

Patient information from the BMJ Group

Bronchiolitis

In this section

[What is it?](#)

[What are the symptoms?](#)

[How is it diagnosed?](#)

[How common is it?](#)

[What treatments work?](#)

[What will happen?](#)

[Questions to ask](#)

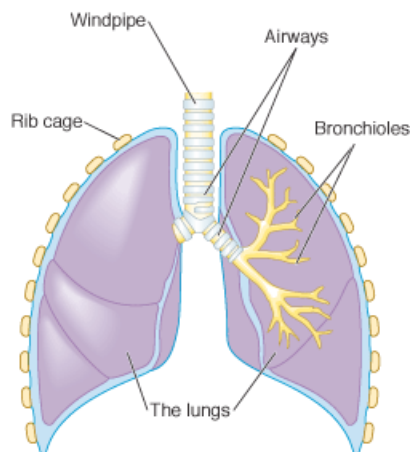
Bronchiolitis

A baby who has bronchiolitis may become breathless and wheezy. Some babies need hospital care. But most young children who have bronchiolitis aren't seriously ill and recover within a week at home.

We've brought together the best research about bronchiolitis 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 child.

What is bronchiolitis?

Bronchiolitis is an infection of the small tubes (bronchioles) inside the lungs. The infection is usually caused by a virus and often affects children under 2 years.



Bronchiolitis means that small tubes called bronchioles have become swollen and full of mucus. This can make it harder to breathe.

Air normally enters the lungs through the windpipe, down larger branching tubes (known as bronchi) and then into the smallest tubes (bronchioles).

The air passes from the bronchioles into millions of tiny air sacs (alveoli) in the lung and then into the bloodstream.

Bronchiolitis

A child with bronchiolitis has **inflamed** bronchioles.^[1] The bronchioles become swollen and full of mucus. This makes it harder for oxygen to reach the lungs and get into the bloodstream. Your child may wheeze and breathe faster to try to get the air they need.

Bronchiolitis is caused by a virus. **Respiratory syncytial virus** (RSV) is the most common type. It causes bronchiolitis in 7 in 10 children with the illness. In winter, nearly all bronchiolitis is caused by this virus.

RSV is also a common cause of colds, and usually causes only mild symptoms in adults. It's spread in the air by coughing and sneezing. By the age of 2 years, almost all children have had an infection caused by RSV.^[2]

For most children, an RSV infection isn't serious. But in about 1 in 5 babies and young children, the virus can infect the airways lower down and cause bronchiolitis.

In early spring, a virus called **parainfluenza virus type 3** is often the cause.^[3] This virus also causes **croup**. Croup is when a child's voice box or windpipe becomes inflamed. The child usually has a 'barking' cough.

The symptoms of bronchiolitis aren't severe for most young children. Your child probably won't need to go to hospital. But the illness can become serious for babies and infants, especially if they have other lung diseases or heart diseases.

You can't easily prevent your baby getting bronchiolitis. The viruses that cause it are common and all around us. There's no vaccine available yet to protect your baby against RSV.

But if you have a cold, you can try to stop the virus from spreading. You should wash your hands often, especially before you pick up or touch your child.

Why does my child have bronchiolitis?

Some things make it more likely that your child will get bronchiolitis. They include being:^[4]

- Six months of age or younger
- Born prematurely (before 37 weeks in the pregnancy)
- Exposed to cigarette smoke (including in the womb)^[5]
- In crowded living conditions
- Bottle-fed rather than breast-fed
- Born with Down's syndrome.^[6]

Bronchiolitis

Your child is more likely to get bronchiolitis severely if they: ^[7]

- Have close contact with other infected children
- Have a heart disease from birth
- Have a long-term lung disease
- Were born prematurely
- Had a low birth weight ^[5]
- Did not start breastfeeding in hospital ^[5]
- Have low oxygen levels because of any of the conditions above
- Have difficulty fighting infections (an immune problem)
- Are less than 6 weeks old.

What are the symptoms of bronchiolitis?

Your child may have only mild symptoms like a heavy cold and wheezy cough. But some children have more serious difficulties breathing. If a child's skin looks bluish it means they are not getting enough oxygen. This is an emergency.

