

Infants and Children, Otitis Media: Acute Management of Sore Ear, Second Edition

Summary This document represents clinical practice guidelines for the acute management of Otitis Media. Ear problems are common in children. For children pain relief measures are helpful and antibiotics are only prescribed where clinically indicated.

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Audience Emergency Departments;nursing;medical;clinicians

INFANTS AND CHILDREN: OTITIS MEDIA, ACUTE MANAGEMENT OF SORE EAR - SECOND EDITION

PURPOSE

The *Infants and Children: Otitis Media, Acute Management of Sore Ear*, second edition Clinical Practice Guideline has been revised to provide direction to clinicians and is aimed at achieving the best possible paediatric care in all parts of the state. The Clinical Practice Guideline was revised for the NSW Ministry of Health by an expert clinical reference group under the auspice of the state wide Paediatric Clinical Practice Guideline Steering Group.

KEY PRINCIPLES

This guideline applies to all facilities where paediatric patients are managed. It requires the Chief Executives of all Local Health Districts to have local guidelines / protocols based on the attached Clinical Practice Guideline in place in all hospitals and facilities required to assess or manage children with otitis media.

The clinical practice guideline reflects what is currently regarded as a safe and appropriate approach to the acute management of otitis media in infants and children. However, as in any clinical situation there may be factors which cannot be covered by a single set of guidelines. This document should be used as a guide, rather than as a complete authoritative statement of procedures to be followed in respect of each individual presentation. **It does not replace the need for the application of clinical judgement to each individual presentation.**

USE OF THE GUIDELINE

Chief Executives must ensure:

- Local protocols are developed based on the *Infants and Children: Otitis Media, Acute Management of Sore Ear*, second edition Clinical Practice Guideline
- Local protocols are in place in all hospitals and facilities likely to be required to assess or manage paediatric patients with otitis media
- Ensure that all staff treating paediatric patients are educated in the use of the locally developed paediatric protocols.

Directors of Clinical Governance are required to inform relevant clinical staff treating paediatric patients of this revised guideline.

REVISION HISTORY

Version	Approved by	Amendment notes
December 2014 (GL2014_023)	Deputy Secretary, Population and Public Health	The revised guideline has incorporated changes that are evidenced based and consistent with literature reviews.
January 2005 (PD2005_385)	Director-General	New Guideline

ATTACHMENT

Infants and Children: Otitis Media, Acute Management of Sore Ear, second edition
Clinical Practice Guideline.

Otitis Media

ACUTE MANAGEMENT OF SORE EAR

second edition

Issue date: 17 December 2014

GL2014_023

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This Clinical Practice Guideline booklet is extracted from the GL2014_023 and as a result, this booklet may be varied, withdrawn or replaced at any time. Compliance with the information in this booklet is mandatory for NSW Health.

Further copies of this document can be downloaded from the NSW Health website www.health.nsw.gov.au and NSW Kids and Families website www.kidsfamilies.health.nsw.gov.au

December 2014
A revision of this document is due in 2019

1. Introduction

These Guidelines are aimed at achieving the best possible paediatric care in all parts of the State.

The document should not be seen as a stringent set of rules to be applied without the clinical input and discretion of the managing professionals. Each patient should be individually evaluated and a decision made as to appropriate management in order to achieve the best clinical outcome.

Field, M.J. & Lohr, K.N. (1990) define clinical practice guidelines as: *'systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances.'* (Field MJ, Lohr KN (Eds). *Clinical Practice Guidelines: Directions for a New Program, Institute of Medicine, Washington, DC: National Academy Press*)

It should be noted that this document reflects what is currently regarded as a safe and appropriate approach to care. However, as in any clinical situation there may be factors which cannot be covered by a single set of guidelines.

This document should be used as a guide, rather than as a complete authoritative statement of procedures to be followed in respect of each individual presentation. It does not replace the need for the application of clinical judgment to each individual presentation.

This document represents clinical practice guidelines for the acute management of Otitis Media. Further information may be required in practice.

Each Local Health District (LHD) is responsible for ensuring that local protocols based on these guidelines are developed. LHDs are also responsible for ensuring that all staff treating paediatric patients are educated in the use of the locally developed paediatric guidelines and protocols.

