

## Implementing the 2013 Acute Otitis Media Guidelines

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The key to the 2013 AOM guidelines published in Pediatrics (2013; 131; e964) is accurate diagnosis of AOM. If you make an accurate diagnosis, the rest of the guideline is straightforward.

Bulging of the TM is the key diagnostic feature of AOM. Acute purulent drainage also is definitive for AOM. Erythema without bulging is not an indicator of AOM. A TM that appears abnormal but is not bulging is OME, although other pathologic diagnoses such as cholesteatoma must be considered.

The problem is that many, if not most clinicians, over-diagnose AOM. The TM in a young child may be difficult to examine. The baby is squirming, possibly crying. The TM is obstructed by cerumen and only part of the TM can be seen. Finally, relatively few pediatricians regularly use the pneumatic bulb and correct speculum. First the child must be restrained properly, whether in the parent's lap or with the help of an aide. Cerumen must be cleared using controlled suction, a curette, or by irrigation. Next the correct speculum must be chosen. It should be large enough to go in no further than the first third of the external auditory canal but keep a seal against the canal wall. Disposable specula have relatively sharp edges that may cause the child pain. Reusable specula have smoother tips and are more comfortable. They also come in more sizes. Finally pneumatic otoscopy is essential for the diagnosis of AOM or otitis media with effusion (OME). The presence of normal mobility usually rules out either diagnosis.

The diagnosis problem begins in residency. Few programs, even today have a curriculum for teaching ear examination and diagnosis. The best tool for teaching examination of the TM uses a video-otoscope. One person looks at the TM and all can see and discuss the findings. This is far better than using a double headed otoscope or the resident looking at the ear and a senior doctor then looking to verify diagnosis. Videos, available at <http://www2.aap.org/sections/infectdis/video.cfm> and through a Web-based program, ePROM: Enhancing Proficiency in Otitis Media. (Available at: <http://pedsed.pitt.edu>) can also be effective learning tools.

After an accurate diagnosis of AOM is made, the next step is to determine appropriate treatment. Children  $\geq 2$  Y/O without severe symptoms (severe otalgia at the time of the visit or temperature  $>39^{\circ}\text{C}$  ( $>102.2^{\circ}\text{F}$ )) may be observed. Observation is not a passive treatment. The child must be observed for worsening symptoms or no improvement after 48-72 hours. In such cases antibiotics may be prescribed. Children  $<2$  Y/O with bulging TM's should be treated in most cases with antibiotics. A child with erythema of a mildly bulging TM may be observed as above.

Amoxicillin (80-90 mg/kg/day in 2 divided doses) is the preferred 1<sup>st</sup> line therapy for uncomplicated AOM. This is based on the safety and efficacy of high dose amoxicillin. If the child has received Amoxicillin (or penicillin) within the past 30 days or if the AOM is accompanied by conjunctivitis, amoxicillin-clavulanate (90 mg/kg/day amoxicillin with 6.4 mg/kg/day of clavulanate [amoxicillin-clavulanate ratio 14:1]) in 2 divided doses. This will treat *H.influenzae* AOM more effectively than amoxicillin alone. Should the patient fail amoxicillin treatment and/or amoxicillin-clavulanate, and the TM is still bulging, parenteral ceftriaxone (50 mg IV or IM for 3 days) is the most effective treatment.

Third generation cephalosporins (cefdinir, cefuroxime, and cefpodoxime) are much less effective against *S.pneumoniae* than high dose amoxicillin and should only be considered in the penicillin allergic patient. Azithromycin, erythromycin-sulfisoxazole and trimethoprim-sulfamethoxazole have poor activity for AOM organisms and should not be used.

Pneumococcal conjugate vaccine and influenza vaccine should be given according to the ACIP/AAP schedule as both may decrease the incidence of AOM. Also breastfeeding for at least 6 months has been shown to decrease the risk of AOM. Tobacco smoke exposure should be avoided as it alters the ciliary function of the respiratory tract including the lower respiratory tract, sinuses and Eustachian tubes increasing the risk of infection.

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