Your child may have symptoms of a cold for the first two or three days, with a runny nose, cough and mild fever. But if the infection reaches the bronchioles, the child may have problems breathing.

Bronchiolitis



Most babies with bronchiolitis get only mild symptoms, but some have difficulty breathing.

Your child may have some of these symptoms: ^[8]

- Fast breathing
- Wheezing and a worsening cough
- Flaring nostrils
- Crackly sounding chest
- Muscles between the ribs sucked in as each breath takes more effort than normal
- Difficulty breathing
- Spells of stopping breathing.

You should see a doctor straight away if your baby has any of these symptoms. You should also see your doctor if your baby is too breathless to feed, or is coughing too much to feed. Some babies who are not feeding become **dehydrated** and need to go to hospital.

Your doctor will probably listen with a stethoscope for wheezing and crackling sounds in your baby's chest. Other tests aren't usually needed. But occasionally doctors may do one or more of the following: ^[9]

Bronchiolitis

- Take samples of fluid from your baby's nose to examine in a laboratory. This test can find out what virus is causing the illness.
- Take an x-ray of your baby's chest to check if there are any other problems.
- Do a blood test to find out if your baby has low levels of oxygen. Doctors don't do this often.

How common is bronchiolitis?

Bronchiolitis is most common in winter, or in the rainy season in warmer countries.

Bronchiolitis is the most common infection of the lower airways in babies and very young children. ^[10]

- About one third of all babies get bronchiolitis in their first year of life. ^[11] Most children aren't seriously ill.
- About 3 in 100 babies younger than one year need care in hospital for bronchiolitis. ^[11]
- The most common age for babies to be admitted to hospital is between 2 months and 6 months. ^[12]
- About half of all babies admitted to hospital with bronchiolitis develop a persistent cough and wheeze. ^[11]

What treatments work for bronchiolitis?

Most babies or young children with bronchiolitis can be cared for at home. But you should get medical help if your child doesn't drink and starts to get dehydrated (becomes low in body fluids) or has difficulty breathing.

Bronchiolitis is an infection of the small tubes (bronchioles) inside the lungs.

The symptoms of bronchiolitis aren't severe for most young children. But the illness can become serious for babies and infants, especially if they have other lung diseases or heart diseases. Babies who are born prematurely or who have problems fighting off infections (have an immune problem) may also be at greater risk of bronchiolitis severe enough to be life-threatening. ^[7]

- Your baby may need care in [hospital](#) until they are over the illness.
- Your baby may need to be fed through a special tube into their stomach and given extra oxygen.

Bronchiolitis

- Treatment with medicines is unlikely to help your child recover from bronchiolitis.
- A course of injections of palivizumab (brand name Synagis) each month during the winter can protect babies at high risk of life-threatening bronchiolitis.

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 bronchiolitis

Treatments that work

- [Palivizumab injections to prevent bronchiolitis](#)

Treatments that are likely to work

- [Taking care to prevent bronchiolitis from spreading](#)

Treatments that need further study

- [Bronchodilators](#)
- [Montelukast](#)
- [Ribavirin](#)
- [Surfactants](#)
- [Nebulised hypertonic saline](#)
- [Helium plus oxygen \(heliox\)](#)
- [Continuous positive airway pressure](#)
- [Nasal decongestants](#)

Treatments that are unlikely to work

- [Steroids](#)
- [Antibiotics](#)
- [Physiotherapy](#)

What will happen to my child?

Most young children with bronchiolitis aren't seriously ill and recover within a week. But some babies and infants have difficulties breathing and may need to go to hospital. Bronchiolitis can be life threatening, especially for children who have other serious heart or lung diseases.

You can care for a child who is not seriously ill at home. Make sure they rest and have plenty to drink.

But if your child has serious breathing problems or is not drinking enough (they are **dehydrated**) you may need to take your child to hospital. Most babies need to stay in hospital for only a short time to make sure they eat and drink enough. Your baby may be fed through a tube passed through their mouth and into their stomach. Rarely, a child may be given fluids through a drip into the bloodstream (**intravenously**).

