been adequately considered and responded to. The panel includes members from the following perspectives: primary care, secondary care, lay, public health and industry.

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Appendix C: The algorithm

[NB NICE to add a note here if the algorithms are being published as a separate file on the website]

[Add a hyperlink to the QRG here if relevant]