In the interests of patient care it is critical that contemporaneous, accurate and complete documentation is maintained during the course of patient management from arrival to discharge.

Parental anxiety should not be discounted: it is often of significance even if the child does not appear especially unwell.

2. Changes

from the previous clinical practice guideline

The following outlines changes to the sore ear guideline:

- The overview now includes a short section on mastoiditis and otitis externa.
- Background issues section has been redefined to include information specific to the Aboriginal and Torres Strait Islander groups.
- The assessment and initial management chart has been redeveloped to incorporate Acute Otitis Media (AOM) and Otitis Media with Effusion (OME).
- The general issues section has been expanded to include simple analgesia with oral pain relief or topical solution.
- Insertion of a section on the discharging ear.
- Insertion of a section on the use of antibiotic therapy in young children.
- Addition of information about penicillin sensitive/allergy patients.
- Insertion of a short section on prevention of otitis media.
- The parent fact sheet is now linked electronically to the guideline.

3. Overview

Ear problems are common in children. For children pain relief measures are helpful and antibiotics are only prescribed where clinically indicated.

4. Definitions

Acute Otitis Media (AOM)

Acute onset of middle ear inflammation characterised by:

- Distinct otalgia (ear pain) that interferes with normal activity or sleep.
- Bulging tympanic membrane and erythema.
- Possible perforation and otorrhoea (ear discharge).

Red eardrum

- Inflammation of the tympanic membrane alone or in association with otitis media and possibly otitis externa.

Otitis externa

- Inflammation of the outer ear canal, often due to bacterial or fungal/yeast infection.
- Otitis externa may occur in isolation, or can be associated with AOM and perforation of the tympanic membrane.

Otitis Media with Effusion (OME)

Also known as serous otitis media or glue ear:

- Fluid in middle ear without symptoms or signs of acute inflammation of the ear.
- Most cases of OME are residual effusions that remain after an episode of AOM.
- Most OME resolve within three months without treatment.

Unresponsive Acute Otitis Media (AOM)

- Is characterised by clinical signs and symptoms associated with inflammation of the eardrum that continues beyond 48 hours of antibiotic therapy.

Recurrent Acute Otitis Media (RAOM)

- Is three episodes of AOM within a six month period.

Chronic Suppurative Otitis Media (CSOM)

- Persistent inflammatory process associated with a perforated tympanic membrane and pus draining from the ear.

5. Background

Mastoiditis

- Osteomyelitis of the mastoid bone (mastoiditis) is a complication of AOM.
- Characterised by post auricular swelling and redness.
- Computed Tomography (CT) scan shows bony destruction of mastoid air cells.

Autoinflation

- Increased air pressure in the post-nasal space transmitted up the Eustachian tube into the middle ear.
- 'Valsalva technique' and the Otovent can provide autoinflation.

Otovent

- A product with a balloon and nozzle that the child blows up through their nose to increase air in the middle ear. It is used to clear OME.²

- AOM is a bacterial or viral infection of the middle ear.
- In some children with viral upper respiratory tract infection, they have an accompanying mild inflammation of the middle ear, with visible reddening and dullness of the tympanic membrane.
- The routine prescription of antibiotics in AOM is NOT indicated (with the exception of high risk groups).¹² Antibiotics provide only modest benefit (approximately 10-20 children need to be treated with antibiotics for one child to receive clinical benefit).²
- The overuse of antibiotics may contribute to increasing antimicrobial resistance. Antibiotic therapy can result in unpleasant side effects in some children and hence should only be prescribed in specific situations where the indication is clear⁷ (see Algorithm – assessment and initial management of otitis media).
- Rare complications of AOM include mastoiditis and facial nerve palsy. Aboriginal and Torres Strait Islander people represent a unique group. Australia has a great dichotomy in incidence and severity of otitis media and complications and therefore Aboriginal and Torres Strait Islander people require special consideration (Appendix 2).