Your child may need extra **oxygen**. It's given through a tube that's put in your child's nose, or through a type of hood that goes over their head. If your child still can't get enough oxygen, they may need to be put on a **ventilating machine** that breathes for them. But only about 1 in 50 babies who go to hospital need this. Babies at high risk because of another serious lung or heart disease are much more likely to need this help. ^[13]

A very small number of babies become extremely ill and may die. ^[14] Children are much more at risk if they have another serious lung or heart disease. About 3 in 100 children who already have heart or lung problems may die from bronchiolitis within two weeks. But just 1 in 1,000 children who are at risk for other reasons are likely to die if they get severe bronchiolitis.

Bronchiolitis may increase the chance of getting **asthma** later, but we don't know for sure. One study found it made no difference. ^[15] But another study showed that children who had bronchiolitis were twice as likely to have asthma five years later. ^[16]

Treatments:

Palivizumab injections to prevent bronchiolitis

In this section

If your baby is at high risk of life-threatening bronchiolitis, injections of a medicine called palivizumab (brand name Synagis) each month during the winter might mean they don't have to go to hospital.

Doctors only use these medicines to prevent bronchiolitis. They aren't used to treat babies and children who already have the illness.

Palivizumab is an **antibody** that can protect your baby against **respiratory syncytial virus** (RSV), the main cause of bronchiolitis. Your body naturally produces antibodies

Bronchiolitis

to defend it against viruses or bacteria. But if your baby has serious heart problems or lung problems, they might need the extra protection of antibody injections.

Doctors used to give babies another medicine called an **immunoglobulin** (brand name RespiGam). This medicine also fights the respiratory syncytial virus (RSV). But this drug has to be fed into a vein by a drip for four hours. Palivizumab is a newer drug and much easier to give to your baby. Your baby needs only one injection of palivizumab a month into the muscle of their thigh. Doctors usually prescribe palivizumab to babies at a high risk of getting bronchiolitis.

Usually, children will have this sort of treatment only if they are under 6 to 9 months of age, were born before the 35th week of pregnancy, and have serious lung or heart disease. ^[17]

There is plenty of research to show this medicine works. We found five good-quality studies (randomised controlled trials) including nearly 5,000 children with serious lung disease or heart disease. Children at high risk from bronchiolitis were half as likely to have to go to hospital if they had palivizumab injections. ^[18] ^[19]

This treatment has side effects but they aren't common. There's a small chance that your baby will get a fever or a skin reaction where they are injected with palivizumab. ^[19] One study also found that babies who were given this drug were slightly more likely to get serious breathing difficulties.

Taking care to prevent bronchiolitis from spreading

In this section

If nurses and doctors wash their hands between patients this helps a lot to prevent infection, including bronchiolitis, spreading to other children. ^[20] Separating babies with bronchiolitis from children who don't have it may help. Getting nurses and other hospital staff to wear gowns, masks, and gloves could also help. ^[21]

But more research into different nursing practices is needed to be sure of the best way of preventing the spread of bronchiolitis to other babies and young children in hospital.

Bronchodilators

In this section

Bronchodilators are drugs that are used to make your airways (bronchioles) open up (dilate). They are normally used to quickly help people with asthma. Examples include salbutamol (Ventolin, Airomir), adrenaline, ipratropium bromide (Atrovent), and aminophylline.

Sometimes babies are given this type of drug if they have problems breathing because of bronchiolitis. The medicine is usually breathed in (inhaled), although it can also be given as injections.

Bronchiolitis

We found a summary of the research (a **systematic review**) that looked at 30 good-quality studies (called **randomised controlled trials**) on using these medicines for bronchiolitis.

^[22] Overall, the review found that bronchodilators didn't seem to help. For example, the review found no evidence that bronchodilators can prevent children having to go into hospital or reduce the time they need to spend in hospital. It also found that children treated at home didn't seem to recover any faster if they used bronchodilators.

However, most of the studies in the review were fairly small and some had other problems affecting their reliability. More good research is needed to know for certain whether or not these drugs help with bronchiolitis.

