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Ear Infection (Otitis Media)

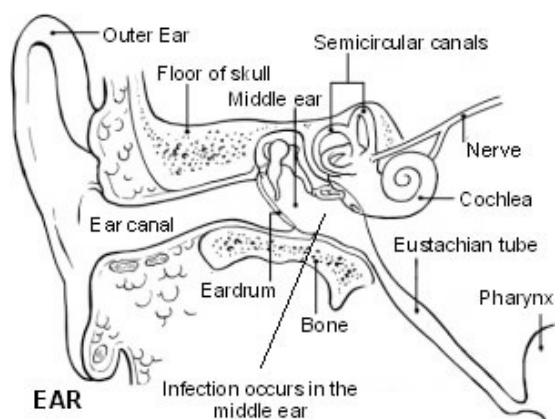
Ear infection is very common in children, although it can occur in people of any age. The main symptoms are earache and feeling unwell. Painkillers are the main treatment. Antibiotics are not usually helpful but are prescribed in some cases. The infection usually clears within a few days.

What is an ear infection?

Ear infections are usually divided into those which occur in the **ear canal** (**otitis externa**) and those which occur in the small space behind the eardrum (the middle ear). You may hear an infection of the middle ear referred to as 'acute otitis media'.

This leaflet deals with infections of the middle ear.

How does an ear infection occur?



The small space behind the eardrum in the middle ear is normally filled with air. It is connected to the back of the throat by a tiny channel called the Eustachian tube. It also contains the three tiny 'hearing bones' which pass sound through from the eardrum to the inner ear.

The middle ear space should contain air but it may become filled with fluid (mucus), which typically occurs during a cold. The mucus may then become infected by germs (bacteria or viruses). This may then lead to otitis media.

Children with **glue ear** have mucus permanently trapped behind their eardrum and they are more prone to ear infections. Sometimes an ear infection occurs 'out of the blue' for no apparent reason.

What are the symptoms of an ear infection?

- Ear pain (earache) is common but does not always occur. It is caused by having a tense, inflamed eardrum.
- Dulled hearing may be present for a few days.
- High temperature (fever) is common.
- Children may feel sick or be sick (vomit) and be generally unwell.
- Young babies may be hot and irritable. A hot, crying baby may have an ear infection.
- Sometimes the eardrum bursts (perforates). This lets out the infected fluid (mucus) and often relieves pain quite suddenly. The ear becomes runny, sometimes for a few days. Most perforations are small. A perforated eardrum usually heals within a few weeks after the infection clears.

This leaflet is part of our series on ear infection

- Ear infection (otitis externa)
- Ear infection (otitis media)
- Glue ear
- Glue ear - picture summary
- Operations for glue ear

A note about earache

Earache is a common symptom of ear infection. However, not all earaches are caused by an ear infection. If a child has earache but is otherwise well, an ear infection is unlikely.

Mild earache is often due to a build-up of mucus in the middle ear after a cold. This usually clears within a few days. Pain that you feel in the ear can be referred pain from other causes such as tooth problems or the jaw joint.

What is the treatment for an ear infection?

Most episodes of ear infection clear on their own without treatment and they tend to settle in 2-3 days. The immune system can usually clear germs (bacteria or viruses) that cause ear infections. Treatments that may be advised to help with the symptoms include the following:

Painkillers

If the ear infection is causing pain in your child then you can give painkillers regularly until the pain eases. For example, **paracetamol** (eg, Calpol®) or **ibuprofen** (eg, Calprofen®). These medicines will also lower a raised temperature, which can make a child feel better. If antibiotics are prescribed (see below), you should still give the painkiller as well until the pain eases.

Research studies have found that a few drops of a local anaesthetic medication (lidocaine) placed into the ear may help to ease pain. Further studies are needed to clarify the use of this treatment. However, it seems logical and may become more widely used over time, especially in children with severe ear pain.

Antibiotics - are prescribed in some cases only

Antibiotics are not advised in most cases. This is because the infection usually clears within 2-3 days on its own and antibiotics make little or no difference to the speed of this. There are many good reasons not to take antibiotics. Antibiotics may cause side-effects such as runny stools (diarrhoea) or rash. They also eradicate 'friendly bacteria' from the gut, which can temporarily upset the digestive balance. Many children feel less well whilst taking antibiotics. Overuse of antibiotics encourages resistant bugs to breed, causing problems for all of us later.

