



Managing Otitis Media in Children Ages 6 Months – 18 Years Clinical Practice Guideline MedStar Health

“These guidelines are provided to assist physicians and other clinicians in making decisions regarding the care of their patients. They are not a substitute for individual judgment brought to each clinical situation by the patient’s primary care provider in collaboration with the patient. As with all clinical reference resources, they reflect the best understanding of the science of medicine at the time of publication but should be used with the clear understanding that continued research may result in new knowledge and recommendations.”

MedStar Pediatrics and MedStar Family Choice endorse and adapted the clinical guidelines set forth by the American Academy of Pediatrics: The Diagnosis and Management of Acute Otitis Media, 2013.

The online version of this article is available at: <http://pediatrics.aappublications.org/content/131/3/e964>

The purpose of this guideline is to present current information on the diagnosis and treatment of acute otitis media in the pediatric patient. In the United States, otitis media is the most common diagnosis resulting in an antibiotic prescription for children. However, the diagnosis of Acute Otitis Media (AOM) is not always straightforward. The clinical presentation evolves with time and varies with the age of the patient. A thorough history along with a good physical exam of the ear, specifically the tympanic membranes need to be considered in making the diagnosis of AOM in order limit unnecessary antibiotic prescriptions while ensuring that pediatric patients get an antibiotic when needed.

Definition Key:

- AOM – acute otitis media
- OME – otitis media with effusion
- MEE – middle ear effusion
- TM – tympanic membrane

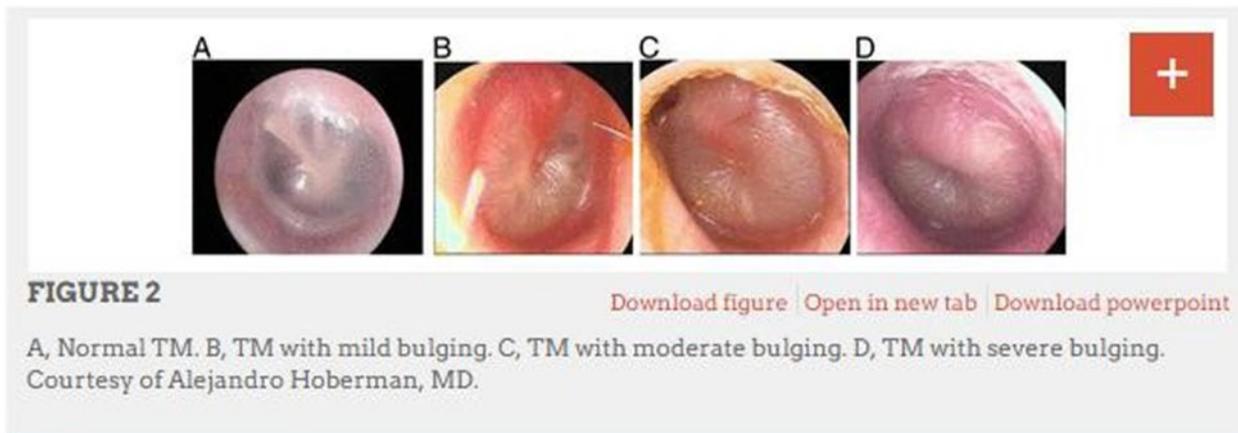
CLINICAL PRESENTATION

- Rapid onset of ear pain verbally expressed or implied by behavior changes including tugging/rubbing ears, increased crying, irritability and/or sleep disruption.
- Presence of fever is variable.
- Frequently occur with viral upper respiratory prodrome.

CLINICAL EXAM

- The pneumatic otoscope is the standard tool used in the diagnosis of OM.¹ Clinicians must become proficient with the use of this tool to distinguish Otitis Media with Effusion (OME) from AOM.
- OME is the presence of a Middle Ear Effusion (MEE) without clinical symptoms. The Tympanic Membrane (TM) will appear to have fluid behind it. This may look cloudy, opaque, yellow, have air bubbles or an air fluid level. The typical landmarks may be obscured. A light reflex may still be present. It may precede or follow an episode of AOM or may be the result of fluid collecting in the middle ear space due to eustachian tube dysfunction. OME does not require antibiotic or medication treatment and typically will spontaneously resolve. MEE is common in children.
- Acute Otitis Media is due to infection in the MEE. **Bulging of the tympanic membrane (TM) with impaired mobility** is the most important characteristic in the diagnosis of AOM.¹ TM color that is hemorrhagic or red is correlated with acute otitis media.

- Otorrhea can be a sign of AOM. This is typically due to a perforation of the TM. It can also be associated with acute otitis externa or tympanostomy tube drainage. A small perforation of the TM will spontaneously heal and there is no additional medication management necessary other than treatment of the AOM. Consider ENT referral for a persistent perforation.
- MEE is necessary for the diagnosis of AOM. A TM that appears red without effusion does not meet diagnostic criteria for AOM.
- See Figure 2 for examples of Tympanic Membrane physiology.



DIAGNOSIS Moderate to severe bulging of the TM or new onset otorrhea without acute otitis media or tympanostomy tubes in absence of other symptoms.

1. Significant expression of ear pain with mild bulging of TM or intense erythema of TM.

Bacterial Pathogens Implicated in AOM: primarily Streptococcus pneumonia, Haemophilus influenza, and Moraxella catarrhalis.

