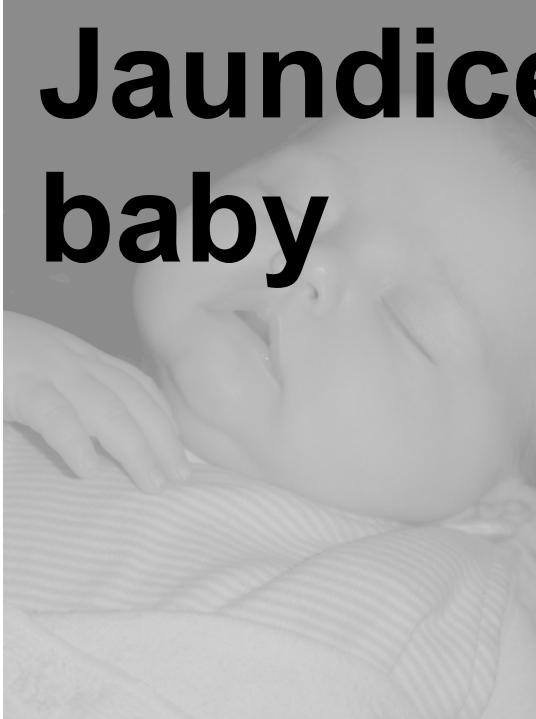


Jaundice in your baby



There are two different types of jaundice – physiological and pathological. Physiological means what normally happens, pathological refers to the abnormal or illness. In this handout we will focus on physiological jaundice since it is the most common form of jaundice.

What is Jaundice?

Jaundice is a description referring to the yellowing of a person's skin. Physiological jaundice commonly occurs in newborn babies, from about the third day after their birth. When a baby is still inside his or her mother's womb, the baby needs high numbers of red blood cells. This is because it is getting its oxygen from the umbilical cord blood rather than from breathing through its lungs. The haemoglobin in the red blood cells carries the oxygen. Therefore, the more haemoglobin (or red blood cells) the more oxygen the baby gets. Once the baby is born it no longer needs all of this haemoglobin.

The haemoglobin is broken down by the liver and converted into bilirubin, excreting it in the faeces of the baby. The baby uses bile to help in this process – hence the yellow colour of jaundice. Because the baby's body is immature and the bowels may be slow to

move the bilirubin, some bilirubin is reabsorbed from the intestines back into the baby's body. This then deposits into the tissues, changing the colour of the baby's skin and eyes.

Pathological jaundice shows up as the same yellowing of the skin and eyes but appears within the first 24 hours after the birth. However, it is caused by an underlying problem rather than a normal mechanism of excreting the excess red blood cells in a newborn. The cause may be blood incompatibilities, a metabolic disorder or a blockage in the liver. Investigation and treatment is needed for these conditions to prevent serious complications occurring.

Problems with Jaundice

You may wonder why, if physiological jaundice is normal, do doctor's become concerned about its appearance. Normal jaundice on its own is not a cause of serious concern. Some babies though have more difficulty in dealing with the high levels of bilirubin in their bodies. Premature babies for instance are at higher risk of problems associated with jaundice. The initial product caused by the breakdown of the red blood cells is fat soluble and so cannot be excreted. If this substance deposits itself into the cells of the fatty tissues around the brain there is an increased risk of brain damage. This is a very rare condition and would be typically only be seen in a baby who was already very ill. This condition is called kernicterus. It is extremely unusual to find this condition in a healthy term baby who has normal physiological jaundice.

A common problem related to jaundice is that the jaundice can cause a baby to be more sleepy than normal and less inclined to feed. Drinking milk will result in the baby opening its bowels, eliminating the bilirubin in the process. If the baby is very sleepy and refusing to feed, the bilirubin will be reabsorbed back into the



baby's body from the intestines, increasing the bilirubin levels, and also is at risk of dehydration. Frequent feeding can reduce the risk of this problem.

Testing Options

If you had your baby in countries such as Australia, the United Kingdom, New Zealand and much of Europe or North America, your baby would only have the bilirubin levels tested if the baby appeared ill or the jaundice appeared before the third day of life. However in Singapore many paediatricians routinely test the baby's bilirubin levels. The test is done by taking a sample of blood from your baby and checking the bilirubin level of that blood. You can:

1. Choose to have no testing done
2. Choose to have testing done if other symptoms appear
3. Choose to have the test done routinely

If the test is done and the paediatrician believes the level is high for the age of your baby, they will recommend that your baby is given phototherapy.

Phototherapy Treatment

Phototherapy treatment is used to reduce the bilirubin levels in a baby with jaundice. This involves undressing the baby and placing them in a plastic crib on top of a light board. The baby has a blindfold put over its eyes to protect them from the light and UV lights are then put on both above and below the baby. The baby's temperature will have to be closely monitored to ensure they do not become overheated. Usually this treatment is done in the nursery. However, the phototherapy unit is on wheels and so can be moved to your postnatal room if you would like to have your baby close by while receiving the treatment. In most cases, the baby would be under the lights for at least 24 hours, only coming out for feeding.

