

EAR INFECTIONS IN CHILDREN

ONE OF THE MOST COMMON AILMENTS IN CHILDREN CAUSING A DOCTOR'S VISIT.

Causes of infection can be viral but commonly are bacteria from the respiratory tract(nose/mouth)

**ANATOMY:

OUTER EAR- from external ear to the tympanic membrane (TM; "eardrum").

Otitis Externa (canal infection)- "swimmer's ear". Hurts to move ear. May treat mild ones with analgesic drops, heat, tylenol/motrin but many need antibiotic drops if worsening. Avoid getting fluid in ear or trauma to canal. Use drying drops after swimming if recurring.

INNER EAR- most internal and not visible; important for balance so infections can cause dizziness or vertigo ("room spinning"). "labyrinthitis"

MIDDLE EAR- from eardrum to window to inner ear

Otitis Media – Majority of infections. "Acute Otitis Media"- fluid plus symptoms/signs.

"Acute otitis media (AOM) is the most common diagnosis in childhood acute sick visits. By three years of age, 50% to 85% of children will have at least one episode of AOM. Symptoms may include ear pain (rubbing, tugging, or holding the ear may be a sign of pain), fever, irritability, otorrhea (discharge), anorexia (loss of appetite), and sometimes vomiting or lethargy. AOM is diagnosed in symptomatic children with moderate to severe bulging of the tympanic membrane (eardrum) or new-onset otorrhea (drainage) not caused by acute otitis externa, and in children with mild bulging and either recent-onset ear pain (less than 48 hours) or intense erythema (redness) of the tympanic membrane. Treatment includes pain management plus observation or antibiotics, depending on the patient's age, severity of symptoms, and whether the AOM is unilateral or bilateral. When antibiotics are used, high-dose amoxicillin (80 to 90 mg per kg per day in two divided doses) is first-line therapy unless the patient has taken amoxicillin for AOM in the previous 30 days or has concomitant purulent conjunctivitis; amoxicillin/clavulanate is typically used in this case. Cefdinir or azithromycin should be the first-line antibiotic in those with penicillin allergy based on risk of cephalosporin allergy. Tympanostomy (ear PE) tubes should be considered in children with three or more episodes of AOM within six months or four episodes within one year with one episode in the preceding six months. Pneumococcal and influenza vaccines and exclusive breastfeeding until at least six months of age can reduce the risk of AOM." *Am Fam Physician*. 2019 Sep 15

Do not prescribe antibiotics for otitis media in children two to 12 years of age with nonsevere symptoms if the observation option is reasonable

- The resolution rate of AOM in children is 81% without antibiotic treatment vs. 93% with antibiotic treatment.¹ Thus, antibiotics have limited benefits compared with the potential adverse effects, such as rash, vomiting, or diarrhea.¹⁰

- Antibiotic treatment of AOM in children does not decrease early pain (before 24 hours), hearing loss at three months, or recurrence within 30 days

****Risk Factors for Acute Otitis Media in Children:**

--Nonmodifiable risk factors:

Age younger than five years

Craniofacial abnormalities

Family history of ear infections

Low birth weight (less than 2.5 kg [5 lb, 8 oz])

Male sex

Premature birth (before 37 weeks of gestation)

Prior ear infections

Recent viral upper respiratory tract infection

White ethnicity

--Potentially modifiable risk factors:

Exposure to tobacco smoke or environmental air pollution

Factors increasing crowded living conditions (e.g., cold seasons, low socioeconomic level, day care/school)

Gastroesophageal reflux

Lack of breastfeeding- at least 3 mos can help; 6 mos reduces by 43%

Pacifier use after six months of age- possibly worsens

Supine bottle feeding (bottle propping)- feeding reclining may aggravate

- Topical anesthetic eardrops and naturopathic eardrops have been found to decrease pain in some small studies, but overall evidence is insufficient to recommend routine use.^{12,13} They should be avoided if there is any concern for tympanic membrane perforation.⁷
- There is limited evidence for the benefit of home remedies, such as distraction, external application of heat or cold, and oil drops into the external auditory canal...other options to be discussed by Bio-Touch



Trusted medical advice from the
American Academy of Family Physicians.

Ear Infection

Overview

What is an ear infection?

An ear infection, also called a middle ear infection, is one of the most common conditions among children. They shouldn't be ignored. Untreated ear infections can lead to unnecessary pain and permanent hearing loss for your child. An ear infection occurs in the middle ear and is caused by a bacterial or viral infection. It creates pressure in the small space between the eardrum and the back of the throat called the Eustachian tube. Smaller Eustachian tubes are more sensitive to pressure, which causes the ear pain. A child's adenoids (the little bits of tissue that hang above the tonsils at the back of the throat) can block the opening of Eustachian tubes because they are larger in young children.

