

Patient information from the BMJ Group

Jaundice in newborn babies

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Jaundice in newborn babies

Many babies get jaundice in their first week of life. Their skin and the whites of their eyes may look slightly yellow. In most babies the jaundice goes away after a week or two without any treatment. But sometimes it can affect a baby's brain. That's why doctors always watch jaundice in babies very carefully, so that they can treat it before this happens.

We've brought together the best research about jaundice in newborn babies and weighed up the evidence about how to treat it. You can use our information to talk to your doctor and decide which treatments are best for your baby.

What is jaundice in newborn babies?

When a baby has jaundice their skin and the whites of their eyes look yellow. Jaundice happens when there is too much of a substance called bilirubin in your baby's blood.

Jaundice usually clears up after a week or two and doesn't cause problems. But in rare cases it can affect a baby's brain, causing things like hearing problems and learning difficulties.^[1] So some babies may need to have the jaundice treated to bring their bilirubin level back to normal.^{[2] [3]}

Bilirubin is made naturally in the body when **red blood cells** that aren't needed any more are broken down. Usually, the **liver** changes the bilirubin into a form the body can get rid of as waste. But sometimes the body makes more bilirubin than it can process. When that happens, bilirubin builds up in the body and makes the skin and the whites of the eyes look yellow.^{[4] [5]}

Newborn babies get jaundice for two reasons:^{[4] [5] [6] [7]}

- They produce twice as much bilirubin as adults. This is because newborn babies make and break down far more red blood cells than adults
- Their liver isn't properly developed. This means it may not be able to process the extra bilirubin that their body is making.

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Some babies with jaundice need light treatment.

Babies usually get jaundice in the first few days after birth.^[4] ^[7] Your baby's doctor may call this physiological jaundice. By the time they are about 2 weeks old, babies make less bilirubin.^[4] So the jaundice clears up because their body isn't producing too much bilirubin any more.

Some things can increase the chances of your baby getting jaundice.

- Being born early (premature birth). If your baby is born early they are more likely to get jaundice than babies born around their due date (full term). This is because their liver is not as well developed. So your baby can't get rid of bilirubin that well. Instead, bilirubin builds up in their body, causing jaundice.^[6]
- Getting bruised during birth. Sometimes babies are bruised during birth or slightly hurt by instruments such as forceps. When this happens, their body has to break down even more red blood cells than usual. So, there is more bilirubin in their body, and they will be more likely to get jaundice.^[5]
- Breastfeeding. Babies are more likely to get jaundice if they're breastfed. But they don't usually need any treatment. Doctors think this happens because babies who are breastfed may not get enough milk in the first few days after they are born. This means they may get dehydrated and are less able to get rid of the bilirubin as waste.^[4] If this happens to your baby you may be advised to breastfeed them more often or give them some formula milk.^[5]

Babies who are breastfed can sometimes get jaundice between six days and two weeks after they are born. This is called late-onset jaundice. Doctors don't exactly know why this happens. It seems that there's something in breast milk that makes it harder for newborn babies to get rid of the bilirubin in their blood.^[5] You won't usually have to stop breastfeeding. But you may be encouraged to breastfeed your baby frequently. This might mean waking up your baby to feed them if they are sleepy.^[8] Late-onset jaundice usually clears up on its own.

What are the symptoms of jaundice in newborn babies?

It can be hard to tell if your baby's skin is yellow, especially if they have dark skin.

Newborn babies who have jaundice may get a yellow tinge to:

- Their skin
- The whites of their eyes
- The inside of their mouth.

If your baby has white skin, it should look normal if you gently press it with your fingertips. But if the skin looks yellow after you've pressed it, your baby may have jaundice. If your baby has dark skin, you'll need to check the whites of their eyes and the inside of their mouth.^[9] ^[10]

Jaundice usually appears when babies are between 2 days and 5 days old. If you can see the yellow tinge only on the skin of your baby's face the jaundice is probably mild. But as bilirubin builds up in your baby's blood the jaundice spreads further down your baby's body, for example to their arms and legs.^[9] (To read more about bilirubin and how jaundice happens, see [What is jaundice in newborn babies](#) .)

If you think your baby has jaundice, or if your baby has jaundice that is getting worse, or your baby has dark urine or pale chalky stools, you should contact your doctor, midwife, or health visitor straight away.^[8] ^[11] This is because:

- Most babies don't spend very long in hospital after they are born. So, doctors rely on parents to spot the early signs of jaundice during the first week at home.^[12] ^[13] Your midwife or health visitor, who visits you at home, will also check for signs of jaundice in your baby.
- Where you see jaundice on your baby's body is only a rough guide to how much bilirubin is in their blood. It can be especially hard to tell whether the jaundice has spread if your baby has dark skin.