The American Academy of Pediatrics suggests that once the bilirubin level has dropped below 14-15 mg/dL (238-255 $\mu\text{mol/L}$) the phototherapy can be discontinued and that in most cases do not need to have further blood testing carried out.

There are varying opinions amongst paediatricians around the world as to what bilirubin level requires phototherapy treatment. We have included the table used by the American Academy of Pediatrics below to provide you with a guideline. Paediatricians in Singapore may suggest phototherapy at significantly lower bilirubin level than those documented in the table.

The World Health Organization point out that while phototherapy is an effective treatment for moderately severe jaundice it may have negative consequences for breastfeeding and the relationship between the mother and her baby. In their paper on postpartum care of the mother and newborn, they emphasise that interventions aimed at lowering serum bilirubin values are performed too often in term infants. gestational age and other problems. They state "It has never been proven that bilirubin values $<340 \mu\text{mol/L}$ are harmful for term infants not suffering from haemolytic disease.²" They emphasise that the use of phototherapy for neonatal jaundice in healthy term babies on the third or later days after birth, for bilirubin values $<300 \mu\text{mol/L}$ is a practice which is clearly harmful or ineffective and should be eliminated.

Alternatives to Phototherapy

If you wish to take a less interventative approach to jaundice treatment you may choose to continue frequent feeding and exposing your baby to indirect sunlight to help their body excrete the bilirubin.

Some paediatricians may recommend supplementing your baby with water to help flush the bilirubin out. The majority of bilirubin is excreted through the faeces rather than the urine. In addition, water or dextrose water given to the baby may result in the baby being less inclined to feed since its stomach will feel full. A lack of food will prolong the time the bilirubin is in the intestine waiting to be cleared and increases the risk of it being reabsorbed back into the body, resulting in increased bilirubin levels.

Many women with jaundiced babies find they are advised to stop breastfeeding in order to reduce the bilirubin levels. There is no evidence that this is beneficial to the baby. The colostrums provided in the first few days has a strongly laxative action and will assist the baby in opening its bowels and eliminating



bilirubin. Both the American Academy of Pediatrics and the World Health Organisation strongly advise against this practice.

“The AAP discourages the interruption of breast-feeding in healthy term newborns and encourages continued and frequent breast-feeding (at least eight to ten times every 24 hours). Supplementing nursing with water or dextrose water does not lower the bilirubin level in jaundiced, healthy, breast-feeding infants.¹”

What is Breast-milk Jaundice?

The term breast-milk jaundice refers to jaundice that persists beyond the first week or two in babies who are breastfed. It is thought that breastmilk may contain a substance that delays the excretion of bilirubin. Mothers are frequently recommended to stop breastfeeding for a period of time if their babies have persistent jaundice. However, many practitioners now believe that this does have any benefit to the baby and may seriously impact the success of breastfeeding. Physiological jaundice that persists beyond the first week, with no other signs of illness in an otherwise healthy baby, is simply a variation on the normal. Increasing breastfeeds and ensuring the baby does not become dehydrated should be all that is necessary³.

References

1. American Academy of Pediatrics, 1994, *Management of Hyperbilirubinemia in the Healthy Term Newborn: Practice Guidelines*, [online] Available: <http://www.aap.org/policy/hyperb.htm>
2. World Health Organisation, *Postpartum care of the mother and newborn: a practical guide*, [online] Available: http://www.who.int/reproductive-health/publications/MSM_98_3/MSM_98_3_table_of_contents.en.html
3. Sears, W. *Breastfeeding A Newborn With Jaundice*, [online] Available: <http://askdrsears.com/html/2/T029600.asp>

Guidelines for phototherapy treatment

	25-48 hrs bilirubin level	49-72 hrs bilirubin level	>72 hrs bilirubin level
Consider Phototherapy †	≥12 mg/dL (170 µmol/L)	≥15 mg/dL (260 µmol/L)	≥17 mg/dL (290 µmol/L)
Phototherapy	≥15 mg/dL (260 µmol/L)	≥18 mg/dL (310 µmol/L)	≥20 mg/dL (340 µmol/L)
Exchange Transfusion	≥20 mg/dL (340 µmol/L)	≥25 mg/dL (430 µmol/L)	≥25 mg/dL (430 µmol/L)
Transfusion & Phototherapy ‡	≥25 mg/dL (430 µmol/L)	≥30 mg/dL (510 µmol/L)	≥30 mg/dL (510 µmol/L)

† Phototherapy at these levels is a clinical option, meaning that the intervention is available and may be used on the basis of individual clinical judgment

‡ Intensive phototherapy should produce a decline of 1-2 mg/dL within 4 to 6 hours and the level should continue to fall and remain below the threshold level for exchange transfusion. If this does not occur, it is considered a failure of phototherapy.

Term infants who are clinically jaundiced at <=24 hours old are not considered healthy and require further evaluation

Source: American Academy of Pediatrics
(<http://www.aap.org/policy/hyperb.htm>)