6. Algorithm

assessment and initial management of otitis media

Symptoms	AOM		OME
History of ear ache, fever and irritability, URTI	Present		Usually absent
Middle ear effusion	Present – purulent		Present – serous or mucoid
Opaque drum	Present		Usually present (may be difficult to see)
Bulging drum	May be present		Usually absent
Red Inflamed TM	Yes		No
Otorrhoea (ear drainage)	May be present if tympanic membrane is perforated		No
Impaired drum mobility (on pneumatic otoscopy)	Impaired		Impaired
Risk factors	No	Yes < 2 years old, severe pain, representation, recurrent AOM, Aboriginal or Torres Strait Islander	
Treatment			
Systemic analgesia	Paracetamol orally 15mg/kg/dose QID for 1-2 days PRN (remember not to exceed the maximum dose) OR *Ibuprofen orally 5mg/kg/dose TDS PRN for 1-2days (remember not to exceed the maximum dose)	Paracetamol orally 15mg/kg/dose QID for 1-2 days PRN (remember not to exceed the maximum dose) OR *Ibuprofen orally 5mg/kg/dose TDS PRN for 1-2days (remember not to exceed the maximum dose)	Generally not required
Topical analgesia	Yes – If intact ear drum topical Auralgan eardrops	Yes – If intact ear drum topical Auralgan eardrops	No
Antibiotics	No	Yes Oral Amoxicillin ² 45mg/kg/dose 12 hrlly (remember not to exceed the maximum dose) Duration: < 2 years of age: 10 days > 2 years of age: 5-7 days <i>For Penicillin allergic patients see page 10</i>	Not routinely – Consider in chronic OME (persistent > 3 months) with hearing loss or drum retraction (see referral section)
Delayed antibiotics (Watch and Wait ²)	Yes Delayed prescription of antibiotics for symptoms persisting 24-48 hours ²	No	No (see antibiotic therapy in young children)
Steroids, Decongestants, Antihistamines	No	No	No
Investigations	Only if diagnosis uncertain or other systemic signs	Only if diagnosis uncertain or other systemic signs	Consider hearing test if duration > 3 months
Referral required	Suspected mastoiditis, facial nerve paralysis, refractory AOM or other complication ⁹	3 episodes of AOM in 6 mths Suspected mastoiditis, facial nerve paralysis, refractory AOM or other complication for consideration of ventilation tubes (grommets) Aboriginal or Torres Strait Islander—Consult Aboriginal and Torres Strait Islander guideline (Appendix2)	Hearing loss >20dB Language, developmental delay or behavioural problems Retracted tympanic membrane ¹²
No or poor response to treatment	See risk factor present	Oral Amoxicillin-Clavulanate ² 22.5mg/kg/dose 12 hrlly (remember not to exceed the maximum dose) Duration: < 2 years of age: 10 days > 2 years of age: 5-7 days ¹ <i>NOTE: Dose is based on amoxicillin component.</i> <i>For Penicillin allergic patients see page 10</i>	Only if symptomatic (hearing loss or retraction of tympanic membrane) > 3 – 4 months; ENT referral
Follow up	If unable to visualise tympanic membrane or discharge present – GP follow up in 2 weeks	If unable to visualise tympanic membrane or discharge present – GP follow up in 2 weeks	Organise follow up to check resolution of OME by 3 months
Education	AOM risk reduction Parent information sheet	AOM risk reduction Parent information sheet	Consider autoinflation – valsalva or use purpose manufactured nasal balloon

* Avoid use in patients with pre-existing illnesses that may contribute to development of renal failure such as children with suspected or proven Gr A streptococcal infection. Use with caution in patients with asthma.

7. Assessment and initial management

7.1 General issues

a) ANALGESIA

- Pain and fever in AOM should be controlled with paracetamol or ibuprofen (NSW Health PD2009_009 Paracetamol Use, http://www0.health.nsw.gov.au/policies/pd/2009/PD2009_009.html).¹¹
- Auralgan Ear Drops (containing Phenazone, Benzocaine and Glycerin) may provide relief of pain in varying degrees within 30 minutes of administration. 5 or 6 drops may be instilled into the affected ear three times a day as required. Auralgan is contraindicated in patients with a perforated drum, if there is discharge from the ear, if ventilation tubes (grommets) are present or in otitis externa.
- Decongestants and antihistamines are not beneficial in the treatment of AOM.⁹

b) DISCHARGING EAR

i) Causes

Discharge from the ear can be due to:

- AOM, with perforation of the tympanic membrane and discharge into the external auditory canal. There may be secondary otitis externa present.
- Otitis externa, may be bacterial or fungal yeast.