Antibiotics are unlikely to be helpful or justified if:

- Your child is 2 years old or more with a temperature of 39°C or less.
- Your child is not severely distressed.
- Your child has been unwell for two days or less.

Despite all this there are occasions when antibiotics are needed. Antibiotics are more likely to be prescribed if:

- The child is under 2 years old (as the risk of complications is greater in babies).
- The infection is severe.
- The infection is not settling within 2-3 days.
- Complications develop.
- Your child has another medical condition (for example, diabetes) which might increase the risk of infection.

When an ear infection first develops it is common for a doctor to advise a 'wait and see' approach for 2-3 days. This means just using painkillers to ease the pain and to see if the infection clears. In most cases, the infection does clear. However, if it doesn't clear, then following a review by a doctor, an antibiotic may be advised. Sometimes, it may be difficult to see a doctor again in 2-3 days if things do not improve - for example, over a weekend. In this situation a doctor may give you a prescription for an antibiotic with the advice to use it to obtain the antibiotic only if the condition does not improve within 2-3 days.

What are the possible complications from an ear infection?

It is common for some fluid (mucus) to remain behind the eardrum after the infection clears. This may cause dulled hearing for a while. This usually clears within a week or so and hearing then returns to normal. Sometimes the mucus does not clear properly and 'glue ear' may develop. Hearing may then remain dulled. Repeated ear infections (for example, due to having several colds in a row) can lead to glue ear. See a doctor if dulled hearing persists after an ear infection has gone, or if you suspect your child is having difficulty hearing.

If the eardrum bursts (perforates) then it usually heals over within a few weeks once the infection clears. In some cases the perforation remains long-term and may need treatment to fix it.

If a child is normally healthy then the risk of other serious complications developing from an ear infection is very small. Rarely, a serious infection of the bone behind the ear develops from an ear infection. This is called mastoiditis. Very rarely, the infection spreads deeper into the inner ear, brain or other nearby tissues. This can cause various symptoms that can affect the brain and nearby nerves, including abscess and meningitis. You should always consult a doctor if a child with earache:

- Becomes more ill.
- Has an illness which seems severe to you.
- Does not improve over 2-3 days.
- Has a temperature above 39°C. A fever like this is not generally considered a danger to your child. Children develop high temperatures in many common illnesses, including ear infections, urinary tract infections, roseola (a common childhood virus) and flu. However, when the temperature is above 39°C your child is more likely to have an illness or infection that needs your doctor's help. (If your child is under 3 months old then you should see a doctor if their temperature is above 38°C).
- Develops any symptoms that you are not sure about.

Will it happen again and can it be prevented?

Most children have at least two bouts of ear infection before they are 5 years old. These are caused by common viral infections which circulate in the general population and against which your child is not immune. There is generally nothing you can do to prevent the infection from occurring. However, there is some evidence to suggest that an ear infection is less likely to develop:

- In breast-fed children.
- In children who live in a smoke-free home. (Passive smoking of babies and children can increase the risk of developing ear infections.)
- In babies and young children who do not use dummies. However, research studies have shown that the use of a dummy in young babies when getting off to sleep can reduce the risk of cot death. So, consider using a dummy in babies up to 6-12 months old at the start of each episode of sleep. (If you breast-feed, do not start to use a dummy until you are well established with breast-feeding. This is normally when the baby is about one month old.) But note:
 - Do not force a dummy on a baby who does not want one. If the dummy falls out when a baby is asleep, just leave it out.
 - Never coat a dummy with anything such as sugar.
 - Clean and replace dummies regularly.
 - It is best to use a dummy only to help a baby get to sleep.
 - Consider stopping dummy use at around 6-12 months old.

Occasionally, some children have recurring bouts of ear infections close together. If this occurs, a specialist may advise a long course of antibiotics to prevent further bouts from occurring.

If infections are very frequent, a specialist may advise the insertion of a grommet into the eardrum. This is the same treatment that is used to treat some cases of glue ear. A grommet is like a tiny drainage pipe that helps to let fluid escape from the middle ear, and that lets air in. Some research suggests that this may reduce the number of ear infections that occur. [See separate leaflet called Operations for Glue Ear for more details.](#)

Further reading & references

- [Respiratory tract infections – antibiotic prescribing: Prescribing of antibiotics for self-limiting respiratory tract infections in adults and children in primary care](#); NICE Clinical Guideline (July 2008)
- [Otitis media with effusion](#); NICE CKS, March 2011 (UK access only)
- [Otitis media - acute](#); NICE CKS, March 2015 (UK access only)

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