There's a risk of side effects from bronchodilators. For example, a child may get a fast heartbeat, less oxygen in their blood, and tremors (muscle movements that can't be controlled) after using a bronchodilator. ^[22]

Physiotherapy

In this section

A physiotherapist may sometimes work with a child to try to remove the phlegm from their lungs. The idea is that this will help them breathe more easily. Physiotherapists can do this in various ways. For example, they may put your child in a position that helps their lungs drain. Or they might pat your child's chest to help the fluids move from their lungs into their throat. But a summary of the evidence (a **systematic review**) that looked at nine studies of different kinds of physiotherapy didn't find any evidence that it helped babies or young children with bronchiolitis. ^[23]

There's no evidence from these studies that chest physiotherapy is harmful.

Montelukast

In this section

Montelukast (brand name Singulair) is a drug that's sometimes used to treat asthma. It's used to help calm down the airways to prevent children getting asthma symptoms. In one small study we found there was no difference in what happened to babies with bronchiolitis whether they took montelukast or not. ^[24] Another small study did find that babies with bronchiolitis who took montelukast spent less time in hospital compared to those who were given a **placebo** (dummy) treatment. However, we still need more research to know whether this treatment is helpful and should be widely used. ^[25]

Ribavirin

In this section

Bronchiolitis

Ribavirin (brand name Virazole) is a medicine that attacks viruses. It isn't usually given to babies with bronchiolitis. There's no clear evidence that this drug will help your baby get better.

One summary of the research (called a **systematic review**) found that children given ribavirin were just as likely to get worse, die or need to stay in hospital as children given a dummy treatment (a placebo).^[26] But there is some evidence that ribavirin may reduce the length of time a child needs to stay on a ventilating machine to help with breathing.^[26]

Treatment with ribavirin probably won't help in the long term either. Two studies (**randomised controlled trials**) found that children treated with ribavirin for bronchiolitis were just as likely to have a wheezing illness and need hospital treatment the following year as those who had a placebo.^[27] ^[28]

Ribavirin can have side effects. The lungs of some children go into a spasm after treatment. The drug is given with an aerosol, and it can cause headaches and problems with contact lenses among people administering the treatment.^[29]

Surfactants

In this section

Surfactants are drugs that are usually used to help premature babies breathe more easily. They are similar to the natural fluid in the lungs. They are put into the lungs through a tube in the windpipe. Beractant (brand name Survant) and poractant (Curosurf) are two products available in the UK.

Some small studies have looked at surfactants in children with bronchiolitis who have to go on a ventilator. The studies found that the children needed to spend less time in the hospital intensive care unit.^[30] But we need more studies to know whether or not this treatment works.

The studies we found did not report any problems with this treatment. But, in premature babies, surfactants can sometimes create more mucus in the lungs, which can make breathing more difficult. They can also make the lungs bleed. But this is very rare.

Nebulised hypertonic saline

In this section

Spraying a fine aerosol of salt solution (saline) into a baby's lungs using a machine called a nebuliser may help in bronchiolitis. We found a summary of the findings from 11 studies (a **systematic review**) on a total of 1,090 babies.^[31]

Bronchiolitis

It found that those who inhaled a 3% solution of saline had a shorter hospital stay than those who inhaled a weaker nebulised saline solution. They also did better on a clinical score.

The saline solution may have helped by reducing swelling of the airways and removing mucus that can block the small airways in a viral infection.

Steroids

In this section

Steroids are medicines that reduce inflammation. They are often used to help control **asthma**. Doctors are unlikely to give steroids to a baby with bronchiolitis, but they may sometimes give them to older children with bronchiolitis who have a history of asthma or wheezing.

Lots of studies have found that steroids are unlikely to help children who have bronchiolitis avoid going into hospital or make their stay in hospital any shorter. ^[32] ^[33] ^[34] ^[35] And they don't prevent children with bronchiolitis from going on to get wheezing afterwards. ^[36]

Steroids have side effects. Sometimes, blood sugar levels get too high. This is called **hyperglycaemia**. And the drugs can affect a child's immune system and make them less able to fight infections. ^[37] A few children in the studies got muscle movements (tremors) after breathing in steroids. ^[38]

The full name for these medicines is corticosteroids. They're not the same as the anabolic steroids sometimes used by athletes or bodybuilders.