- Chronic suppurative otitis media with perforation of the tympanic membrane. Secondary otitis externa may also be present.
- Infected cholesteatoma and secondary otitis externa may also be present.⁴

ii) Investigations

- A swab is useful, showing middle ear (Streptococcus Pyogenes, Haemophilus Influenzae, Moraxella) or outer ear (Pseudomonas, Staphylococcus Aureus, Candida Albicans, Aspergillus) pathogens. Request microscopy, culture and sensitivities and fungal cultures. This can help guide treatment and differentiate between bacterial/fungal/yeast infections.⁴

iii) Management

- In AOM and OME topical antibiotic/corticosteroid preparations are not recommended.^{2,6}
- Oral steroids are not beneficial in OME.¹³
- Remove the discharge from the outer ear by mopping with tissue spears. This allows ear drops to better penetrate the external auditory canal and may facilitate visualisation of the tympanic membrane and assessment for perforation.

- If grommets are present, manage as per a perforation. Keep the external auditory canal dry whilst treating the infection.
- If the discharge is thick, copious or mucoid, then it is likely to be coming from the middle ear, and oral antibiotics should be commenced. Outer ear drops, such as Ciloxan Ear Drops (contains ciprofloxacin)¹, can be considered as they will help clear the discharge from the outer ear canal and treat/prevent secondary otitis externa. If discharge has only been present for a few days, then oral antibiotics may be sufficient. Ciloxan Ear Drops (contains ciprofloxacin) are the safest ear drop to use if a perforation of the tympanic membrane is suspected.
- Dose for Ciloxan Ear drops - 5 drops into the affected ear canal(s) twice daily for up to nine days. If the solution is cold, it should be warmed by holding the bottle in the hand for one or two minutes before instillation, to avoid dizziness which may be associated with instillation of a cold solution into the ear.
- For otitis externa ear drops are indicated.⁸

- For otitis media with secondary otitis externa, oral antibiotics and ear drops are required.
- If the pinna is painful to movement, the discharge is offensive, and the external auditory canal is swollen, then otitis externa is considered severe. Topical antibiotic drops must be used. With swelling of the external auditory canal, an ear drop containing steroids provides quicker relief of the pain. If perforation of the tympanic membrane is suspected, then use Ciloxan Ear Drops (contains ciprofloxacin).
- If the external canal is full of debris, itchy, but not very painful, then fungal/ yeast is the likely infection. Kenacomb or Locacorten Vioform drops can be used. For fungal otitis externa, treatment needs to continue for a few weeks.⁸
- If discharge persists, then review by an Ear Nose and Throat (ENT) Specialist is recommended. Suction of the debris may be required to allow assessment of the tympanic membrane to exclude cholesteatoma and chronic suppurative otitis media.

- The age appropriate Standard Paediatric Observation Chart (SPOC) should be used as part of the assessment to aid the clinician in determining how unwell the infant, child or adolescent is & the severity of their illness. Escalating the child's care to increase the frequency of observations, Clinical Review or Rapid Response according to the local CERS policy should be followed accordingly.
- If child is exhibiting signs of toxicity (pale or mottled; cool peripheries; weak cry; grunting; rigors; decreased alertness, arousal or activity) then escalate as per paediatric sepsis pathway. If sepsis is considered then manage according to the Paediatric Sepsis Pathway, <http://www.cec.health.nsw.gov.au/programs/sepsis.2>

c) ANTIBIOTIC THERAPY IN YOUNG CHILDREN

i) Red eardrum

- Antibiotics are not indicated.²

ii) Otitis Media with Effusion (OME)

- Only consider antibiotic therapy in chronic OME (persisting > 3 months) with hearing loss or drum retraction.¹⁰

iii) Acute Otitis Media (AOM)

Children younger than two years:

- Treat with oral amoxicillin 45mg/kg/dose 12 hourly. The duration depends on age: < 2 years of age: 10 days.²

Children aged 2 years or older:

- Observation unless child's illness is severe, with follow up within 24 to 48 hours if symptoms have not resolved. Observation includes treatment of pain with appropriate analgesia.
- Failure to respond to symptomatic treatment after 48 to 72 hours may require antibiotic therapy.²
- Treat with antibiotics oral amoxicillin 45mg/kg/dose 12 hourly. The duration depends on age (2-5 years of age: 7 days) and (>6 years: 5-7 days²).

