Acute Otitis Media (AOM) – Clinician Guide

Diagnosis[1-4]

- Moderate to severe bulging of the tympanic membrane (if otoscope available) or new onset ear drainage (otorrhea) with symptoms of middle-ear inflammation (e.g., ear pain, fever).
- Severe symptoms include ill appearance, moderate to severe otalgia, otalgia lasting at least 2 days, or temperature of 102 degrees Fahrenheit or greater.
- Common bacterial pathogens causing AOM are *Streptococcus pneumoniae* (~25%), non-typeable *Haemophilus influenzae* (~50%), and *Moraxella catarrhalis* (~15%).

Treatment[5]

Age	Otorrhea With AOM	Unilateral or Bilateral AOM With Severe Symptoms	Bilateral AOM Without Otorrhea and Without Severe symptoms	Unilateral AOM Without Otorrhea and Without severe symptoms
<6 months	Antibiotics	Antibiotics	Antibiotics	Antibiotics
6 months to <2 years	Antibiotics	Antibiotics	Antibiotics	Antibiotics or observation
2 years and older	Antibiotics	Antibiotics	Consider observation	Antibiotics or observation

- For children <6 months old, a virtual examination should rule out other causes of infection, particularly for children with severe symptoms. If unilateral or bilateral AOM is confirmed, antibiotics are indicated due to risk for severe or systemic infection in infants with waning maternal antibodies and immature immune systems.[6]
- Decision to observe a child with AOM should be made in conjunction with the caregiver and with a plan for close followup.
- Amoxicillin (high-dose) is the preferred therapy for AOM.
    - Amoxicillin covers almost all *S. pneumoniae* and a large portion of *H. influenzae*.
        - *S. pneumoniae* is associated with greater clinical severity than other pathogens, as reflected by high fever, more intense otalgia, and a higher potential for complications such as bacteremia, meningitis, and mastoiditis.
- Amoxicillin-clavulanate is recommended in children with AOM who:
    - Do not improve after 48-72 hours of amoxicillin.
    - Have received amoxicillin within the previous 30 days.
    - Have concurrent purulent conjunctivitis (most commonly caused by *H. influenzae*).
    - Have a history of recurrent AOM unresponsive to amoxicillin.
- Alternative agents for children with non-severe penicillin allergies or intolerance to amoxicillin-clavulanate include cefdinir, cefuroxime, cefpodoxime, or ceftriaxone (intramuscular or intravenous daily for up to 3 doses).
- Levofloxacin can be considered for children with severe penicillin allergies.

Duration[5,7]

- <2 years old or severe symptoms at any age: 10 days.
- 2–5 years: 7 days.
- ≥6 years: 5-7 days.

Followup

- When a decision is made to observe without antibiotics, a clear plan should be made with the parent for when the child should return to medical attention.[5]
- Patients should seek medical attention if the child worsens or fails to improve within 48-72 hours of initiating antibiotics; if the child is becoming confused, lethargic, or increasingly tired; or if the child is ill appearing.[5]
- Consider referral to pediatric otolaryngology if the child is nontoxic but has persistent symptoms despite antibiotic changes.
    - Also consider a pediatric otolaryngology referral for children with either chronic otitis media (>3 months of middle ear effusion without infection) or recurrent ear infections (at least 3 episodes of AOM in 6 months or 4 episodes of AOM within 12 months).[8]

References

1. Kaur R, Morris M, Pichichero ME. Epidemiology of acute otitis media in the postpneumococcal conjugate vaccine era. Pediatrics. 2017 Sep;140(3):e20170181. PMID: 28784702.

2. Ben-Shimol Shalom, Givon-Lav N, Leibovitz E, et al. Impact of widespread introduction of pneumococcal conjugate vaccines on pneumococcal and nonpneumococcal otitis media. Clin Infect Dis. 2016 Sep 1;63(5):611-8. PMID: 27225239.

3. Cohen R, Varon E, Doit C, et al. A 13-year survey of pneumococcal nasopharyngeal carriage in children with acute otitis media following PCV7 and PCV13 implementation. Vaccine. 2015 Sep 22;33(39):5118-26. PMID: 26271823.

4. Wald ER, DeMuri GP. Antibiotic recommendations for acute otitis media and acute bacterial sinusitis: Conundrum no more. Pediatr Infect Dis J. 2018 Dec;37(12):1255-7. PMID: 29570583.

5. Lieberthal AS, Carroll AE, Chonmaitree T, et al. The diagnosis and management of acute otitis media. Pediatrics. 2013 Mar;131(3):e964-99. PMID: 23439909.

6. Randolph AG, McCulloh RJ. Pediatric sepsis: important considerations for diagnosing and managing severe infections in infants, children, and adolescents. Virulence. 2014 Jan 1;5(1):179-89. PMID: 24225404.

7. Committee on Infectious Diseases, American Academy of Pediatrics, Kimberlin DW, Barnett ED, et al. Red Book: 2021–2024 Report of the Committee on Infectious Diseases. AAP. 2021.

8. Rosenfeld RM, Schwartz SR, Pynnonen MA, et al. Clinical practice guideline: Tympanostomy tubes in children. Otolaryngol Head Neck Surg. 2013 Jul;149(1 Suppl):S1-35. PMID: 23818543.