

## Gastroenteritis in Children

Gastroenteritis is an infection of the gut. It causes diarrhoea, and may also cause vomiting, tummy pain and other symptoms. In most cases the infection clears within a few days, but sometimes takes longer. The main risk is dehydration. The main treatment is to give your child lots to drink. This may mean giving special rehydration drinks. Also, once any dehydration is treated with drinks, encourage your child to eat as normally as possible. See a doctor if you suspect that your child is dehydrating, or if they have any worrying symptoms such as those which are listed below.

### What is gastroenteritis and what causes it?

Gastroenteritis is an infection of the gut (intestines). It is common. Many children have more than one episode in a year. The severity can range from a mild tummy upset for a day or two with some mild diarrhoea, to severe diarrhoea and vomiting for several days or longer. Many viruses, bacteria and other microbes (germs) can cause gastroenteritis.

A virus is the most common cause of gastroenteritis. Rotavirus is the most common virus causing gastroenteritis in children in the UK. Almost every child in the UK has a rotavirus infection before they are 5 years old. Once you have had rotavirus, your body usually becomes immune to getting it again. Therefore, it is uncommon for adults to get rotavirus because most will have had it as a child. Adenoviruses are another common group of viruses that cause gastroenteritis in children. Adenovirus and rotavirus infection are more common in infants and younger children than in teenagers.

Viruses are easily spread from an infected person to another by close contact. This is often because of the virus being present on the infected person's hands after they have been to the toilet. Surfaces or objects touched by the infected person can also allow transmission of the virus. The virus can also be passed on if the infected person prepares food. Outbreaks of a virus causing gastroenteritis can often occur - for example, in schools or hospitals.

Food poisoning (eating food infected with microbes) causes some cases of gastroenteritis. Food poisoning is usually caused by a bacterial infection. Common examples are species of bacteria called *Campylobacter*, *Salmonella* and *Escherichia coli* (usually shortened to *E. coli*). Toxins (poisons) produced by bacteria can also cause food poisoning. Another group of microbes called parasites can also be a cause of food poisoning.

Water contaminated by bacteria or other microbes (germs) is another common cause, particularly in countries with poor sanitation.

This is a general leaflet about gastroenteritis. Click the links for other leaflets that give more details about some of the different microbes that cause gastroenteritis.

### What are the symptoms of gastroenteritis?

- The main symptom is diarrhoea, often with vomiting as well. Diarrhoea means loose or watery stools (faeces), usually at least three times in 24 hours. Blood or mucus can appear in the stools with some infections.
- Crampy pains in the abdomen (tummy) are common. Pains may ease for a while each time some diarrhoea is passed.
- A high temperature (fever), headache and aching limbs sometimes occur.

In most children, the symptoms are mild and they tend to get better within a few days. If vomiting occurs, it often lasts only a day or so, but sometimes longer. Diarrhoea often continues after the vomiting stops and commonly lasts for between 5 to 7 days. Slightly loose stools may persist for a week or so further before a normal pattern returns. Sometimes the symptoms last longer.

### Symptoms of dehydration

Diarrhoea and vomiting may cause dehydration (a lack of fluid in the body). Consult a doctor quickly if you suspect that your child is becoming dehydrated. Mild dehydration is common and is usually easily and quickly reversed by drinking lots. Severe dehydration can be fatal unless quickly treated because the organs of the body need a certain amount of fluid to function normally.

- Symptoms of dehydration in children include: passing little urine, a dry mouth, a dry tongue and lips, fewer tears when crying, sunken eyes, weakness, being irritable or lethargic.
- Symptoms of severe dehydration in children include: drowsiness, pale or mottled skin, cold hands or feet, very few wet nappies, fast (but often shallow) breathing. Severe dehydration is a medical emergency and immediate medical attention is needed.

