# Neonatal jaundice

## *Executive summary*

## Introduction

Jaundice is a common problem affecting up to 60% of term neonates and 80% of preterm neonates.

It is thought to develop due to the occurrence of:

* Elevated bilirubin production due to the shortened life span of fetal erythrocytes and a relatively high haematocrit at birth
* Reduced hepatic excretory capacity

In the vast majority of neonates, this physiological jaundice will resolve spontaneously (by about 10 days of age) and causes no harm. In exclusively breast-fed babies it may persist for longer.

It is important to identify those neonates with jaundice who require further investigation and treatment.

Even in those neonates where physiological jaundice is presumed, bilirubin can sometimes rise to potentially dangerous levels and require intervention.

### Target users

* Doctors
* Nurses

### Target area of use

* Ward

### Key areas of focus / New additions / Changes

This guidelines outlines in clinical form the management of neonatal jaundice. For research participants, there is a more formal Standard Operating Procedure SOP-CLS-012 on sharepoint, which should be followed.

## Limitations

We do not routinely offer exchange transfusion. Patients seen in Keneba will require referral as serum bilirubin assay and phototherapy are not routinely available there.

## Presenting symptoms and signs

Jaundice appears as a yellow discolouration of the sclerae and skin which typically starts centrally (face and chest) and spreads out to the peripheries.

Visual inspection for the level of jaundice alone is unreliable and therefore a bilirubin level should always be measured urgently if a baby appears visibly jaundiced

The baby should be examined for associated features including:

* Signs of dehydration
* Signs of infection
* Lethargy
* Poor feeding

Every baby with jaundice should be weighed and the percentage of its birth weight lost needs to be calculated:

(birth weight – current weight x100)  
 birth weight

Babies who have lost > 10% of their birth weight are more likely to have some degree of dehydration which will make their jaundice worse. These babies need particular attention to be paid to their hydration status.

## Differential diagnoses

* Rhesus haemolytic disease
* ABO incompatibility
* Congenital spherocytosis
* Intrauterine infection
* Glucose-6-phosphate dehydrogenase deficiency
* Bacterial sepsis

## Investigation

All babies with suspected jaundice should have an urgent bilirubin level checked.

Further investigations may be necessary depending on your clinical assessment. The following can be considered:

* Group and save
* Full blood count and blood film
* Direct Coomb’s Test and maternal blood group
* Renal function
* Liver function
* Culture of blood, urine and CSF if considering sepsis as the cause

Jaundice appearing within the first 24 hours of life is more likely to be pathological and often indicates haemolysis. These babies require urgent medical review and investigation as they are most at risk of developing encephalopathy due to a rapidly rising bilirubin.

All babies with jaundice appearing within the first 24 hours should have the following investigations:

* Total serum bilirubin
* FBC and blood film
* Blood group and DCT
* Maternal blood group
* Culture of blood, urine and CSF (if concerned about sepsis)

Once the bilirubin level is obtained, it should be plotted on the correct gestation specific chart (<https://www.nice.org.uk/guidance/cg98/resources/treatment-threshold-graphs-excel-544300525>)

In babies with jaundice within the first 24 hours or those who appear to be significantly jaundiced, consider starting phototherapy before the result is back if there is a delay in getting the results.

## Phototherapy

Babies whose bilirubin level plots between the phototherapy and exchange transfusion lines on the treatment threshold graph should be placed in a basinet and started on phototherapy.

Consider intense phototherapy (2 lamps) in babies who:

* Have a bilirubin level which plots within 50 micromol/L of the exchange transfusion line or higher
* Have a rapidly rising bilirubin (> 8.5 micromol/L per hour)
* Have a bilirubin level that fails to respond to initial phototherapy

Once phototherapy is initiated, a repeat bilirubin level should be checked in 4-6 hours

During phototherapy the bilirubin level should be measured every 6-12 hours once the bilirubin is stable or falling

When the bilirubin level is more than 50 micromol/L below the phototherapy threshold line, phototherapy can be stopped

Check for rebound hyperbilirubinaemia by repeating a bilirubin level 12-18 hours after stopping phototherapy

**Exchange transfusion:** if the bilirubin level exceeds the exchange transfusion line on the treatment graph, this baby needs to be discussed with the on-call consultant and consider transfer to EFSTH for exchange transfusion.

## Prolonged jaundice

Prolonged jaundice refers to jaundice persisting beyond 14 days in a term neonate and 21 days in a preterm neonate.

This must be investigated as some causes may require further treatment.

The following steps must be taken where prolonged jaundice occurs:

* a full history and clinical examination should be performed
* a weight should be measured
* stools should be examined: pale, chalky stools and dark urine suggests cholestasis
* check FBC, LFTs and thyroid function tests
* serum bilirubin should be taken to establish whether the bilirubin is conjugated or unconjugated. Conjugated bilirubinaemia is defined as a conjugated bilirubin > 17 mmol/L if the total bilirubin is < 85 mmol/L or more than 20% of the total bilirubin if the total is > 85 mmol/L

If the bilirubin is conjugated, consultation with a specialist should take place to determine further investigation and management.

Most commonly the diagnosis is unconjugated hyperbilirubinaemia due to breast milk jaundice, but this is a diagnosis of exclusion.

In babies who are well with normal bloods and an unconjugated hyperbilirubinaemia no further investigations are required.

## Key Issues for Nursing care

* Ensure the lights are placed at the correct distance from the baby, as per manufacturers advice (generally this is at 30 cm).
* Place the baby in a supine position.
* Ensure the maximum area of skin is exposed (baby should only be in a nappy).
* Ensure the eyes are covered.
* Babies should remain under the phototherapy lights as much as possible, having short breaks for feeds and cares.
* Monitor the baby’s temperature and other vital signs every 4 hours as babies receiving phototherapy are at increased risk of dehydration and so their hydration status should be assessed daily and feeding support given to their carers.
* Daily weights should be recorded.

## References

NICE guidelines: Jaundice in newborn babies under 28 days (2010 updated 2016).

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