If your doctor or midwife thinks your baby has jaundice, they will check their bilirubin level with a hand-held device placed briefly on your baby's skin (a bilirubinometer). If the reading is high, they will also do a blood test to check how much bilirubin is in your baby's blood.^[11] They may also carry out other tests to find out what has caused the jaundice. The tests will help them decide if your baby needs treatment.^[9] ^[14]

If your baby gets jaundice within 24 hours of being born or has jaundice for longer than about 10 days, he or she may need treatment. Or it may be a sign that your baby is unwell for another reason. For example, your baby may have an infection.^[15]

How common is jaundice in newborn babies?

Many babies get jaundice in the first few days of life. Because newborn babies don't usually stay in hospital for long after they're born, this might not be diagnosed until they're at home.

About half of all babies get jaundice in the first week of life.^[16] But it's more common in babies who are born early (prematurely). Between 7 in 10 and 8 in 10 babies who are born prematurely get jaundice.^[17]

Treatment for jaundice is one of the most common reasons why newborn babies go to hospital.^[18]

What treatments work for jaundice in newborn babies?

Jaundice in newborn babies usually goes away without any treatment. But if it's more serious simple treatments using lights usually help.

If your baby gets jaundice within 24 hours of being born or has jaundice for longer than about 10 days, he or she may need treatment. Or it may be a sign that your baby is unwell for another reason. For example, your baby may have an infection.^[15]

- Putting a baby in a cot placed under a series of ultraviolet lights (called **phototherapy**) is a simple treatment that almost always works.
- Or your baby might be wrapped in a **blanket that releases light** (fibre-optic light treatment).
- Occasionally a baby may need an **exchange transfusion**. This means some of your baby's blood is removed and replaced with blood from a donor. This treatment works very quickly. But rarely it can cause serious side effects.
- If your baby's bilirubin levels are rising very quickly, your baby may be given drugs called **immunoglobulins**. These are given into the veins, at the same time as phototherapy is used.

Which treatments work best? We've looked at the best research and given a rating for each treatment according to how well it works.

Treatment Group 1

Treatments for jaundice in newborn babies

Treatments that work

- [Light treatment \(phototherapy\)](#)
- [Fibre-optic light treatment \(phototherapy\)](#)

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- [Immunoglobulins](#)

Treatments that are likely to work

- [Exchange transfusion](#)

What will happen?

Jaundice in newborn babies usually goes away in a week or two without any treatment. Your baby's doctor will make sure the bilirubin in your baby's blood doesn't get too high.

Bilirubin is made when the body breaks down the **red blood cells** that aren't needed any more. Usually the **liver** gets rid of bilirubin. But newborn babies may not be able to do this very well. Instead the bilirubin builds up, causing jaundice.

If your baby's jaundice is not too bad, they may not need any treatment.^[19] But if your baby's bilirubin builds up, there are simple treatments that can prevent serious problems.^[2] ^[1]

One serious problem, called **kernicterus**, can affect your baby's brain. It can lead to hearing loss, learning difficulties, and late development.^[1] But this is rare.

It can be hard to tell if your baby has severe jaundice. So you should tell your doctor straight away if your baby has a yellow tinge to their skin or the whites of their eyes or inside their mouth, and:^[1]

- Is feeding less well than normal
- Seems less alert and harder to wake
- Has a high-pitched cry
- Seems limp.

If your doctor thinks the bilirubin in your baby's blood may be building up they will do a blood test. Some babies may need to have the jaundice treated to bring their bilirubin level back to normal.^[2] ^[3]

Treatments:

Light treatment (phototherapy)

In this section

Jaundice in newborn babies

Light treatment (or phototherapy) is a good way of treating jaundice in babies. The lights help your baby process bilirubin (the substance in their blood that makes their skin yellow).^[20] ^[21] Light treatment works so well that most babies don't need any other treatment.



Some babies with jaundice need light treatment.

To read more about bilirubin and how jaundice happens, see [What is jaundice in newborn babies?](#)

To have light treatment, your baby is put in a cot with lights about 20 centimetres (8 inches) from their body.^[20] Your baby's eyes are covered with a mask to stop the light hurting them.^[21] Most babies need about one or two days of light treatment. This treatment is done in hospital.^[11]

Several good-quality studies have found that light treatment helped to get rid of jaundice in babies.^[22] ^[23] ^[24] In one of these studies:^[22]

- Only 4 in 100 babies who had light treatment also needed to have an [exchange transfusion](#)
- But 25 in 100 babies who didn't have light treatment needed to have an exchange transfusion.

Light treatment has a few side effects. Your baby may:

- Become too warm
- Become dehydrated
- Get a skin rash or a tan.

Some doctors and parents are also concerned that babies who're given light treatment have to be separated from their mothers.^[20] So doctors have been looking at a new way of giving light treatment to babies. This is called [fibre-optic light treatment](#) .