Dehydration in children with gastroenteritis is more likely to occur in:

- Babies under the age of one year (and particularly those under six months old). This is because babies don't need to lose much fluid to lose a significant proportion of their total body fluid.
- Babies under the age of one year who were a low birthweight and who have not 'caught up' with their weight.
- A breast-fed baby that has stopped breast-feeding during their illness.
- Any baby or child who does not drink much when they have gastroenteritis.
- Any baby or child with severe diarrhoea and vomiting (particularly if they have passed six or more diarrhoeal stools and/or vomited three or more times in the previous 24 hours).

### How is gastroenteritis diagnosed and does my child need any tests?

Most parents recognise gastroenteritis in their children because of their typical symptoms. The symptoms will often be quite mild and commonly get better within a few days without any treatment, other than drinking plenty of fluids. You will often not need to take your child to see a doctor or seek medical advice.

However, in some circumstances, you may need to seek medical advice for your child (see below). If this is the case, the doctor may ask you questions about recent travel abroad, if your child has been in contact with someone with similar symptoms, or if they have recently taken antibiotics, or been admitted to hospital. This is to look for a possible cause of their gastroenteritis. They will usually examine your child for signs of dehydration. They may check their temperature and heart rate. They may also examine your child's abdomen to look for any tenderness.

ests are not usually needed. However, in certain cases, you may need to ask a doctor to collect a stool sample from your child. For example, if your child is particularly unwell, has bloody stools, is admitted to hospital, if food poisoning is suspected, if your child has recently travelled abroad, or their symptoms are not getting better. The stool sample can then be examined in the laboratory to look for the cause of the infection.

## When should I seek medical advice?

Most children who have gastroenteritis have mild symptoms which will get better in a few days. The important thing is to ensure that they have plenty to drink. In many cases, you do not need to seek medical advice. However, you should seek medical advice in the following situations (or if there are any other symptoms that you are concerned about):

- If your child is under the age of six months.
- If your child has an underlying medical condition (for example, heart or kidney problems, diabetes, history of premature birth).
- If your child has a fever (high temperature).
- If you suspect dehydration is developing (see earlier).
- If your child appears drowsy or confused.
- If your child is vomiting and unable to keep fluids down.
- If there is blood in their diarrhoea or vomit.
- If your child has severe abdominal pain.
- Infections caught abroad.
- If your child has severe symptoms, or if you feel that their condition is getting worse.
- If your child's symptoms are not settling (for example, vomiting for more than 1-2 days, or diarrhoea that does not start to settle after 3-4 days).

## What is the treatment of gastroenteritis in children?

Symptoms of gastroenteritis often settle within a few days or so as a child's immune system is usually able to clear the infection. Children can usually be treated at home. Occasionally, admission to hospital is needed if symptoms are severe, or if complications develop.

### Fluids to prevent dehydration

You should encourage your child to take plenty of fluids. The aim is to prevent dehydration (low body fluid). The fluid lost in their vomit and/or diarrhoea needs to be replaced. Your child should continue with their normal diet and usual drinks. In addition, they should also be encouraged to drink extra fluids. However, avoid fruit juices or fizzy drinks, as these can make diarrhoea worse.

Babies under six months old are at increased risk of dehydration. You should seek medical advice if they develop gastroenteritis. Breast-feeds or bottle-feeds should be encouraged as normal. You may find that your baby's demand for feeds increases. You may also be advised to give extra fluids (either water or rehydration drinks) in between feeds.

*Rehydration drinks* may be advised by a doctor for children at increased risk of dehydration (see above for who this may be). They are made from sachets available from pharmacies and on prescription. You should be given instructions about how much to give. Rehydration drinks provide a perfect balance of water, salts, and sugar. The small amount of sugar and salt helps the water to be absorbed better from the gut into the body. Do not use home-made salt/sugar drinks as the quantity of salt and sugar has to be exact.

If your child vomits, wait 5-10 minutes and then start giving drinks again, but more slowly (for example, a spoonful every 2-3 minutes). Use of a syringe can help in younger children who may not be able to take sips.

