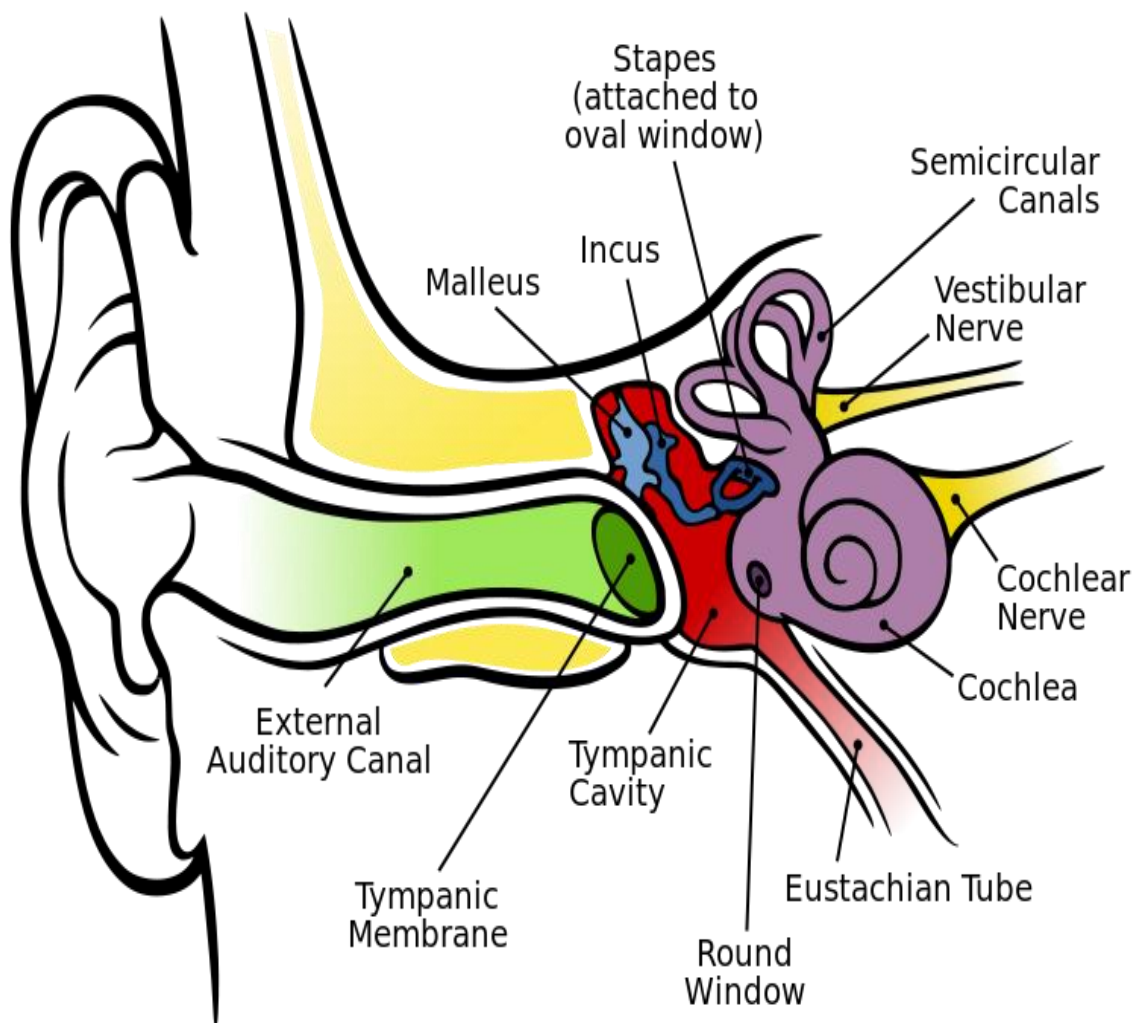


Middle Ear Infections: What to Expect and Treatment Options



(1)

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Normal Tympanic Membrane



(4)

- Pneumococcal polysaccharide protein conjugate vaccine (PCV7) should be administered in children aged 2–23 months ⁽⁹⁾. This vaccine has been a key player in the reduction of bacterial ear infections. Since the emergence of the PCV7 vaccine, the virus H. Influenzae has become a more widespread cause of Acute Otitis Media (AOM) ⁽⁹⁾.
- In the United States, viral and bacterial ear infections are the most common childhood illnesses treated with antibiotics ⁽⁹⁾. Early detection and treatment of ear infections is vital because it can significantly reduce the negative effects on public and personal wellbeing ⁽⁹⁾.

Normal Ear Drum



(4)

- Early childhood vaccinations can help to prevent bacterial ear infections ⁽⁹⁾.
- Most ear infections are viral and can get better on their own without antibiotic treatment ⁽⁹⁾.

