



The Doctor Is In

BY DR. DAVID HILL

Acute Otitis Media: From Ear to Eternity

Ear infection” or acute otitis media (AOM) is the single most common illness doctors diagnose in children. Given that 90% of children have at least one episode of AOM by age three, it’s a topic almost every parent is bound to confront. So lend me your ear.

Who gets ear infections?

Infants between 6 and 24 months of age are most likely to get AOM. Children in daycare (a setting with 4 or more children) are at higher risk. Pacifiers raise the risk a little, and exposure to tobacco smoke is a major risk factor. Genetics contribute, too. Breastfeeding for at least the first three months is protective. Immunizations against pneumonia and influenza also help. Ear infections become much less common as children age; a child who makes it three years without an infection is unlikely to ever have a severe AOM.

How do ear infections happen?

Let’s journey into the ear. The part you can grab is called the pinna. The hole is the external auditory canal, which ends at the eardrum (tympanic membrane). The chamber behind the eardrum holds tiny bones that conduct sound vibrations from the eardrum to the inner ear (cochlea). This chamber is called the middle ear, and it’s where AOM occurs. The eardrum protects the middle ear from the outside world, so neither wind nor water in the ear canal causes AOM. The middle ear depends on a connection to the nose, the Eustacian tube, to drain fluid and keep air pressure normal.

If you’ve ever flown with a cold, you know the Eustacian tube is easily blocked by inflammation, allowing fluid to get trapped in the middle ear. When viruses or bacteria infect this fluid, that’s an ear infection. Babies’ smaller Eustacian tubes make them more susceptible. Three species of bacteria account for most bacterial AOM: *Streptococcus pneumoniae*, *Haemophilus influenzae*, and *Moraxella catarrhalis*. The most common viruses are respiratory syncytial virus, rhinoviruses, influenza viruses, and adenoviruses. Without putting a needle through the eardrum there’s no way to know which virus or bacteria is causing the infection.

How do I know when my child has an ear infection?

Most children get ear infections before they learn to talk, so you’re mostly guessing. Usually they have cold symptoms. Fever, irritability, vomiting, and diarrhea can all suggest an ear infection. Some children pull, poke, or rub at their ears, but this

is common enough in healthy babies it can be misleading. Also, not all ear infections hurt. Pink-eye (conjunctivitis) often accompanies ear infections and may be the only symptom, one reason we don’t phone in eye drops. Fever is common in the first few days of a cold, but when fever lasts four days it’s time to see the doctor. Children with ear tubes or whose eardrums rupture may have pus draining from the ear.

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How does my child’s doctor diagnose nose ear infections?

The only way to make the diagnosis is by looking in the ear with a pneumatic otoscope. The otoscope is the flashlight doctors use to look in ears, noses, and mouths. To make an accurate diagnosis your child’s doctor will use a tube with a bulb or mouthpiece to puff air at the eardrum. Normal eardrums move with this maneuver; infected eardrums don’t. The doctor is also looking for pus or bulging of the eardrum. Redness alone is common in healthy children, especially if they’ve been crying, and doesn’t warrant antibiotics. Likewise, clear (serous) fluid may last for months after an ear infection and does not require antibiotics.

I wish it was always easy to see the eardrum, but narrow ear canals and ear wax (cerumen) can make it hard. We’ll often try to scoop or wash the wax out, but even the most experienced practitioners sometimes have to guess what they’re seeing. Two electronic tools, tympanometry and acoustic reflectometry, can help with challenging diagnoses.

How do you treat ear infections?

Antibiotics remain the key for most patients. Amoxicillin is usually the first choice. With the correct dose (80 to 90 mil-

ligrams of amoxicillin per kilo per day) 80% of children will improve. Children with pink eye or those who have used amoxicillin in the last thirty days require a different antibiotic, as do those with an allergy to amoxicillin or penicillin. Second-line choices include amoxicillin-clavulanate (Augmentin), cephalosporins (Vantin, Omnicef, and Ceftin), erythromycin-sulfisoxazole (Pediazole), clindamycin, and azithromycin (Zithromax). Children with severe or resistant infections may require one to three daily shots of ceftriaxone (Rocephin).

Pain relief is also important. Ibuprofen (Advil, Motrin) and acetaminophen (Tylenol) both work well. Your doctor may prescribe analgesic drops (Auralgan). Decongestants and antihistamines (Triaminic, PediaCare) don’t help ear infections and may prolong middle ear fluid collections.

Do you have to treat AOM with antibiotics?

In some cases – children older than two years with uncomplicated infections antibiotics may be more likely to cause side effects than to cure the infection. In those cases your doctor may advise a two to three day period of observation before treating.

“Amoxicillin never works in my child.”

It’s the bacteria, not the child, that’s resistant to antibiotics. A certain percentage of children are going to fail any antibiotic, usually because their infection is caused by a virus or resistant bacteria. Amoxicillin at 80 mg/kg/day is much more likely to work than lower doses.

What about tubes?

Some children get recurrent or resistant infections no matter what. Recurrent acute otitis media (AOM) is defined as 3 distinct and well-documented episodes within three months or 4 episodes within 12 months. These children may be candidates for daily antibiotic prophylaxis or tympanostomy (ear) tubes. The decision to place tubes depends on the child’s age, past history, and risk factors and should be made after a thorough discussion of the potential risks and benefits. Adenoidectomy may help children who require a second set of tubes.

The nice thing about ear infections is that kids usually grow out of them. Your child’s doctor can help you get from ear to there.

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