Antibiotics

In this section

A big summary of the research (a **systematic review**) and one study found no evidence that antibiotics do any good in bronchiolitis in babies and young children. ^[39] ^[40] Antibiotics are not recommended by guidelines and have no effect on the virus that causes bronchiolitis.

Helium plus oxygen (heliox)

In this section

Many children are given oxygen to help with their breathing if they are in hospital with bronchiolitis. Researchers have also explored using a mixture of helium and oxygen, which is called heliox. Helium is lighter than air, which may help the oxygen move more easily through the airways. This treatment is sometimes given to people with other lung

Bronchiolitis

conditions, such as asthma. However, not much research has explored its use in bronchiolitis.

One summary of the research (a [systematic review](#)) found four studies with a total of 84 children under age 2.^[41] Compared with children having standard oxygen treatment, those given heliox had less breathing difficulty within the first hour of treatment. However, there was no difference between the groups in other areas, such as how long they needed to stay in intensive care or whether they needed to use a ventilator.

Another study also found that children given heliox together with a bronchodilator (treatment to open up the airways) improved a bit more quickly than children given oxygen with a bronchodilator.^[42] However, a third study found that the mixture of helium and oxygen was no more effective than standard oxygen treatment for bronchiolitis.^[43] We need more research to know whether this treatment is helpful and should be widely used.

The studies didn't report any harmful effects from heliox.

Continuous positive airway pressure

In this section

Continuous positive airway pressure (CPAP) involves giving babies with bronchiolitis a steady flow of air and oxygen into both their nostrils to help them breathe more easily. This is done through a machine, which sits beside the cot. Tubes carry the air and oxygen mix into the baby's nose.

CPAP is widely used for babies with bronchiolitis. But there is not much research on how effective it is compared to other treatments.

One small study (a [randomised control trial](#)) found CPAP may be no more effective than other treatments at reducing the time babies need to stay in hospital, or improving their breathing.^[44] We need more research to know whether this treatment is definitely helpful.

The study didn't report any harmful effects from CPAP.

Nasal decongestants

In this section

Nasal decongestants are nose drops. They are meant to shrink the swelling of the lining of the nose and nasal air passages, and reduce the amount of mucus produced.

Swelling and blockage of the nasal passages makes feeding babies by mouth difficult, because they can't swallow and breathe at the same time unless it's through their nostrils.

Doctors use nasal congestants to ease the symptoms of bronchiolitis in some situations. However, we didn't find any good-quality evidence to say whether or not they worked.

Further informations:

Glossary:

inflammation

Inflammation is when your skin or some other part of your body becomes red, swollen, hot, and sore. Inflammation happens because your body is trying to protect you from germs, from something that's in your body and could harm you (like a splinter) or from things that cause allergies (these things are called allergens). Inflammation is one of the ways in which your body heals an infection or an injury.

asthma

Asthma is a disease of the lungs. It makes you wheeze, cough and feel short of breath. Asthma attacks are caused by inflammation and narrowing of your airways, which makes it hard for air to pass in and out of your lungs.

antibodies

Antibodies are an important part of your immune system. They are proteins made by white blood cells (another part of your immune system). They help destroy bacteria and other agents that cause infections.

randomised controlled trials

Randomised controlled trials are medical studies designed to test whether a treatment works. Patients are split into groups. One group is given the treatment being tested (for example, an antidepressant drug) while another group (called the comparison or control group) is given an alternative treatment. This could be a different type of drug or a dummy treatment (a placebo). Researchers then compare the effects of the different treatments.

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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placebo

A placebo is a 'pretend' or dummy treatment that contains no active substances. A placebo is often given to half the people taking part in medical research trials, for comparison with the 'real' treatment. It is made to look and taste identical to the drug treatment being tested, so that people in the studies do not know if they are getting the placebo or the 'real' treatment. Researchers often talk about the 'placebo effect'. This is where patients feel better after having a placebo treatment because they expect to feel better. Tests may indicate that they actually are better. In the same way, people can also get side effects after having a placebo treatment. Drug treatments can also have a 'placebo effect'. This is why, to get a true picture of how well a drug works, it is important to compare it against a placebo treatment.

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Bronchiolitis

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Bronchiolitis

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Bronchiolitis

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