Diagnosis and Management of Acute Otitis Media
(Ages 6 months to 12 years)

These Guidelines are promulgated by Sentara Health Plans, Inc. (SHP) as recommendations for the clinical management of specific conditions. Clinical data in a particular case may necessitate or permit deviation from these Guidelines. The SHP Guidelines are institutionally endorsed recommendations and are not intended as a substitute for clinical judgment.
DIAGNOSIS:

- **Acute Otitis Media (AOM)** must meet the three part definition: acute onset symptoms, presence of middle ear effusion diagnosed by pneumatic otoscopy or tympanometry, and acute middle ear inflammation (intense redness of tympanic membrane, moderate to severe bulging of tympanic membrane; new onset discharge due to infected ear canal; mild bulging of ear drum and onset of pain within 48 hours).

**SIGNS AND SYMPTOMS:**

- Fever
- Ear pain
- Crying
- Irritability
- Tugging or pulling at ear(s)
- Drainage of fluid or pus from ear
- Poor feeding
- Ear pain
- Difficulty sleeping
- Ear “popping” or “fullness”
- Hearing loss
- Balance problems
- Dizziness
- Poor feeding

Ear pain in non-verbal children could be indicated by holding, tugging or rubbing the ear.

**OTHER DEFINITIONS:**

- **Otitis Media with effusion (OME):** the presence of fluid in the middle ear without signs or symptoms of ear infection
- **Chronic Otitis Media with effusion (COME):** when infection persists over a long period of time (at least 3 months)
- **Persistent Acute Otitis Media:** continued findings of AOM present within 6 days of finishing a course of antibiotics
- **Recurrent Acute Otitis Media:** a minimum of 3 episodes of AOM in a 6 month period or 4 episodes the prior year with one occurring in the last 6 months.

**CHILDREN AT INCREASED RISK FOR RECURRENT ACUTE OTITIS MEDIA:**

- Cleft palate
- Craniofacial abnormalities
- Down's syndrome
- First episode early (under six months)
- Family history of recurrent acute otitis media
- Day care attendance
- Exposure to tobacco smoke or other respiratory irritants and allergens
- Lack of breast feeding
- Ethnic origin: Native American or Inuit (Eskimo)
- Age
- Supine Feeding position
- Use of pacifiers beyond 10 months of age
- Immune deficiency
- GERD
- History of seasonal allergies
- Presence of enlarged adenoids
- Frequent upper respiratory infections

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PREVENTIVE MEASURES:

- Encourage breast feeding
- Feed child upright if bottle fed
- Avoid exposure to passive smoke
- Limit exposure to numbers of children to extent possible
- Teach adults and children careful hand washing
- Limit exposure to viral URI’s
- Avoid pacifier beyond 10 months of age
- Ensure immunizations are up to date including influenza vaccine and pneumococcal conjugate vaccine

TREATMENT:

Acute otitis media (AOM):

- **Amoxicillin** remains the first line agent. Drugs that have additional beta-lactamase coverage are used for those who have already had amoxicillin in the previous 30 days, those with concurrent conjunctivitis, or who are allergic to penicillin.
- **If < 6 months**, treat with antibiotics
- **If ≥ 6 months**, treat with antibiotics for **severe** bilateral or unilateral AOM based on ear pain that is moderate or severe, lasts for at least 48 hrs, or is accompanied by temperature of ≥ 102.2F (≥ 39C)
- In **less severe** cases, watchful waiting could be offered instead of antibiotics unless both ears are affected for ages 6-23 months.
- If patient fails to respond to the initial management within 48-72 hours, reassess to confirm AOM diagnosis and exclude other causes of illness
- Management should include pain assessment. If present, recommend treatment to decrease pain (oral) acetaminophen, ibuprofen; and in patients >5 years old can add topical *benzocaine, procaine, lidocaine). *Topical benzocaine products have been withdrawn from the market in the United States because they have not been evaluated by the US Food and Drug Administration (FDA) for safety, effectiveness, and quality. (In July, 2, 2015 the FDA asked all manufacturers of antipyrine and benzocaine otic products- (Auralgan and Aurodex brand names) to stop selling these products because they have not been proven to be safe and effective.)
- Teach prevention of AOM through reduction of risk factors
- It is not recommended to use other therapies such as steroids, antihistamines, or decongestants. Antihistamines may actually prolong middle ear effusion
- **Prophylactic antibiotics should not be prescribed to reduce recurrences.** Consider ENT referral for tympanostomy tubes.
- Instruct in comfort measures:
  - Warm compresses to ear
  - Elevate head of bed or crib
  - Analgesic ear drops for children > 5 years old (if ventilating tubes and/or visible drainage are not present)