**Note:** *if you suspect that your child is dehydrated, or is becoming dehydrated, you should seek medical advice urgently..*

### Fluids to treat dehydration

If your child is mildly dehydrated, this may be treated by giving them rehydration drinks. Your doctor or nurse will advise about how to make up the drinks and about how much to give. The amount can depend on the age and the weight of your child. If you are breast-feeding, you should continue with this during this time. Otherwise, don't give your child any other drinks unless the doctor or nurse has said that this is OK. It is important that your child is rehydrated before they have any solid food.

Sometimes a child may need to be admitted to hospital for treatment if they are dehydrated. Treatment in hospital usually involves giving rehydration solution via a special tube called a nasogastric tube. This tube passes through your child's nose, down their throat and directly into their stomach. An alternative treatment is with intravenous fluids (fluids given directly into a vein).

### Eat as normally as possible once any dehydration has been treated

Correcting any dehydration is the first priority. However, if your child is not dehydrated (most cases), or once any dehydration has been corrected, then encourage your child to have their normal diet. Do not starve a child with gastroenteritis. This used to be advised but is now known to be wrong. So:

- *Breast-fed babies* should continue to be breast-fed if they will take it. This will usually be in addition to extra rehydration drinks (described above).
- *Bottle-fed babies* should be fed with their normal full-strength feeds if they will take it. Again, this will usually be in addition to extra rehydration drinks (described above).
- *Older children* - offer them some food every now and then. However, if he or she does not want to eat, that is fine. Drinks are the most important, and food can wait until their appetite returns.

### Medication is not usually needed

You should not give medicines to stop diarrhoea to children under 12 years old. They sound attractive remedies, but are unsafe to give to children, due to possible serious complications. However, you can give paracetamol or ibuprofen to ease a high temperature or headache. If symptoms are severe, or persist for several days or more, a doctor may ask for a sample of the diarrhoea. This is sent to the laboratory to look for infection germs (bacteria, parasites, etc). Sometimes an antibiotic or other treatments are needed, depending on the cause of the infection.

### Are there any complications that can occur from gastroenteritis?

Complications from gastroenteritis in children are uncommon in the UK. They are more likely in very young children. They are also more likely if your child has a chronic (ongoing) illness such as diabetes, or if their immune system is not working fully. For example, if they are taking long-term steroid medication or they are having chemotherapy treatment for cancer. Possible complications include the following:

- **Dehydration and salt (electrolyte) imbalance in the body.** This is the most common complication. It occurs if the water and salts that are lost in your child's stools, or when they vomit, are not replaced by them drinking enough fluids. If your child drinks well, then it is

unlikely to occur, or is only likely to be mild and will soon recover as your child drinks.

- **Reactive complications.** Rarely, other parts of the body can react to an infection that occurs in the gut. This can cause symptoms such as arthritis (joint inflammation), skin inflammation and eye inflammation (either conjunctivitis or uveitis). Reactive complications are uncommon if it is a virus causing gastroenteritis.
- **Spread of infection** to other parts of your child's body such as their bones, joints, or the meninges that surround their brain and spinal cord. This is rare. If it does occur, it is more likely if gastroenteritis is caused by *Salmonella* spp. infection.
- **Persistent diarrhoea syndromes** may rarely develop.
- **Irritable bowel syndrome** is sometimes triggered by a bout of gastroenteritis.
- **Lactose intolerance** can sometimes occur for a while after gastroenteritis. It is known as secondary or acquired lactose intolerance. Your child's gut lining can be damaged by the episode of gastroenteritis. This leads to lack of an enzyme (chemical) called lactase that is needed to help the body digest a sugar called lactose that is in milk. Lactose intolerance leads to bloating, abdominal pain, wind and watery stools after drinking milk. The condition gets better when the infection is over and the gut lining heals.
- **Haemolytic uraemic syndrome** is a rare complication. It is usually associated with gastroenteritis caused by a certain type of *E. coli* infection - *E. coli* O157. It is a serious condition where there is anaemia, a low platelet count in the blood and kidney failure. If recognised and treated, most children recover well.
- **Malnutrition** may follow some gut infections. This is mainly a risk for children in developing countries.

