

Neonatal jaundice: phototherapy

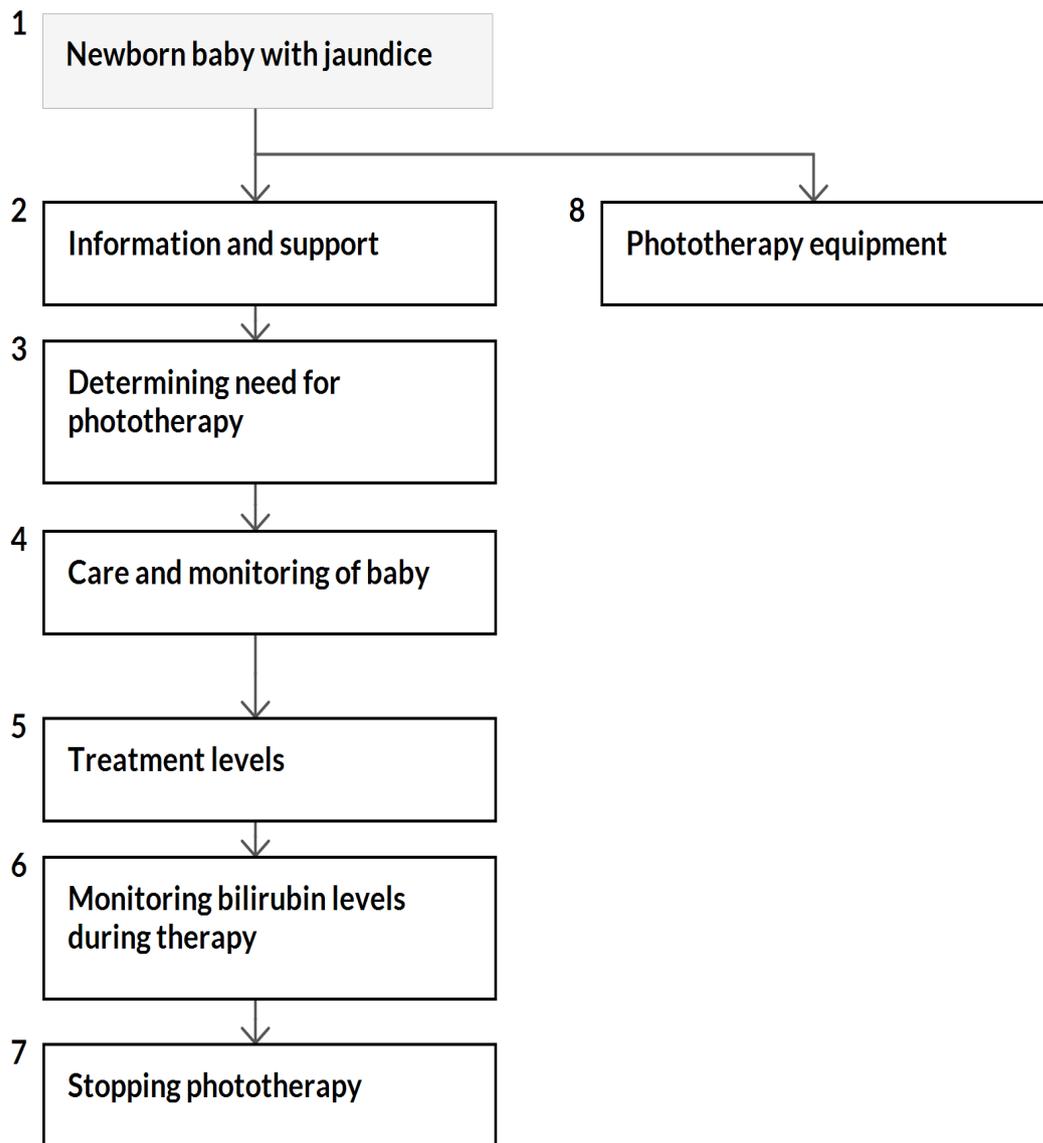
NICE Pathways bring together everything NICE says on a topic in an interactive flowchart. NICE Pathways are interactive and designed to be used online.

They are updated regularly as new NICE guidance is published. To view the latest version of this NICE Pathway see:

<http://pathways.nice.org.uk/pathways/neonatal-jaundice>

NICE Pathway last updated: 15 July 2020

This document contains a single flowchart and uses numbering to link the boxes to the associated recommendations.



1 Newborn baby with jaundice

No additional information

2 Information and support

Offer parents or carers verbal and written information on phototherapy including all of the following:

- why phototherapy is being considered
- why phototherapy may be needed to treat significant hyperbilirubinaemia
- the possible adverse effects of phototherapy
- the need for eye protection and routine eye care
- reassurance that short breaks for feeding, nappy changing and cuddles will be encouraged
- what might happen if phototherapy fails
- rebound jaundice
- potential long-term adverse effects of phototherapy
- potential impact on breastfeeding and how to minimise this.

3 Determining need for phototherapy

In babies who are clinically well, have a gestational age of 38 weeks or more and are more than 24 hours old, and who have a bilirubin level that is below the phototherapy threshold but within 50 micromol/litre of the threshold (see the [threshold table \[See page 7\]](#) and the [treatment threshold graphs](#) from the CG98 full guideline), repeat bilirubin measurement as follows:

- within 18 hours for babies with risk factors for neonatal jaundice (those with a sibling who had neonatal jaundice that needed phototherapy or a mother who intends to exclusively breastfeed)
- within 24 hours for babies without risk factors.

