

Disclaimer: This Clinical Practice Guideline ('CPG') was written for use in The Royal Victorian Eye and Ear Hospital Emergency Department. It should be used under the guidance of an Ophthalmology or ENT registrar. If clinical advice is required, please contact the Eye and Ear Admitting Officer for assistance: EYE: +61 3 9929 8033; ENT: +61 3 9929 8032. Links to internal Eye and Ear documents cannot be accessed from the website CPG.

See also: Otitis media with effusion, cholesteatoma, mastoiditis, chronic suppurative otitis media

Description:

Acute otitis media (AOM) is inflammation in the middle ear, of less than three weeks duration, with acute signs and symptoms together with a middle ear effusion. 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*.

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

How to Assess:

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

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 for more than three weeks, flexible nasoendoscopy may be recommended to rule out an occult post nasal space tumor obstructing the Eustachian tube orifice.

Investigations:

- 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 12 months 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 48 hours
 - When oral antibiotics are considered, prescribe amoxicillin 30 mg/kg up to 500mg (adult dose) orally, 12 hourly for 5 days
 - If poor response, consider amoxicillin + clavulanate 22.5+3.2 mg/kg up to 875+125mg (adult dose) orally, 12 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)

Evidence Table

Author(s)	Title	Source	Level of Evidence (I – VII)
	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.

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