

## Patient information from the BMJ Group

# Diarrhoea in children

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](#)

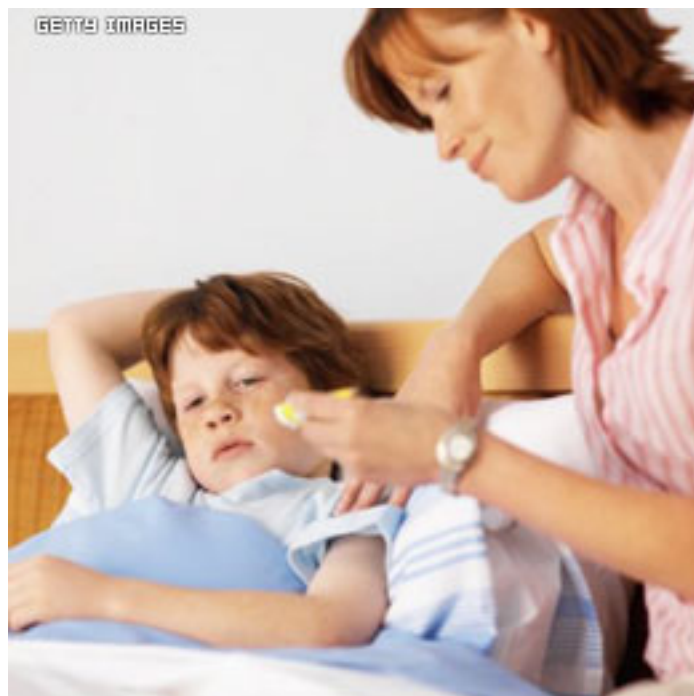
## Diarrhoea in children

Diarrhoea is very common among children. The main danger is losing too much fluid, so it's important to make sure your child drinks lots of fluid during an attack.

We've brought together the best research about diarrhoea in children 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 diarrhoea?

Children with diarrhoea have loose, watery stools and need to go to the toilet more often than usual.



Some children with diarrhoea have a high temperature.

Normally, when you eat and drink, fluids get absorbed into your bloodstream as the food passes through your gut (the part of your body that digests food and gets rid of waste). With diarrhoea, the lining of your gut becomes **inflamed** or irritated. The food passes

## Diarrhoea in children

through too quickly and the fluids can't be absorbed. This leads to loose, watery stools, passed more frequently than usual (usually more than three times a day). A child with diarrhoea may also get other symptoms such as tummy pain and vomiting.

Diarrhoea is commonly caused by a **virus**, which is usually passed on through infected stools.<sup>[1]</sup> Your child can pick up a virus if they go to the toilet, don't wash their hands, and then put their hands in their mouth. A type of virus called rotavirus is the most common cause. Babies can catch the virus if the person making their formula milk or meals has not washed their hands properly.

Children can also get diarrhoea from **bacteria** in food, although this type of diarrhoea is much less common. For example, the bacteria *Salmonella* and *Campylobacter* can lead to diarrhoea. You can get infected with these by eating chicken or eggs that are not thoroughly cooked, or from unpasteurised milk. When you get diarrhoea from one of these bacteria it's often called **food poisoning**.

Tiny organisms called parasites can also cause diarrhoea. Two of the most common ones are *Giardia* and *Cryptosporidium*. These are found in dirty water, most often in countries where the water is not treated thoroughly. So your child could get infected when you travel abroad. When you get an **infection** like this abroad it's often called 'traveller's diarrhoea'. However, illness due to infection with *Cryptosporidium* does happen in the UK. You're at increased risk if you have contact with farm animals. If your child gets one of these infections they can pass it to other children, especially in nurseries.

Sometimes other things can cause diarrhoea, such as side effects from **antibiotics**.

