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

Guideline History

Original Approve Date	08/94
Review/Revise Dates	03/96, 06/98, 03/99, 01/01, 02/03, 10/04, 02/05, 03/05, 03/07, 2/09, 01/11, 1/13, 01/15, 01/17, 01/19, 01/21, 1/23
Next Review Date	01/25

DIAGNOSIS:

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

SIGNS AND SYMPTOMS:

Fever	Difficulty sleeping
Ear pain	Ear “popping” or “fullness”
Crying	Hearing loss
Irritability	Balance problems
Tugging or pulling at ear(s)	Dizziness
Drainage of fluid or Pus from ear	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
- Non-breastfed infants
- Ethnic origin: Native American or Inuit
- Age
- Supine Feeding position
- Use of pacifiers beyond 6 months of age
- Immune deficiency
- GERD
- History of seasonal allergies
- Presence of enlarged adenoids
- Frequent upper respiratory infections

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 6 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 and/or ibuprofen (if >6 months of age).
- ❖ 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 prolong middle ear effusion.

- ❖ **Prophylactic antibiotics should not be prescribed to reduce recurrences.** Consider ENT referral for Tympanostomy Tubes once criteria for recurrent AOM is reached (see next page).

- ❖ Instruct in comfort measures:
    - Warm compresses to ear
    - Elevate head of bed or crib
    - Analgesic ear drops for children > 5years 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.

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
- ❖ 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:
  - o Mastoiditis
  - o Facial nerve paralysis
  - o Lateral (sigmoid) sinus thrombosis
  - o Meningitis
  - o Brain abscess
  - o Labyrinthitis
  - o Tympanic membrane perforation
  - o Delayed speech
  - o Hearing loss
- ❖ Patients in high-risk categories:
  - o craniofacial anomalies
  - o Down syndrome
  - o cleft palate
  - o 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.

