

EMERGENCY DEPARTMENT CLINICAL PRACTICE GUIDELINES

Acute otitis media

SEE ALSO: Otitis media with effusion, cholesteatoma, mastoiditis, chronic suppurative otitis media

DESCRIPTION – Acute otitis media (AOM) is inflammation in the middle ear with acute signs and symptoms together with a middle ear effusion, of less than three weeks duration. AOM results in resolution within 1-2 weeks in 70-80% of untreated children, versus 92% of treated children. Of those with acute tympanic membrane perforations, 70% close within one week and 94% close within one month. Infection is usually of viral origin. Common causative bacteria include *Streptococcus pneumoniae*, *Haemophilus influenzae* (non-typeable), *Moraxella catarrhalis*, group A *Streptococcus*.

HOW TO ASSESS:

Red Flags:

- Aggressive management is indicated if AOM is:
 - bilateral, associated with perforation of the tympanic membrane, known immune deficiencies, pyrexia greater than 39°C, facial palsy, mastoiditis, severe headache, changes in sensorium, neurological deficits, meningitic signs, nystagmus, vertigo
 - affecting indigenous children including Aboriginal, Torres Strait islanders, Maoris and those from other Pacific islands, who are more susceptible to recurrent AOM and complications
 - in patients who have a cochlear implant
 - affecting only hearing ear

On History:

- In young children:
 - Establish the severity (that is febrile convulsions, red flags described above)
 - Establish pattern and frequency of recurrence of AOM
 - Identify increased incidence when in child care setting, smoking in household, increased number of siblings, congenital disorders such as Down syndrome and palatal abnormalities
- Typical history would include a preceding upper respiratory tract infection, followed by otalgia, ear pulling, fever and/or otorrhoea

On Examination:

- Bulging at the postauricular area, with displacement of the pinna indicates mastoiditis.
- Otoscopy may demonstrate a gradual progression from generalised erythema and opacification to bulging of the tympanic membrane. This may lead to perforation and mucoid otorrhoea accompanied by bleeding.
- There is loss of landmark of handle of malleus in AOM.
- Pneumatic otoscopy demonstrates a stiff, non-mobile tympanic membrane. This test has a high specificity and sensitivity for middle ear fluid, but will be painful for a child with AOM.
- In adult patient, if effusion persists more than three weeks, flexible nasoendoscopy may be recommended to rule out an occult post nasal space tumor obstructing the Eustachian tube orifice.

On Investigation:

- Note: AOM is a clinical diagnosis
- Audiometric testing is not indicated in the acute phase
- In the presence of complications, imaging of the temporal bones and brain with CT and/or MRI is indicated in order to assess for intracranial pathology.
- In recurrent AOM with otorrhoea, swab for microscopy, culture and sensitivity

Acute Management:

- Uncomplicated afebrile cases in children greater than 12months of age and adult, observe with analgesia, for first 48 hours
- Short-term use of topical 2% lignocaine drops applied to the tympanic membrane has been shown to be effective for severe acute ear pain
- If otorrhoea is present from a perforation, ear toilet is preferable
- Antibiotics may be commenced in the following groups: children \leq 12months, history of febrile seizures, presence of fever $>39^{\circ}\text{C}$, associated with red flag symptoms/signs, no resolution after 48hours
 - When oral antibiotics are considered, prescribe amoxicillin 15mg/kg up to 500mg (adult dose) orally, 8 hourly for 5 days
 - If poor response, consider amoxicillin + clavulanate 22.5+3.2 mg/kg up to 875+125mg (adult dose) orally, 8 hourly for 5 days
 - If the patient has an allergy to penicillin, oral cefuroxime is recommended.
 - aged 3 months to 2 years: 10 mg/kg up to 125 mg 12 hourly for 5 days
 - aged 2 years or more: 15 mg/kg up to 500 mg (adult dose) orally, 12 hourly for 5 days
 - Cefaclor is not a good alternative as it does not reach good levels in the middle ear
- If the patient does not respond to therapy, consider admission to hospital
- Note: Decongestants, antihistamines and topical steroid sprays have been shown to have no effect on improving Eustachian tube function
- Keep ear dry

Urgent referral to ENT:

- Mastoiditis (note: clinical and radiological diagnosis)
- Facial paralysis
- Vertigo or nystagmus
- Headache, possible meningitis
- Diplopia or other neurological deficits

Follow up:

- GP follow up in 1/52 if primary episode of AOM with /without small uncomplicated perforation
- Consider ENT referral for recurrent AOM (defined as 4 or more episodes per year, or three or more episodes in a 6 month period)

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Evidence Table

Author/s	Title	Source	Level of Evidence (I – VII)	Comments
	eTG, Therapeutic Guidelines Limited, Melbourne, Victoria, Australia, http://online.tg.org.au (accessed 29 th June 2012)		VII	
Shin, J et al	Amoxicillin or ampicillin prophylaxis versus placebo: Impact on number of subsequent episodes of acute otitis media, chance of no further episodes of acute otitis media	Evidence-based Otolaryngology, Shin J et al editors, 2008., pp 73-80	II	
Shin, J et al	Tympanostomy tube placement versus no surgery/no prophylaxis: Impact on number of subsequent episodes of acute otitis media, chance of no further episodes of acute otitis media	Evidence-based Otolaryngology, Shin J et al editors, 2008., pp 91-97	II	
McDonald S	Langton-Hewer CD, Nunez DA. Grommets (ventilation tubes) for recurrent acute otitis media in children	Cochrane Database of Systematic Reviews 2008, Issue 4. Art. No.: CD004741	I	
Sharon Sanders, Paul P Glasziou, Chris Del Mar, Maroeska Rovers	Antibiotics for acute otitis media in children	(Cochrane review)	I	
Foxlee R, Johansson A-C, Wejfalk J, Dawkins J, Dooley L, Del Mar C	Topical analgesia for acute otitis media.	Cochrane Database of Systematic Reviews 2006, Issue 3. Art. No.: CD005657	I	
Kozyrskyj AL, Klassen TP, Moffatt M, Harvey K.	Short-course antibiotics for acute otitis media	Cochrane Database of Systematic Reviews 2010, Issue 9. Art. No.: CD001095	I	

The Hierarchy of Evidence

The Hierarchy of evidence is based on summaries from the National Health and Medical Research Council (2009), the Oxford Centre for Evidence-based Medicine Levels of Evidence (2011) and Melynck and Fineout-Overholt (2011).

- I** Evidence obtained from a systematic review of all relevant randomised control trials.
- II** Evidence obtained from at least one well designed randomised control trial.
- III** Evidence obtained from well-designed controlled trials without randomisation.
- IV** Evidence obtained from well designed cohort studies, case control studies, interrupted time series with a control group, historically controlled studies, interrupted time series without a control group or with case series.
- V** Evidence obtained from systematic reviews of descriptive and qualitative studies.
- VI** Evidence obtained from single descriptive and qualitative studies.
- VII** Expert opinion from clinician, authorities and/or reports of expert committees or based on physiology.