### Preventing diarrhoea

Most children get diarrhoea at least once before the age of 5 years old.<sup>[2]</sup> But you can still do a lot to prevent infections that cause diarrhoea and to stop them spreading.<sup>[3]</sup>

- Breastfeeding is a good way to protect babies from diarrhoea.
- Be careful about cleanliness when making up a baby's bottle and preparing food.
- Make sure everyone in the family washes their hands with soap and water after using the toilet, after changing a baby's nappy, before preparing food and baby bottles, and before eating.
- Dispose of nappies properly. Don't leave them lying around.
- Keep children away from people who have diarrhoea or vomiting.

There are vaccines that can protect against diarrhoea caused by the rotavirus. One called Rotarix is available on the NHS as part of the childhood vaccination programme. The vaccine is given to babies in two doses, at ages 2 months and 3 months. To learn more, see [Rotavirus vaccine \(to prevent diarrhoea\)](#).

### What are the symptoms of diarrhoea in children?

The main symptom of diarrhoea is loose and watery stools. But your child may get other symptoms too.

If your child has diarrhoea, they will have watery stools that they pass more frequently than usual.

They might also have some or all of the following symptoms:

- Vomiting
- Abdominal pain
- A low fever
- Loss of appetite.

Other infections, such as an ear infection or a urine infection, can cause similar symptoms to those listed above.<sup>[4]</sup> So if your child has extra symptoms like an earache (they might pull on their ear if they are too young to say their ear hurts) or a burning pain when they urinate, you should take them to the doctor. They might need antibiotics for these kinds of infections. To learn more see our information on [ear infection](#), [ear infection with discharge](#), and [outer ear infection](#).

Your child will probably get better within a few days or a week. But there is a chance that they could become dehydrated. Here are the signs to look out for:<sup>[3]</sup>

- Being very thirsty
- Being restless or irritable
- Suddenly losing weight
- Having sunken-looking eyes
- Having a sunken fontanel (the soft spot babies have on their heads).

If your child is becoming dehydrated you should take them to a doctor straight away. There are some things you can do to prevent dehydration. For more information see [What treatments work for diarrhoea in children?](#)

If your child is urinating less than usual, or if they are tired or groggy, then they could be severely dehydrated. Severe dehydration is life-threatening. If you think your child may be severely dehydrated, you should take them to a hospital accident and emergency department immediately.

## Diarrhoea in children

If your child has a high fever (more than 38.5°C [101°F]) or blood in their stools, their infection might be caused by **bacteria**. You should take them to see a doctor. Very occasionally these infections need to be treated with **antibiotics**. Diarrhoea from bacteria is more likely if your child has been travelling abroad. But it may also be caused by contaminated food or drink.

If your child's diarrhoea doesn't settle within a few days, or if it is getting worse, or if you are concerned about any symptoms, you should take them to the doctor.

### How common is diarrhoea in children?

Diarrhoea in children is extremely common.

In children, a type of virus called a rotavirus is the most common cause of diarrhoea. Nearly all children catch this virus by the time they are 5 years old. <sup>[2]</sup>

Every year, 7 in 1,000 children aged 5 years and younger are admitted to hospital with diarrhoea. <sup>[5]</sup>

### What treatments work for diarrhoea in children?

If a child has diarrhoea, the main danger is losing too much fluid. It's important to prevent this and to treat it quickly if it happens.

We've listed below the things you can do to help prevent your child losing too much fluid (getting dehydrated). <sup>[8]</sup>

- If you are breastfeeding, continue this as usual. Offer your baby feeds more often and try to make the feeds longer. You can also give your baby extra fluids such as water or rehydration drinks.
- If your baby is bottle-fed, you can continue with their usual formula milk. Do not dilute their milk.
- Make sure older children keep drinking fluids. Offer plenty of water. Giving small sips often is better than trying to get them to drink a lot at once.
- Try to avoid sugary drinks like fruit juice and squash, as they can increase the risk of a child becoming dehydrated. If you do use them make sure they are well diluted.
- Rehydration drinks (such as Dioralyte, Electrolade, or Rapolyte) work well to prevent and treat **dehydration**.
- Offer your child food if they are hungry. It's important to keep up their energy.
- Doctors don't recommend using medicines to stop diarrhoea in young children. They can have side effects in children. <sup>[9]</sup>

## Diarrhoea in children

- Antibiotics don't usually help with diarrhoea. Diarrhoea is usually caused by a virus and antibiotics don't get rid of viruses. But antibiotics may be needed if your child's diarrhoea is caused by bacteria.