Fibre-optic light treatment (phototherapy)

In this section

For fibre-optic light treatment, your baby will be wrapped in a blanket made of material that contains optical fibres. Light shines down these fibres, and this affects the bilirubin in your baby's blood in the same way as ordinary [light treatment](#). But you can hold and feed your baby while they're having this treatment. ^[21]

Research has shown that that fibre-optic light treatment works, but it may take longer than ordinary light treatment. ^[21] ^[25] In one study: ^[25]

- Babies who had fibre-optic light treatment needed to be treated for about 60 hours
- Babies who had ordinary light treatment needed to be treated for about 49 hours.

Studies have also found that: ^[21] ^[26]

- If your baby is born early (prematurely) it doesn't seem to matter whether they have fibre-optic light treatment or ordinary light treatment. They need to be treated for just as long, whichever treatment they have.
- Babies who have both fibre-optic light treatment and ordinary light treatment need to be treated for a shorter time than babies who are treated just one way. But having both treatments means you can't hold your baby. One advantage of fibre-optic treatment on its own is that you can hold your baby.

Exchange transfusion

In this section

Your baby may need an exchange transfusion if: ^[20]

- Their bilirubin level is very high and [light treatment](#) hasn't worked
- Their bilirubin level is rising rapidly and they need to be treated quickly.

During an exchange transfusion some of your baby's blood is taken out and replaced with fresh blood (from a blood donor). This is the fastest way to reduce bilirubin levels. ^[20] Your baby may need to have the transfusion again, depending on how much bilirubin remains in their body. ^[27]

Transfusion has been used for a long time to treat very high bilirubin levels in babies. Doctors agree that it works, but there hasn't been much research on it. This is because

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it wouldn't be fair to do a study in which some babies with high bilirubin had a transfusion and others did not.

Exchange transfusion can cause some serious side effects.^[27] ^[28] One review of the research found that:^[29]

- Up to 1 in 10 babies had some bad reactions (for example, internal bleeding)
- Between 3 in 1,000 and 4 in 1,000 babies who had an exchange transfusion died.^[29]

Most of the babies who had bad reactions or died were very unwell before the transfusion. In one study of 106 healthy babies who had exchange transfusions for very severe jaundice, none died and only one had a bad reaction.^[29]

Immunoglobulins

In this section

Immunoglobulins are proteins made by your **immune system**. They protect you from **infections** and diseases.

Immunoglobulins are collected from donated blood. They are separated from other things in the blood and then injected into your baby's veins to treat newborn jaundice.

You may hear this treatment called IVIG, which is short for intravenous immunoglobulins. Intravenous means into the vein.

The National Institute for Health and Care Excellence (NICE), the body that advises on treatments for the NHS, says intravenous immunoglobulin should be used, along with light therapy, as an alternative to exchange transfusion if your baby's bilirubin level is rising rapidly and they need to be treated quickly.^[30]

A large, good-quality study called a **systematic review** of three trials of 189 babies compared babies who had light therapy alone with those who had light therapy and immunoglobulins. It found that fewer babies who had immunoglobulins needed exchange transfusions, and that those who did needed less blood to be given during the transfusion.^[31]

Using immunoglobulins also meant the light therapy took less time than when it was used on its own, and babies were able to go home sooner. Babies who had both treatments needed around one day less of light therapy and were able to go home a day earlier than those who had light therapy on its own.^[31]

One good-quality trial looked at 112 babies, half of whom had light therapy only and the other half light therapy and immunoglobulins. It found that four of the 56 babies who had light therapy along with immunoglobulins needed exchange transfusion compared with

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16 who had light therapy only. Babies in the group who had light therapy only stayed in hospital for around four and a half days. Babies who were also given immunoglobulins went home after three days.^[32] None of the studies of immunoglobulins found any side effects.

Further informations:

Glossary:

red blood cells

Red blood cells are the part of your blood that makes it red. Their main job is to carry oxygen from your heart and lungs to the tissues of your body. Once these cells unload oxygen, they pick up carbon dioxide. They take carbon dioxide back to your lungs so it can be breathed out of your body.

liver

Your liver is on the right side of your body, just below your ribcage. Your liver does several things in your body, including processing and storing nutrients from food, and breaking down chemicals, such as alcohol.

immune system

Your immune system is made up of the parts of your body that fight infection. When bacteria or viruses get into your body, it's your immune system that kills them. Antibodies and white blood cells are part of your immune system. They travel in your blood and attack bacteria, viruses and other things that could damage your body.

infection

You get an infection when bacteria, a fungus, or a virus get into a part of your body where it shouldn't be. For example, an infection in your nose and airways causes the common cold. An infection in your skin can cause rashes such as athlete's foot. The organisms that cause infections are so tiny that you can't see them without a microscope.

systematic reviews

A systematic review is a thorough look through published research on a particular topic. Only studies that have been carried out to a high standard are included. A systematic review may or may not include a meta-analysis, which is when the results from individual studies are put together.

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