In babies who are clinically well, have a gestational age of 38 weeks or more and are more than 24 hours old, and have a bilirubin level that is below the phototherapy threshold by more than 50 micromol/litre (see the [threshold table \[See page 7\]](#) and the [treatment threshold graphs](#) from the CG98 full guideline), do not routinely repeat bilirubin measurement.

Do not use phototherapy in babies whose bilirubin does not exceed the phototherapy threshold

levels in the [threshold table \[See page 7\]](#) and the [treatment threshold graphs](#) from the CG98 full guideline.

4 Care and monitoring of baby

During phototherapy:

- place the baby in a supine position unless other clinical conditions prevent this
- ensure treatment is applied to the maximum area of skin
- monitor the baby's temperature and ensure the baby is kept in an environment that will minimise energy expenditure (thermoneutral environment)
- monitor hydration by daily weighing of the baby and assessing wet nappies
- support parents and carers and encourage them to interact with the baby.

Give the baby eye protection and routine eye care during phototherapy.

Use tinted headboxes as an alternative to eye protection in babies with a gestational age of 37 weeks or more undergoing phototherapy.

During phototherapy:

- using clinical judgement, encourage short breaks (of up to 30 minutes) for breastfeeding, nappy changing and cuddles
- continue lactation/feeding support
- do not give additional fluids to babies who are breastfed.

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

During [intensified phototherapy \[See page 8\]](#):

- do not interrupt phototherapy for feeding but continue administering intravenous/enteral 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.

5 Treatment levels

Use [phototherapy \[See page 8\]](#) to treat significant hyperbilirubinaemia (see the [threshold table \[See page 7\]](#) and the [treatment threshold graphs](#) from the CG98 full guideline) in babies.

Consider [intensified phototherapy \[See page 8\]](#) to treat significant hyperbilirubinaemia in babies if any of the following apply:

- the serum bilirubin level is rising rapidly (more than 8.5 micromol/litre per hour)
- the serum bilirubin is at a level within 50 micromol/litre below the threshold for which exchange transfusion is indicated after 72 hours or more since birth (see [threshold table \[See page 7\]](#) and the [treatment threshold graphs](#) from the CG98 full guideline).
- the bilirubin level fails to respond to initial phototherapy (that is, the level of serum bilirubin continues to rise, or does not fall, within 6 hours of starting phototherapy).

If the serum bilirubin level falls during intensified phototherapy to a level 50 micromol/litre below the threshold for which exchange transfusion is indicated reduce the intensity of phototherapy.

Do not use sunlight as treatment for hyperbilirubinaemia.

6 Monitoring bilirubin levels during therapy

During phototherapy:

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

7 Stopping phototherapy

Stop phototherapy once serum bilirubin has fallen to a level at least 50 micromol/litre below the phototherapy threshold (see [threshold table \[See page 7\]](#) and the [treatment threshold graphs](#) from the CG98 full guideline).

Check for rebound of significant hyperbilirubinaemia with a repeat serum bilirubin measurement 12–18 hours after stopping phototherapy. Babies do not necessarily have to remain in hospital for this to be done.

8 Phototherapy equipment

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

Use incubators or bassinets according to clinical need and availability.

Do not use white curtains routinely with phototherapy as they may impair observation of the baby.

Consensus-based bilirubin thresholds for management of babies 38 weeks or more gestational age with hyperbilirubinaemia

Age (hours)	Bilirubin measurement (micromol/litre)	
0	>100	>100
6	> 125	> 150
12	> 150	> 200
18	> 175	> 250
24	> 200	> 300
30	> 212	> 350
36	> 225	> 400
42	> 237	> 450
48	> 250	> 450
54	> 262	> 450
60	> 275	> 450
66	> 287	> 450
72	> 300	> 450

78	> 312	> 450
84	> 325	> 450
90	> 337	> 450
96+	> 350	> 450
Action	Start phototherapy	Perform an exchange transfusion unless the bilirubin level falls below threshold while the treatment is being prepared

Phototherapy that is given with an increased level of irradiance with an appropriate spectrum. Phototherapy can be intensified by adding another light source or increasing the irradiance of the initial light source used.

Phototherapy given using an artificial light sources with an appropriate spectrum and irradiance. This can be delivered using light-emitting diode, fibreoptic or fluorescent lamps, tubes or bulbs.

Sources

Jaundice in newborn babies under 28 days (2010 updated 2016) NICE guideline CG98

Your responsibility

Guidelines

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them

and their families and carers or guardian.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Technology appraisals

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, health professionals are expected to take these recommendations fully into account, alongside the individual needs, preferences and values of their patients. The application of the recommendations in this interactive flowchart is at the discretion of health professionals and their individual patients and do not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or their carer or guardian.

Commissioners and/or providers have a responsibility to provide the funding required to enable the recommendations to be applied when individual health professionals and their patients wish to use it, in accordance with the NHS Constitution. They should do so in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Medical technologies guidance, diagnostics guidance and interventional procedures guidance

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take these recommendations fully into account. However, the interactive flowchart does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Commissioners and/or providers have a responsibility to implement the recommendations, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this interactive flowchart should be interpreted in a way that would be inconsistent with compliance with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.