TREATMENT

1. **Pain management.** AOM is painful and the pain may persist for 2 to 3 days into the course even with antibiotic treatment when appropriate. Use ibuprofen (age > 6 months) or acetaminophen for pain control. Topical benzocaine has been removed from the market due to safety concerns. Opioids are not necessary for pain control for AOM.
2. **Observation** is an option for management of non-severe unilateral AOM in children 6-23 months of age or for non-severe unilateral or bilateral AOM in older children. Non-severe means the ear discomfort is mild, less than 48 hour duration and fever is less than 39° C. The decision to observe with close follow-up should be based on joint decision making with the parent/caregiver. There must be a plan in place to ensure follow-up if the child's condition worsens or fails to improve in 48 hours of observation. This plan could include having a follow-up appointment, having the ability to call to discuss the child's condition with the possibility of calling in a prescription or giving the parent a prescription to hold to fill if not improving or if worsens. That prescription should have a note to void in 3 to 5 days after the issue date.

3. **Antibiotic Therapy** is recommended for:

- Unilateral or bilateral AOM in children over 6 months of age with severe symptoms including moderate to severe pain at presentation or any pain for at least 48 hr or fever of 39° C or higher.
- Bilateral AOM in children 6 to 23 mo with mild signs and symptoms of AOM for less than 48 hours including expression of mild otalgia/discomfort and fever less than 39° C.
- **Amoxicillin 90 mg/kg/day divided BID x 10 days** is the first line treatment for AOM.
- **Amoxicillin clavulanate 90 mg/kg/day divided BID x 10 days** is recommended in the following scenarios:
 1. For AOM which does not respond to initial therapy with Amoxicillin after 48 to 72 hours of treatment.
 2. In children who have already completed a course of amoxicillin in the previous 30 days.
 3. AOM with purulent conjunctivitis as this is most likely due to *H. influenza* which is often beta lactamase resistant.
 4. For children who have a history of recurrent AOM unresponsive to Amoxicillin in the past.

Alternative antibiotics or if penicillin allergic: cefdinir (14 mg/kg/day qd or divided bid), cefpodoxime (10 mg/kg/day divided bid) or ceftriaxone 50 mg/kg qd x 3 days.

Not recommended: Macrolides such as erythromycin and azithromycin due to their limited efficacy against *H. influenza* and *S. pneumonia*.

Trimethoprim-sulfamethoxazole and erythromycin-sulfisoxazole due to substantial *S. pneumoniae* resistance patterns.

4. **Prophylactic Antibiotic Therapy** to reduce frequency of recurrent AOM is no longer recommended.

5. **Referral to ENT:**

- **Recurrent AOM= 3** or more episodes of AOM in a 6 month period or 4 or more episodes of AOM in a 12 month period with at least 1 episode in the preceding 6 months for consideration of tympanostomy tubes.
- **Severe AOM** which is not responding to usual therapy.

PREVENTIVE STRATEGIES

1. Appropriate vaccinations on schedule recommended by ACIP including pneumococcal conjugate vaccine (PCV 13) and Influenza vaccine.
2. Exclusive breast feeding for the first 6 months of life.
3. Do not bottle feed the baby lying flat.
4. Eliminate smoke exposure.
5. Good hand hygiene to minimize recurrent viral upper respiratory infections.

ACUTE OTITIS MEDIA IN CHILDREN WITH TYMPANOSTOMY TUBES⁶

- Often presents with sudden onset of purulent otorrhea
- Common pathogens include Staphylococcus aureus and Pseudomonas aeruginosa as they often colonize the external ear canal as well as Streptococcus pneumonia, Haemophilus influenza and Moraxella catarrhalis.
- Topical antibiotic therapy preferred due to higher local concentrations and less GI side effects.
- Topical fluoroquinolones Ofloxacin and Ciprofloxacin with or without dexamethasone are safe and effective.
- Gentle debridement the ear canal of exudates helps penetration of antibiotic drops to the tympanic membrane area.

References:

1. American Academy of Pediatrics and American Academy of Family Physicians. Otitis Media: Diagnosis and Treatment. October 1, 2013. Retrieved from <http://www.aafp.org/afp/2013/1001/p435.pdf> ([Errata - February 01, 2014](#))
2. Qureishi, a., Lee, Yan, Belfield, K., Birchall, JP, Daniel, M., 2014. Update on otitis media – prevention and treatment. *Infection and Drug Resistance.*, January 10, 2014, 7, 15-24.
3. Medical Services Commission. Otitis media: acute otitis media (AOM) and otitis media with effusion (OME). Victoria (BC): British Columbia Medical Services Commission; 2010 Jan 1. 7 p. 31, Retrieved from National Guideline Clearinghouse at <http://www.guideline.gov/content.aspx?id=38906>
4. Center for Disease Control, (2014). Otitis Media: PIS. Retrieved from <http://www.cdc.gov/getsmart/campaign-materials/info-sheets/child-otitismedia.html#references>
5. Harmes, KM, Blackwood, R.A., Burrows, HL, Cooke, JM, Van Harrison, R., Passamani, PP., 2013. Otitis Media: Diagnosis and treatment. Retrieved from <http://www.aafp.org/afp/2013/1001/p435.html>
6. Schmelzle, Jason , Richard v. Birtwhistle and Andre K.W. Tan. Acute otitis media in children with tympanostomy tubes. *Canadian Family Physician.* Vol 54:Aug 2008, 1123-1126.

<p><u>Initial Approval Date and Reviews:</u> <i>Effective 2000, revised 9/2006, reviewed 4/2009, 3/2013, 3/2015, 3/2017, 2/2019</i> by <i>Pediatric Ambulatory Workgroup</i></p>	<p><u>Most Recent Revision and Approval Date:</u> <u>February 2019</u></p>	<p><u>Next Scheduled Review Date:</u> <i>February 2021 by Pediatric Ambulatory Workgroup</i> Condition: Otitis Media</p>
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