There's not much research on the best ways to prevent dehydration. We've looked closely at the research and ranked some treatments into categories according to whether they work.

### Treatment Group 1

#### Treatments for diarrhoea in children

##### Treatments that work

- [Rehydration drinks](#)
- [Rotavirus vaccine \(to prevent diarrhoea\)](#)
- [Probiotics](#)

##### Treatments that are likely to work

- [Lactose-free formula milk for babies and infants](#)
- [Zinc](#)

### What will happen to my child?

Most children who have diarrhoea get better in about a week. The main danger is losing too much fluid (dehydration). If this happens, your child can get very ill very quickly.

Most cases of diarrhoea can be treated at home. But take your child to the doctor if you are at all worried.

The doctor will ask you about your child's symptoms and do an examination. They might look for other causes of your child's symptoms, like an ear infection or a urine infection. They will look for signs of **dehydration**.

The doctor might recommend rehydration drinks. <sup>[3]</sup> <sup>[6]</sup>

If your child is very ill they will have to go to hospital. Depending on how serious their dehydration is, their treatment might involve: <sup>[3]</sup> <sup>[6]</sup>

- Being given rehydration drinks and being watched closely
- Being given rehydration solutions through a tube that goes down their nose and into their stomach (**nasogastric rehydration**)

## Diarrhoea in children

- Being given fluids through a drip (an IV or **intravenous infusion**).

Most children make a good recovery if they get treatment quickly. In very rare cases children can die from severe dehydration. <sup>[7]</sup>

---

### Treatments:

#### Rehydration drinks

In this section

Rehydration drinks (also called oral rehydration solutions) contain a mix of salts and sugar to help your child's body replace fluids and salts lost through diarrhoea. They do not stop the diarrhoea, but they can prevent your child getting dehydrated.

This is the safest treatment and it should be tried first.

Rehydration drinks come as powders that you dilute in water. You can buy them from the pharmacy or get a prescription. Some over-the-counter medicines are only suitable for children over certain ages. Check the packaging or ask your pharmacist for advice.

Some brand names are Dioralyte, Electrolade, and Rapolyte.

There is good evidence that rehydration drinks help to prevent and treat dehydration caused by diarrhoea. They don't seem to have any important side effects. However, some children don't like the taste of rehydration drinks, or they may be vomiting and find it hard to keep fluids down. In these cases, or when a child needs fluids very quickly, doctors may give them rehydration fluids through a tube through their nose and into their stomach. If a child is seriously dehydrated, they may be given fluids through a drip in their arm (an IV or **intravenous infusion**). Both methods work well, although they may be uncomfortable. <sup>[10]</sup> <sup>[11]</sup>

---

#### Rotavirus vaccine (to prevent diarrhoea)

In this section

Diarrhoea is usually caused by a virus. The most common culprit is the rotavirus. There's a vaccine available in the UK that protects against the rotavirus, called Rotarix.

Rotarix comes as a liquid that a doctor puts into your child's mouth through a small plastic syringe. It is now available on the NHS as part of the childhood vaccination programme. The vaccine is given to babies in two doses, at ages 2 months and 3 months. <sup>[12]</sup>

There has been a lot of research looking at whether the Rotarix vaccine protects children from diarrhoea. A review of more than 30 studies suggested that Rotarix prevents around 70 in 100 cases of rotavirus diarrhoea among children aged 2 years and younger, and around 80 in 100 severe cases. <sup>[13]</sup>

## Diarrhoea in children

The vaccine helps to prevent diarrhoea caused by rotaviruses. It doesn't work for other kinds of diarrhoea.

The rotavirus vaccine doesn't seem to cause many side effects.<sup>[14]</sup> <sup>[15]</sup> In 1999, a rotavirus vaccine called Rotashield was taken off the market in the United States.<sup>[16]</sup> Doctors were worried that it could cause a serious bowel problem called **intussusception**.