Diagnosis and Management if Acute Otitis Media

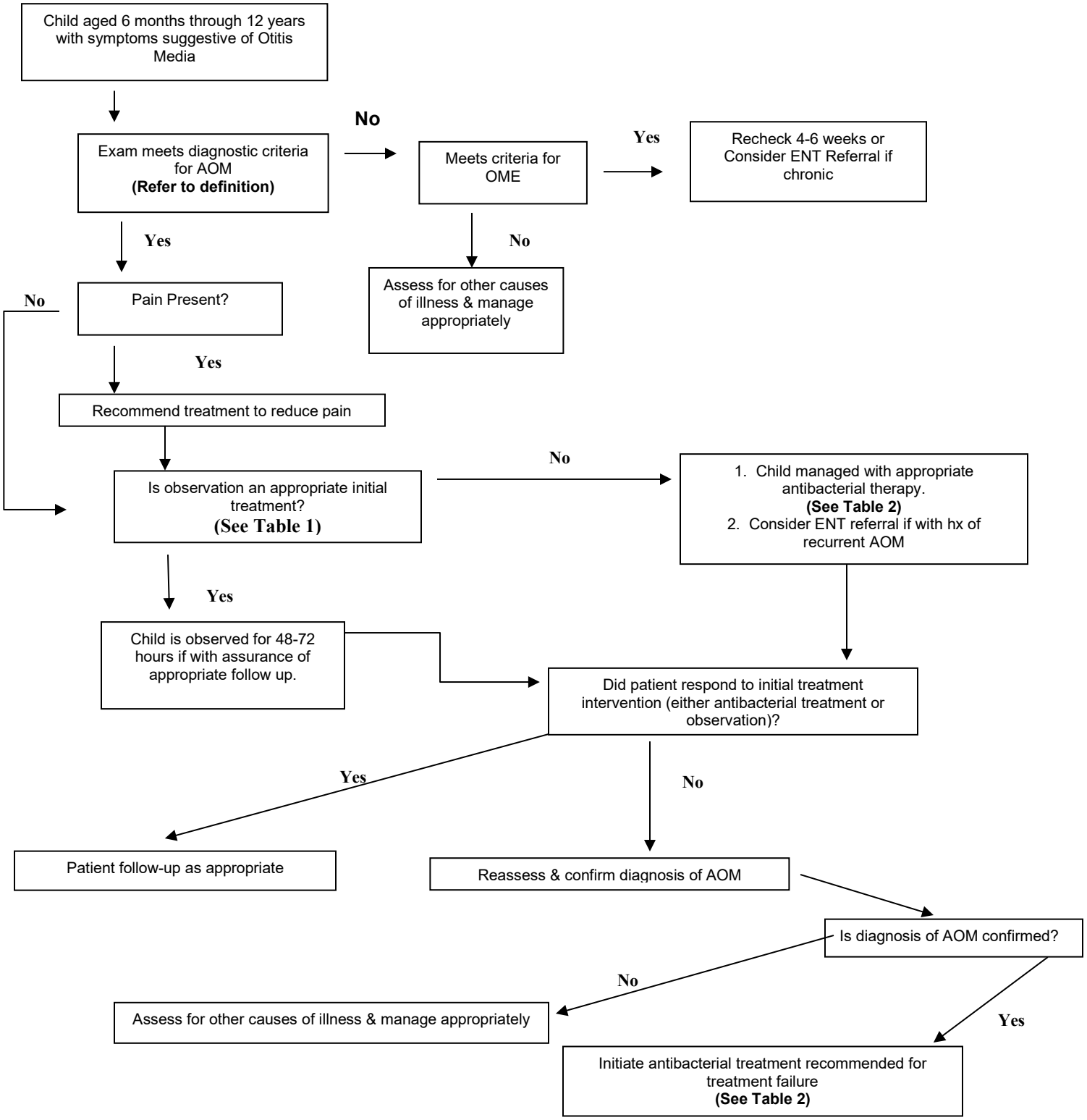

Table 1 Recommendations for Initial Management for Uncomplicated AOM[c]

Age	Otorrhea With AOM[a]	Unilateral or Bilateral AOM[a] With Severe Symptoms[b]	Bilateral AOM[a] Without Otorrhea	Unilateral AOM[a] Without Otorrhea
6 mo. to 2 y	Antibiotic therapy	Antibiotic therapy	Antibiotic therapy	Antibiotic therapy or additional observation
≥2 y	Antibiotic therapy	Antibiotic therapy	Antibiotic therapy or additional observation	Antibiotic therapy or additional observation

a Applies only to children with well documented AOM with high certainty of diagnosis. (See Diagnosis section).
b 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.
c 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.
From the American Academy of Pediatrics Vol. 131 No. 3 March 1, 2013

Table 2 Recommended Antibiotics for (Initial or Delayed) Treatment and for Patients Who Have Failed Initial Antibiotic Treatment

Initial Antibiotic Treatment at AOM Diagnosis or After Observation		Antibiotic Treatment After 48–72 Hours of Initial Antibiotic Treatment Failure	
Recommended First Line Treatment	**Alternative Treatment**	**Recommended First Line Treatment**	**Alternative Treatment**
Amoxicillin (80–90 mg/kg per day)	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)	Ceftriaxone, 3 d, or Clindamycin (30–40 mg/kg per day in 3 divided doses), with or without second or third-generation cephalosporin
OR	Cefuroxime (30 mg/kg per day in 2 divided doses),	**OR**	
Amoxicillin-clavulanate (90 mg/kg per day amoxicillin, with 6.4 mg/kg per day of clavulanate)	Cefpodoxime (10 mg/kg per day in 2 divided doses), or	Ceftriaxone (50 mg/kg per day IM or IV for 3 d)	Clindamycin plus second or third-generation cephalosporin.
	Ceftriaxone (50 mg/kg per day IM or IV for 1 to 3 d)		Tympanocentesis
			Consult specialist

IM, intramuscular; IV, intravenous

Should be considered in patients who have received amoxicillin in the previous 30 d or who have the otitis-conjunctivitis syndrome. 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.

From the American Academy of Pediatrics Vol. 133 No. 2 February 1, 2014

***** Please note this table has been updated to reflect a correction to Ceftriaxone dosing as noted in the February 1, 2014 publication.

References (List is not inclusive)

1. American Academy of Pediatrics the Diagnosis and Management of Acute Otitis Media. Pediatrics 2013; 131

2. American Academy of Pediatrics The Diagnosis and Management of Acute Otitis Media Pediatrics 2014, 133

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4. 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

5. Acute Otitis Media in Children Up to date. Topic last updated Nov 8, 2016.

6. Antibiotic Prescribing and Use in Doctor's Offices: Ear Infection. Last retrieved January 10, 2021. https://www.cdc.gov/antibiotic-use/community/for-patients/common-illnesses/ear-infection.html

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8. https://www.aafp.org/pubs/afp/issues/2009/0415/p681.html