

# Ear infection

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## What is it?

Most of the time when adults or children have an ear infection, it is *otitis media*. The best way to define otitis media is to look at what the words mean. They are actually made up of 3 parts; *ot-* meaning "ear," *-itis* meaning "inflammation," and *media* meaning "middle," or more exactly "middle ear." So, *otitis media* means "inflammation of the middle ear." The inflammation occurs as a result of a middle ear infection. It can occur in one or both ears.

The ear works by receiving sound waves and sending messages to the brain. The *outer ear* includes the part of the ear you can see and the ear canal. The sound waves go through the ear canal and hit the eardrum and cause it to vibrate.

The *middle ear* includes the space behind the eardrum. The *eustachian tube* connects the middle ear to the back of the nose. The vibration of the eardrum causes three tiny bones (the *hammer*, *anvil* and *stirrup*) to move. This movement sends the sound waves to the *inner ear*, which then sends messages to the brain.

## What causes it?

Middle ear infection is caused by bacteria or viruses that enter the middle ear space from the nose or throat through the eustachian tube. Blockage of the eustachian tube prevents fluid from draining out of the tube. Once inside, the germs begin to multiply, causing an accumulation of pus and a buildup of pressure behind

the eardrum, which becomes red, tender, and swollen. By observing the appearance and movement of the eardrum through an otoscope, your doctor will be able to diagnose the presence of an infection.

*Acute* ear infections usually clear up within one or two weeks. But they often come back. Sometimes ear infections become *chronic*. After an infection, fluid may stay in the middle ear for several weeks.

## Who gets it?

Almost half of all children will have an ear infection during the first year of their life. More than 3/4 of children will have at least one ear infections by their third birthday. Nearly half of them will have had three or more infections before they are three years old. Many will be prone to recurrence, particularly those with a parent or sibling who had the same problem during childhood. Middle ear infections are also more frequent among children who attend day care centers, children with *hay fever* (nasal allergy) and those whose parents smoke at home.

Because ear infections often accompany colds, they are especially frequent during the fall and winter months. The peak age range for ear infections is 2 months - 2 years, but they continue to be a common childhood illness until 8 years of age and occasionally a problem even into adulthood. Ear infections in children may be so common because their eustachian tubes are shorter and smaller than those of adults.

## What are the symptoms?

Pain is the most common symptom of middle ear infection. Infants may be fussy or out of sorts, and sleep restlessly. Children may tug at their ears, perhaps as a reaction to the discomfort or pain. In some cases it is very mild; in others it is severe enough to make the child cry or scream, although usually for less than half an hour. Older children and adults usually complain of soreness, hearing loss, or a sharp stabbing pain in the affected ear. Nausea can rarely occur.

Up to 1/2 of children with middle ear infections will develop fever, occasionally as high as 104 F (40C). Elevated temperature is more common in infants and toddlers than in older children or adults. Symptoms of a

cold such as nasal congestion, cough, and *conjunctivitis* ("pink eye") often accompany or precede ear infections.

## How do you prevent it?

Some parents are concerned that they have done something to cause an ear infection. Please note that the infection is behind the ear drum, meaning it is not the result of water in the ear canal. Neither is it caused by going without a hat in cold weather. There is no sure way to prevent ear infection, although there are several minor things that may help.

One fact that is clear, and proven by multiple studies, is that children in households where the parents smoke have more upper respiratory infections and middle ear infections. Also, bottle feeding a child that is lying flat can result in the fluid going up the *eustachian tube* from the back of the throat. This may also lead to an increased risk of ear infection.

A routine childhood vaccine against the bacterial Pneumococcal infection also has been shown to significantly reduce ear infections.

## Can it be treated?

- **Stop smoking** and avoid smoky rooms since cigarette smoke paralyzes the body's immune system which normally fights infection. Under no circumstances should smoke be allowed in a child's bedroom.

- **Acetaminophen** (Tylenol, Tempra, Panadol) provides temporary relief of mild to moderate earache. More severe pain usually requires prescription medication. Use of a heating pad or hot water bottle can also be helpful. Avoid aspirin which has been associated with *Reye's syndrome* in children with viral illnesses. *Reye's syndrome* is a rare but potentially life threatening neurological disease.

- **Decongestants** may help relieve nasal congestion, and blockage in the eustachian tube, allowing the tube to drain. Decongestants (like Sudafed) generally come in the form of tablets or syrup. Again, have the child take these exactly as directed. Antihistamines, which dry secretions making them thicker and stickier, probably should be avoided.

- **Antibiotics** occasionally are needed to treat middle ear infection. Your doctor will choose one based on his/her experience, cost of the medicine, taste of the suspension, and possible side effects such as rashes or upset stomach. Antibiotic treatment is usually prescribed for 7-10 days. Even though ear pain may be completely gone after 2-3 doses of medicine, infection is still present and the full course should be completed to reduce the likelihood of relapse or recurrence.

Occasionally low dose antibiotics are prescribed for longer periods of time to control recurrent ear infections

(at least 3 episodes in 6 months), especially during the winter when these infections are more common.

- **Ventilation tubes** placed in the tympanic membrane can be used to treat persistent ear infections which recur frequently or do not clear with antibiotics alone and are associated with decreased hearing. This surgery was done more frequently a generation ago. However, it is now felt that most ear infections should be adequately treated with antibiotics and surgery is used only as a last resort.

## Are there complications?

Sometimes the ear drum bursts when pressure from the infection stretches it to its maximum state. Although pus and blood may drain from the ear canal when this happens, there is no cause for alarm; the tear in the eardrum is usually quite small and seals off within 2 - 3 days. It is uncommon to have a lasting hole in the eardrum or prolonged hearing loss as a result of an ear infection.

However, untreated ear infections have the potential to go on and cause more serious infections in other places of the body. It is also possible that an untreated ear infection may impair hearing or potentially damage hearing permanently. For these reasons if antibiotic treatment is started after an infection is diagnosed, a child may be asked to return for a recheck after treatment. If requested, the follow up examination is very important to be sure the infection has cleared.

## In summary

- *Otitis media* is generally not serious.
- Ear infections are not contagious.
- Most middle ear infections get better without antibiotics.
- Children with ear infections who do not have drainage from the ear canal can usually be permitted to go swimming.
- All children and adults with middle ear infections should avoid cigarette smoke.
- Follow the treatment schedule prescribed.
- For more information contact the American Academy of Family Physicians at [familydoctor.org](http://familydoctor.org)