An intussusception happens when one part of your child's bowel folds down into another part, a bit like someone folding down a telescope. The newer vaccines, including Rotarix, don't seem to cause this problem. Large studies including over 100,000 infants aged 6 to 17 weeks haven't found any evidence of an increased risk.<sup>[13]</sup> <sup>[14]</sup>

---

## Lactose-free formula milk for babies and infants

In this section

There has been a lot of debate about whether babies with diarrhoea should be given formula milk that is lactose-free while they recover. Lactose-free formula milk doesn't contain lactose, which is a natural sugar found in cow's milk. For a short time after having diarrhoea, children's bodies may find it harder to break down lactose, so lactose-free products might be easier to digest.<sup>[17]</sup> But lactose-free formula milk is usually recommended only for children with diarrhoea that has lasted a long time.

There have been some studies but the results haven't given us a clear answer about whether formula milk that is lactose-free is better than standard formula milk.

One summary of the research (a [systematic review](#)) that looked at 13 studies found that diarrhoea or dehydration was more likely to get worse in babies who had normal formula milk (about 2 in 10 babies) compared with those who had lactose-free formula milk (about 1 in 10 babies).<sup>[18]</sup> Babies on lactose-free milk got better faster (after about three-and-a-half days) compared with those on normal formula milk (about four days).

Out of five other studies, three found that diarrhoea stopped more quickly in babies who were given lactose-free formula milk.<sup>[19]</sup> <sup>[20]</sup> <sup>[21]</sup> In the two other studies, the special formula milk made no difference.<sup>[22]</sup> <sup>[23]</sup>

There don't seem to be any side effects from using lactose-free formula milk.

---

## Zinc

In this section

Zinc is an important nutrient for a child's health. There's some concern that children with diarrhoea may lose too much zinc.<sup>[24]</sup> Zinc is usually given in tablet form that dissolves in water. Doses depend on the child's age or weight.



## Diarrhoea in children

Two summaries of research - which included 25 studies between them - found that children given zinc supplements had diarrhoea for half a day to a day less, compared to the children who were given a dummy ( placebo ) tablet. <sup>[25]</sup> <sup>[26]</sup>

Children who take zinc may be more likely to be sick (vomit). <sup>[25]</sup> <sup>[26]</sup>

Also, most of the research was done in developing countries. We need more research to see whether zinc is helpful for children in the UK with diarrhoea.

---

## Probiotics

In this section

Probiotics are bacteria that grow in the gut. You may have heard them called 'friendly bacteria' because they help keep the digestive system healthy. Probiotics come in some types of live yoghurt, and in dietary supplements. Probiotics may help shorten attacks of diarrhoea in children.

More than 30 studies have looked at the effect of probiotics on children with diarrhoea. Most of the studies found that probiotics shorten the attack by around one to two days. <sup>[27]</sup> <sup>[28]</sup> <sup>[29]</sup> <sup>[30]</sup> <sup>[31]</sup>

The studies did not give any information about side effects from probiotics. It's a good idea to check with your doctor before giving probiotics to a child with diarrhoea. Probiotics are not recommended routinely for use in children with diarrhoea. <sup>[8]</sup>

---

## 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.

#### viruses

Viruses are microbes (tiny organisms) that need the cells of humans or other animals to exist. They use the machinery of cells to reproduce. Then they spread to other cells in the body.

#### bacteria

Bacteria are tiny organisms. There are lots of different types. Some are harmful and can cause disease. But some bacteria live in your body without causing any harm.

#### 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.

#### antibiotics

These medicines are used to help your immune system fight infection. There are a number of different types of antibiotics that work in different ways to get rid of bacteria, parasites, and other infectious agents. Antibiotics do not work against viruses.

#### fever



# Diarrhoea in children

If you have a fever, your body temperature is above 37 degrees Celsius (98.6 degrees Fahrenheit). With a fever you often get other symptoms, such as shivering, headache or sweating. A fever is usually caused by an infection.