Severe Illness is defined as a toxic appearing child, persistent otalgia more than 48 hrs, ≥ 102.2 degrees Fahrenheit (≥ 39 degrees C) in the past 48 hours, or if there is uncertain access to follow-up.

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The observation option is limited to healthy children over the age of 6 months. The caregiver must agree to the option, be able to monitor the child and return should conditions worsen. Systems must be in place for ready communication with the clinician, for re-evaluation, and obtaining medication if needed. Giving the caregiver the prescription for antibiotic treatment at the initial assessment with the understanding to fill only if symptoms do not improve or worsen within 48-72 hours is recommended. This is referred to as a “safety net antibiotic prescription (SNAP).

Otitis Media with Effusion:
- Observe
- Recheck in 4-6 weeks
- Refer for hearing evaluation if OME present bilaterally for at least 3 months or longer
- Refer to ENT if with bilateral OME for at least 3 months or longer AND with documented hearing difficulties.
- Refer to ENT if with bilateral or unilateral OME for at least 3 months or longer AND symptoms likely attributable to OME such as balance (vestibular) problems, poor school performance, behavior problem, ear discomfort.

CONSIDER ENT REFERRAL: A child should meet one of the following criteria for ear, nose and throat (ENT) specialist referral for consideration of ventilating tubes:
- Impending or actual complication of otitis media including:
  - Mastoiditis
  - Facial nerve paralysis
  - Lateral (sigmoid) sinus thrombosis
  - Meningitis
  - Brain abscess
  - Labyrinthitis
  - Tympanic membrane perforation
  - Delayed speech
  - Hearing loss
- Patients in high-risk categories:
  - craniofacial anomalies
  - Down’s syndrome
  - cleft palate
  - patients with speech and language delay
- Recurrent acute otitis media
- Refractory acute otitis media with moderate to severe symptoms unresponsive to at least two antibiotics
- Development of advanced middle-ear disease involving tympanic membrane atrophy, retraction pockets, ossicular erosion or cholesteatoma
- Medical treatment failure secondary to multiple drug allergy or intolerance
- At least two recurrences of otitis media within two to three months following ventilating tube extrusion with failed medical management

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**Antibacterial choice should be guided by the likely pathogen(s) in the community and clinical experience**
<table>
<thead>
<tr>
<th>Age</th>
<th>Otorrhea With AOM&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Unilateral or Bilateral AOM&lt;sup&gt;a&lt;/sup&gt; With Severe Symptoms&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Bilateral AOM&lt;sup&gt;a&lt;/sup&gt; Without Otorrhea</th>
<th>Unilateral AOM&lt;sup&gt;a&lt;/sup&gt; Without Otorrhea</th>
</tr>
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<tbody>
<tr>
<td>6 mo. to 2 y</td>
<td>Antibiotic therapy</td>
<td>Antibiotic therapy</td>
<td>Antibiotic therapy</td>
<td>Antibiotic therapy or additional observation</td>
</tr>
<tr>
<td>≥2 y</td>
<td>Antibiotic therapy</td>
<td>Antibiotic therapy</td>
<td>Antibiotic therapy or additional observation</td>
<td>Antibiotic therapy or additional observation</td>
</tr>
</tbody>
</table>

<sup>a</sup> Applies only to children with well documented AOM with high certainty of diagnosis. (See Diagnosis section).