Eustachian tubes do not work properly when filled with drainage from the nose or mucous from allergies, colds, bacteria, or viruses because the drainage presses on the eardrum, which is what causes the pain. A chronic ear infection can last for 6 weeks or more, but most go away on their own after 3 days. Children who are routinely exposed to illness from other kids (especially during the winter months), or second-hand smoke are more likely to get ear infections, as does bottle-feeding, because your baby is lying down while eating. Some ear pain is due to teething in babies, a buildup of earwax, or a foreign object your child may have put in their ears. When the pressure increases, it can cause your child's eardrum to rupture or pop, leaving a hole in the ear. The initial pop hurts, but actually relieves the pressure and pain.

Symptoms

Symptoms of ear infections

Intense pain in your child's affected ear is usually the first sign of an ear infection. Young children can tell you that their ear hurts, but babies may only cry. Your child may repeatedly pull on the ear that hurts. The pain is usually worse at night and when your child is chewing, sucking a bottle, or lying down because that's when the pressure is at its greatest. Other symptoms include a runny nose, cough, fever, vomiting, or dizziness, and hearing loss.

Chronic, frequent ear infections can cause permanent hearing loss. You might suspect your child has hearing loss if you have to talk louder to your child, your child turns up the volume of the TV or music, is not responding to softer sounds or is suddenly less attentive at school.

Causes

What causes ear infections?

Ear infections happen in the middle ear. They are caused by a bacterial or viral infection. The infection creates pressure in the small space between the eardrum and the back of the throat. This area is called the Eustachian tube. These tubes do not work properly when filled with drainage from the nose or mucous from allergies, colds, bacteria, or viruses.

Diagnosis

How are ear infections diagnosed?

Your doctor will be able to check for an ear infection by using a small scope with a light to look into your child's ear. The infection is not visible without that tool, called an otoscope. Your doctor will know if the eardrum is infected if it looks red and he or she sees fluid inside the ear, the eardrum ruptured, leaving a hole that is visible to your doctor, or if your child has related symptoms, such as a runny nose, cough, fever, vomiting, and dizziness.

Prevention

Can ear infections be prevented or avoided?

Although an ear infection is not contagious, the bacteria or virus that causes it is often passed from person to person like most germs. It's important to:

- Vaccinate your child with a pneumococcal conjugate vaccine to protect against several types of pneumococcal bacteria. This type of bacteria is the most common cause of ear infections. Get your child's vaccinations on time.
- Practice routine hand washing and avoid sharing food and drinks, especially if your child is exposed to large groups of kids in day care or school settings.
- Avoid second-hand smoke.
- Breastfeed your baby exclusively for the first 6 months and continue breastfeeding for at least 1 year. Place your baby at an angle while feeding.
- Common allergy and cold medicines do not protect against ear infections.

Treatment

Ear infection treatment

Ear infections usually go away in a few days without the use of medicine and don't require surgery. Doctors are cautious about prescribing antibiotics for ear infections unless they are chronic and frequent. Research shows that over prescribing antibiotics for ear infections is not effective. Doctors treat the pain and fever of an ear infection with over-the-counter (OTC) pain relievers or eardrops, and wait a few days to see if your child's infection disappears on its own. They'll ask you to bring your child in again if there's no improvement. The doctor may prescribe an antibiotic at that point if it is a bacterial infection.

If your child has chronic and frequent ear infections, signs of hearing loss, or speech delays because of that hearing loss, your doctor might refer you to an ear, nose, and throat (ENT) specialist for ear tube surgery. An ENT surgically inserts tubes inside your child's middle ear. The tubes relieve the pressure and allow the fluid to drain. Some children naturally have small Eustachian tubes, so this helps correct that problem. As your child's ears grow and develop, the tubes fall out automatically and the ear infections are no longer a problem. Sometimes, the tubes fall out too soon and have to be replaced. For some children, they never fall out and eventually have to be surgically removed. The surgery is quick and does not require overnight hospitalization.

Your doctor may recommend ear tube surgery in certain instances, such as frequent ear infections, or if your child has Down syndrome, cleft palate or a weakened immune system. Never stick anything in your child's ear to relieve the pain of an ear infection, to remove the tubes or remove a foreign object. See your child's doctor to have it removed.

Everyday Life

Living with ear infections

Young children are more likely to get ear infections than are older children or adults. They are one of the most common illnesses among children. If your child suffers from several ear infections each year, you'll want to look out for symptoms every time he or she has a stuffy nose or congestion. Many times, an ear infection will clear up on its own within a week or two. If you can manage your child's pain at home, the American Academy of Family Physicians recommends a wait-and-see approach for 48 hours before seeing a doctor and asking for an antibiotic. This is unless your child has pain in both ears, is less than 2 years old, and has a fever higher than 102.2°F.

Questions

Questions to ask your doctor

- How can I keep my child comfortable at night with the pain of an ear infection?
- Is there drainage with an ear infection?
- What is the difference between an ear infection and swimmer's ear?
- Is my child a candidate for ear tubes?
- What are the risks of surgically inserting tubes inside my child's middle ear? What are the risks of not?
- Should my child get regular hearing tests if he or she has had ear infections?

Resources

National Institutes of Health, National Institute on Deafness and Other Communication Disorders (NIDCD), Ear Infections in Children (<https://www.nidcd.nih.gov/health/ear-infections-children>)

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