## Preventing spread of infection to others

Gastroenteritis can very easily be passed on from person to person. Therefore, you and your child need to take measures to try to reduce this chance.

If your baby has gastroenteritis, be especially careful to wash your hands after changing nappies and before preparing, serving, or eating food. Ideally, use liquid soap in warm running water, but any soap is better than none. Dry your hands properly after washing. For older children, whilst they have gastroenteritis, the following are recommended:

- Regularly clean the toilets used, with disinfectant. Also, clean the flush handle, toilet seat, sink taps, bathroom surfaces and door handles at least daily with hot water and detergent. Disposable cleaning cloths should be used (or a cloth just for toilet use).
- If a potty has to be used, wear gloves when you handle it, dispose of the contents into a toilet, then wash the potty with hot water and detergent and leave it to dry.
- Make sure your child washes their hands after going to the toilet. Ideally, they should use liquid soap in warm running water, but any soap is better than none. Dry properly after washing.
- If clothing or bedding is soiled, first remove any faeces into the toilet. Then wash in a separate wash at as high a temperature as possible.
- Don't let your child share towels and flannels.
- Don't let them help to prepare food for others.
- They should stay off school, nursery, etc, until at least 48 hours after the last episode of diarrhoea or vomiting. They should also avoid contact with other children, where possible, during this time. (Sometimes this time may be longer with certain infections. Check with your doctor if you are not sure.)
- If the cause of gastroenteritis is known to be (or suspected to be) a germ called *Cryptosporidium* spp., your child should not swim in swimming pools for two weeks after the last episode of diarrhoea.

## Can gastroenteritis be prevented?

The advice given in the previous section is aimed at preventing the spread of infection to other people. But, even when we are not in contact with someone with gastroenteritis, proper storage, preparation and cooking of food, and good hygiene help to prevent gastroenteritis. In particular, always wash your hands, and teach children to wash theirs:

- After going to the toilet (and after changing nappies).
- Before touching food. And also, between handling raw meat and food ready to be eaten. (There may be some bacteria on raw meat.)
- After gardening.
- After playing with pets (healthy animals can carry certain harmful bacteria).

The simple measure of washing hands regularly and properly is known to make a big difference to the chance of developing gastroenteritis. You should also take extra measures when in countries of poor sanitation. For example, avoid water and other drinks that may not be safe, and avoid food washed in unsafe water.

Breast-feeding is also protective. Breast-fed babies are much less likely to develop gastroenteritis compared to bottle-fed babies.

## Immunisation

As mentioned earlier, rotavirus is the most common cause of gastroenteritis in children. There is an effective vaccine against rotavirus. In the UK it has now been decided to routinely vaccinate babies against rotavirus. From September 2013 babies will receive drops (by mouth) to prevent rotavirus, along with their other routine vaccinations. These drops will be given at 2 and 3 months old.

## Further reading & references

- [Diarrhoea and vomiting in children under 5](#), NICE Clinical Guideline (April 2009)
- [Gastroenteritis](#), Prodigy (September 2009)
- [Elliott EJ](#); Acute gastroenteritis in children. *BMJ*. 2007 Jan 6;334(7583):35-40.
- [Khanna R, Lakhanpaul M, Burman-Roy S, et al](#); Diarrhoea and vomiting caused by gastroenteritis in children under 5 years: summary of NICE guidance. *BMJ*. 2009 Apr 22;338:b1350. doi: 10.1136/bmj.b1350.
- [Ejemot RI, Ehiri JE, Meremikwu MM, et al](#); Hand washing for preventing diarrhoea. *Cochrane Database Syst Rev*. 2008 Jan 23;(1):CD004265.

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