<sup>b</sup> A toxic-appearing child, persistent otalgia more than 48 h, temperature ≥39°C (102.2°F) in the past 48 h, or if there is uncertain access to follow-up after the visit.

<sup>c</sup> This plan of initial management provides an opportunity for shared decision-making with the child’s family for those categories appropriate for additional observation. If observation is offered, a mechanism must be in place to ensure follow-up and begin antibiotics if the child worsens or fails to improve within 48 to 72 h of AOM onset.

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<table>
<thead>
<tr>
<th>Initial Antibiotic Treatment at AOM Diagnosis or After Observation</th>
<th>Antibiotic Treatment After 48–72 Hours of Initial Antibiotic Treatment Failure</th>
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<tbody>
<tr>
<td><strong>Recommended First Line Treatment</strong></td>
<td><strong>Alternative Treatment</strong></td>
</tr>
<tr>
<td>Amoxicillin (80–90 mg/kg per day)</td>
<td>Cefdinir (14 mg/kg per day in 1 or 2 doses), Amoxicillin-clavulanate (90 mg/kg per day of amoxicillin, with 6.4 mg/kg per day of clavulanate)</td>
</tr>
<tr>
<td>OR</td>
<td>OR</td>
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<tr>
<td>Amoxicillin–clavulanate (90 mg/kg per day amoxicillin, with 6.4 mg/kg per day of clavulanate)</td>
<td>Ceftriaxone–clavulanate (90 mg/kg per day of amoxicillin, with 6.4 mg/kg per day of clavulanate)</td>
</tr>
<tr>
<td>Cefuroxime (30 mg/kg per day in 2 divided doses), OR</td>
<td>Ceftriaxone (50 mg/kg per day IM or IV for 3 d)</td>
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<tr>
<td>Cefpodoxime (10 mg/kg per day in 2 divided doses), or</td>
<td>Clindamycin plus second or third-generation cephalosporin.</td>
</tr>
<tr>
<td>Ceftriaxone (50 mg/kg per day IM or IV for 1 to 3 d)</td>
<td>Tympanocentesis&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>a</sup> May be considered in patients who have received amoxicillin in the previous 30 d or who have the otitis–conjunctivitis syndrome.

<sup>b</sup> Perform tympanocentesis/drainage if skilled in the procedure or seek a consult from an otolaryngologist for tympanocentesis/drainage. If the tympanocentesis reveals multidrug-resistant bacteria, then seek an infectious disease specialist consultation.

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*Please note this table has been updated to reflect a correction to Ceftriaxone dosing as noted in February 1, 2014 publication.*
References (List is not inclusive)

   http://pediatrics.aappublications.org/content/early/2013/02/20/peds.2012-3488.full.pdf+html

2. American Academy of Pediatrics The Diagnosis and Management of Acute Otitis Media Pediatrics 2014, 133
   http://pediatrics.aappublications.org/content/133/2/346.4

3. The University of Michigan Health System Otitis Media Guideline April 2013.
   http://www.med.umich.edu/1info/FHP/practiceguides/om/OM.pdf

4. Otitis Media: Diagnosis and Treatment American Family Physician. 2013 Oct 1; 88(7):435-440
   http://www.aafp.org/afp/2013/1001/p435.html

5. U.S. Department Of Health & Human Services National Institutes Of Health National Institute on Deafness and Other Communication Disorders; Ear Infections in Children NIH Publication No. 13-4799
   http://www.nidcd.nih.gov/health/hearing/Pages/earinfections.aspx


7. Otitis media with effusion. Medline Plus A service of the U.S. National Library of Medicine from the National Institutes of Health

   http://www.guideline.gov/content.aspx?id=46909&search=ear+effusion


10. Antipyrine and Benzocaine Otic (Auralgan, Aurodex- removed from market)
    http://www.medicinenet.com/antipyrine_with_benzocaine-otic/article.htm

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