## dehydrated

When you're dehydrated, you don't have enough fluid in your blood. This could be because you're not drinking enough or because you're losing water by sweating or having diarrhoea.

## intravenous infusion

When a medicine or a fluid, such as blood, is fed directly into a vein, it's called an intravenous infusion (or IV). To give you an intravenous infusion, a nurse, technician or a doctor places a narrow plastic tube into a vein (usually in your arm) using a needle. The needle is then removed and the fluid is infused (or dripped) through the tube into the vein.

## 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.

## 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.

## Sources for the information on this leaflet:

1. Elliott E, Dalby-Payne J. Acute infectious diarrhea and dehydration in children. *Medical Journal of Australia*. 2004; 181: 565-570.
2. Health Protection Agency. Rotavirus. Available at [http://www.hpa.org.uk/infections/topics\\_az/rotavirus/menu.htm](http://www.hpa.org.uk/infections/topics_az/rotavirus/menu.htm) (accessed on 25 April 2014).
3. World Health Organization. The treatment of diarrhoea: a manual for physicians and other senior health workers (4th revision). 2005. Available at <http://whqlibdoc.who.int/publications/2005/9241593180.pdf> (accessed on 25 April 2014).
4. Elliott E, Dalby-Payne J. Acute infectious diarrhea and dehydration in children. *Medical Journal of Australia*. 2004; 181: 565-570.
5. McCormick A, Fleming D, Charlton J. Morbidity statistics from general practice: fourth national study 1991-1992. HSO, London, UK; 1995.
6. Armon K, Stephenson T, McFaul R et al. An evidence and consensus based guideline for acute diarrhoeal management. *Archives of Disease in Children*. 2001; 85: 132-142.
7. Centers for Disease Control and Prevention. About rotavirus. October 2010. Available at <http://www.cdc.gov/rotavirus/about> (accessed on 25 April 2014).
8. National Institute for Health and Care Excellence. Diarrhoea and vomiting caused by gastroenteritis: diagnosis, assessment and management in children younger than 5 years. April 2009. Clinical guideline 84. Available at <http://www.nice.org.uk/cg084> (accessed on 25 April 2014).
9. British National Formulary for Children. Antimotility drugs. Section 1.4.2. British Medical Association, Royal Pharmaceutical Society of Great Britain, Royal College of Paediatrics and Child Health, Neonatal and Paediatric Pharmacists Group. Also available at <http://bnfc.org> (accessed on 25 April 2014).
10. Hartling L, Bellemare S, Wiebe N, et al. Oral versus intravenous rehydration for treating dehydration due to gastroenteritis in children (Cochrane review). In: *The Cochrane Library*. Wiley, Chichester, UK.
11. Fonseca BK, Holdgate A, Craig JC. Enteral vs intravenous rehydration therapy for children with gastroenteritis. A meta-analysis of randomized controlled trials. *Archives of Pediatrics and Adolescent Medicine*. 2004; 158: 483-490.
12. NHS Choices. The NHS vaccination schedule. April 2014. Available at <http://www.nhs.uk/Conditions/vaccinations/Pages/vaccination-schedule-age-checklist.aspx> (accessed on 25 April 2014).