Acute Otitis Media



(5)

Diagnostic criteria:

1. Rapid onset of signs and symptoms, 2. Middle ear effusion, 3. Middle-ear inflammation ⁽⁹⁾.

Signs and symptoms:

- a. Bulging tympanic membrane (TM)
- b. Decreased mobility of TM
- c. Fluid behind TM
- d. Otorrhea
- e. Erythematous TM
- f. Otagia ⁽⁹⁾

Risk factors:

1. Bottle-fed vs. breast-fed
2. Passive cigarette smoking exposure
3. Daycare attendance ⁽⁹⁾

Treatment:

Anti-microbial agents have typically been used to manage AOM, but a “wait and see” approach is increasingly used given concerns about medication resistance.

Amoxicillin is frequently suggested as the first-line medication treatment in children ⁽⁹⁾.

1. Amoxicillin
2. Amoxicillin-Clavulanate
3. Cephalosporins (e.g. Ceftriaxone, Cefdinir, Cefixime) ⁽⁹⁾

Potential negative outcomes of antibiotic use:

1. Antibiotic resistance
2. Allergic reactions
3. Diarrhea/vomiting ⁽⁹⁾

Ear Infection



(5)

Signs of an ear infection:

1. Fever
2. Earache (child tugging or pulling on ear is a sign)
3. Irritability
4. Liquid draining from the ear
5. Hearing difficulty (9)

Treatment:

1. "Wait and see" approach:
 - a. Does ear pain decrease?
 - b. Is the fever gone?
2. Prescription medications may be needed to:
 - a. Decrease ear pain
 - b. Reduce fever
 - c. Treat ear infection (9)

Parent/ Guardian follow up:

- Follow up as directed by your healthcare provider
- Use and complete all of the medications as prescribed
- Keep ears clean and dry

Otitis Media with Effusion

(6)

- Treatment can vary based on child's age and severity of symptoms. Uncomplicated AOM, the existing research suggests the "wait and see" approach ⁽⁹⁾.

Parent/ Guardian Instructions:

- Keep ears clean and dry
- Follow up with provider for symptoms of fever, ear pain, drainage from the ear
- Follow up with provider as directed

Fluid in the ear drum

(6)

- With this type of an ear infection, clear fluid builds up or collects behind the ear drum ⁽⁹⁾. Often the fluid will go away on its own without medication ⁽⁹⁾.
- “Wait and see” approach ⁽⁹⁾.

Parent/ Guardian Instructions:

1. Keep ears clean and dry
2. Follow up with provider for symptoms of fever, ear pain, drainage from the ear
3. Follow up with provider as directed

Otitis Media with Perforation



(2)

- Topical antibiotic drops are the first-line treatment for AOM with perforation (7).
- Fluoroquinolone antibiotics are preferred due to their lack of ototoxicity (7). If the infection appears to be more than just localized then oral and sometimes even parenteral antibiotics may be needed (7).
- Surgery may be needed to repair a perforation if it persists for more than 6 weeks (7).

Ear infection with ruptured ear drum



(2)

- Sometimes severe ear infections can cause your ear drum to burst. This opening in the ear drum can:
 1. Make it difficult to hear
 2. Cause ear infections
 3. Cause other serious problems ⁽⁵⁾
- If you have a ruptured ear drum you may notice:
 1. Decrease or loss of ear pain
 2. Drainage from your ear
 3. Loss of hearing
 4. Ringing sound in your ears
 5. Dizziness
 6. Nausea and/ or vomiting ⁽⁵⁾
- It is important that you seek medical attention right away if you have any of these signs or symptoms.
- Follow up visits may also be needed in order to ensure that the ruptured ear drum has healed after being treated.

Tympanostomy Tubes



(3)

- Recurrent Otitis Media (ROM) is defined as three or more diagnosed occurrences of AOM within six months or four episodes within 12 months ⁽⁹⁾.
- Tympanostomy tube insertion can substantially reduce the rate of ear infections after the first six months of tube insertion in children with ROM ⁽⁹⁾.

Outcomes with Tympanostomy Tubes:

1. Improved fluid drainage
2. Reduced pressure in tympanic membrane (TM)
3. Improved equilibrium maintenance ⁽⁹⁾

Treatment for infection with Tympanostomy Tube:

1. Ciprofloxacin 0.3%-dexamethasone 0.1% otic drops
2. Amoxicillin-Clavulanate
3. Cephalosporins (e.g. ceftriaxone, cefuroxime)
4. Quinolones
5. Antibiotic prophylaxis ⁽⁹⁾

Ear tubes



(3)

Are Ear Tubes An Option For My Child?

Ear tubes may be an option for children who suffer from recurrent ear infections. (More than 3 in 6 months, or 4 in 12 months) ⁽⁹⁾.

Ear tubes help to:

1. Reduce pressure in the ear drum (that may cause ear pain)
2. Drain fluid from the ear drum
3. Decrease the number of ear infections ⁽⁹⁾

Parent/ Guardian care:

1. Keep ears clean and dry
2. Wear ear plugs when swimming
3. Do not put anything into the ear (e.g. Q-tips)
4. Call your provider if there is discolored drainage, fever, red ears, irritability/ ear tugging occurs
5. Follow up with provider as directed

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