## Diarrhoea in children

13. Soares-Weiser K, Macle hose H, Bergman H, et al. Vaccines for preventing rotavirus diarrhoea: vaccines in use (Cochrane review). In: The Cochrane Library. Wiley, Chichester, UK.
14. Ruiz-Aragon J, Marquez-Pelaez S, Villegas R. Safety and efficacy of the rotavirus vaccine. Systematic review. *Vacunas*. 2007; 8: 182-190.
15. Soares-Weiser K, Macle hose H, Ben-Aharon I, et al. Vaccines for preventing rotavirus diarrhoea: vaccines in use. In: The Cochrane Library. Wiley, Chichester, UK.
16. Centers for Disease Control and Prevention. Rotavirus vaccine (RotaShield®) and intussusception. April 2014. Available at <http://www.cdc.gov/vaccines/vpd-vac/rotavirus/vac-rotashield-historical.htm> (accessed on 25 April 2014).
17. MacGillivray S, Fahey T, McGuire W. Lactose avoidance for acute diarrhoea in children less than five years (Cochrane review). In: The Cochrane Library. Wiley, Chichester, UK.
18. Brown KH, Peerson JM, Fontaine O. Use of nonhuman milks in the dietary management of young children with acute diarrhea: a meta-analysis of clinical trials. *Pediatrics*. 1994; 93: 17-27.
19. Allen UD, McLeod K, Wang EE. Cow's milk versus soy-based formula in mild and moderate diarrhea: a randomized, controlled trial. *Acta Paediatrica*. 1994; 83: 183-187.
20. Fayad IM, Hashem M, Husseine A, et al. Comparison of soy-based formulas with lactose and with sucrose in the treatment of acute diarrhoea in infants. *Archives of Pediatrics and Adolescent Medicine*. 1999; 153: 675-680.
21. Wall CR, Webster J, Quirk P, et al. The nutritional management of acute diarrhea in young infants: effect of carbohydrate ingested. *Journal of Pediatric Gastroenterology and Nutrition*. 1994; 19: 170-174.
22. Clemente YF, Tapia CC, Comino AL, et al. Lactose-free formula versus adapted formula in acute infantile diarrhea. *Anales Espanola Pediatria*. 1993; 39: 309-312.
23. Lozano JM, Cespedes JA. Lactose vs. lactose free regimen in children with acute diarrhoea: a randomized controlled trial. *Archivos Latinoamericanos de Nutricion*. 1994; 44: 6-11.
24. World Health Organization. Diarrhoea treatment guidelines including new recommendations for the use of ORS and zinc supplementation for clinic-based healthcare workers. 2005. Available at [http://www.who.int/maternal\\_child\\_adolescent/documents/a85500/en/](http://www.who.int/maternal_child_adolescent/documents/a85500/en/) (accessed on 25 April 2014).
25. Patro B, Golicki D, Szajewska H. Meta-analysis: Zinc supplementation for acute gastroenteritis in children. *Alimentary Pharmacology and Therapeutics*. 2008; 28: 713-723.
26. Lazzarini M, Ronfani L. Oral zinc for treating diarrhoea in children (Cochrane review). In: The Cochrane Library. Wiley, Chichester, UK.
27. Szajewska H, Mrukowicz JZ, Szajewska H, et al. Probiotics in the treatment and prevention of acute infectious diarrhea in infants and children: a systematic review of published randomized, double-blind, placebo-controlled trials. *Journal of Pediatric Gastroenterology & Nutrition*. 2001; 33 (supplement 2): S17-S25.
28. Van Niel CW, Feudtner C, Garrison MM, et al. Lactobacillus therapy for acute infectious diarrhea in children: a meta-analysis. *Pediatrics*. 2002; 109: 678-684.
29. Chmielewska A, Ruszczynski M, Szajewska H. Lactobacillus reuteri strain ATCC 55730 for the treatment of acute infectious diarrhoea in children: a meta-analysis of randomized controlled trials. *Pediatrica Wspolczesna*. 2008; 10: 32-36.
30. Szajewska H, Skórka A, Dylag M. Meta-analysis: Saccharomyces boulardii for treating acute diarrhoea in children. *Alimentary Pharmacology and Therapeutics*. 2007; 25: 257-264.
31. Allen SJ, Okoko B, Martinez E, et al. Probiotics for treating infectious diarrhoea (Cochrane review). In: The Cochrane Library. Wiley, Chichester, UK.

## Diarrhoea in children

---

This information is aimed at a UK patient audience. This information however does not replace medical advice. If you have a medical problem please see your doctor. Please see our full [Conditions of Use](#) for this content. For more information about this condition and sources of the information contained in this leaflet please visit the Best Health website, <http://besthealth.bmj.com> . These leaflets are reviewed annually.