Penicillin sensitive/allergy patient:

Suggested antibiotics for the penicillin sensitive patients:

- Cefuroxime 15mg/kg/dose 12 hourly – semisynthetic 2nd generation cephalosporin.¹
- Co-trimoxazole (trimethoprim/sulfamethaxazole) 4mg/kg/dose (dose based on trimethoprim component) twice a day.

Observation or the 'Watch and Wait' approach:

- The observation or 'Watch and Wait' approach when deemed clinically appropriate is facilitated by having a pre-prepared follow up routine and instructions.⁵
- One such approach is the Safety Net Antibiotic Prescriptions (SNAP).² Parents are given an antibiotic prescription to take home and asked to fill it if their child's symptoms do not improve after a prescribed period of time (e.g. 24 or 48 hrs).
- Written instructions, including options for follow up should be given to the parents if this strategy is to be used. In 70% of cases parents do not fill their prescription, with no increase in adverse outcomes.²

7.2 Follow-up

If the patient fails to respond to the initial management options within 48 to 72 hours, the clinician should reassess the patient to both confirm the diagnosis of AOM and exclude other causes of illness.² Antibiotics should be prescribed when clinically indicated. If AOM is confirmed and antibiotic therapy was not commenced previously, then start antibiotic therapy. If initial management was with antibiotic, then the clinician should consider a broader spectrum antibiotic.

7.3 Referral

Consider referral to an ENT Specialist if:

- OME for three months or more with evidence of hearing loss or retraction of the tympanic membrane.
- Three episodes or more of AOM in six months or four episodes or more of AOM in 12 months.
- Serious complications of AOM such as mastoiditis or facial nerve paralysis.
- Patients with a high risk of OME, such as those with craniofacial abnormalities e.g. Down syndrome and cleft palate.¹⁰
- Discharge with cholesteatoma or CSOM.¹³

7.4 Prevention

Parents/Carers should be given advice about otitis media prevention.

The following points may be included:

- Encourage breast feeding to protect against infection.
- Feed child upright if bottle fed. Do not prop feed.
- Children should not be exposed to passive smoking.
- Teach the child how to blow their nose so they can get rid of mucus (remember to blow and not wipe).

8. Key Points

- AOM is a bacterial or viral infection.
- Children diagnosed with AOM should not routinely be prescribed antibiotics. Exceptions exist for high risk groups and persistent infection.
- Children with AOM should not be prescribed decongestants or antihistamines.
- Pain and fever in AOM should be controlled with paracetamol or ibuprofen.
- The observation ('Watch and Wait') approach or the Safety Net Antibiotic Prescription (SNAP) approach can be used when clinically appropriate. The SNAP method can be used when parents are given an antibiotic prescription on discharge and requested to fill only if the child's symptoms do not improve.

Appendix 1

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Appendix 2

Recommendations

Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations (updated 2010)

<http://www.healthinonet.ecu.edu.au/other-health-conditions/ear/resources-and-equipment/otitis-media-guidelines>

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Based on the 'Recommendations for Clinical Care Guidelines on the Management of Otitis Media in Aboriginal and Torres Strait Islander Populations-March 2001'.

April 2010

For the Office for Aboriginal and Torres Strait Islander Health, Australian Government Department of Health and Ageing, Canberra, ACT.

Appendix 3

Parent information sheets

Ear infections in children

Ear problems in children was jointly developed by The Children's Hospital at Westmead, Sydney Children's Hospital and John Hunter Children's Hospital/ Kaleidoscope Children's Health Network.

The ear problems in children fact sheet is available at:

<http://kidshealth.schn.health.nsw.gov.au/fact-sheets/ear-problems-children>

This document was reviewed on 24 May 2012.

Disclaimer: this fact sheet is for educational purposes only. Please consult with your doctor or other health professional to make sure this information is right for your child.

Otitis Media (Middle Ear Infection) was jointly developed by The Children's Hospital at Westmead, Sydney Children's Hospital and John Hunter Children's Hospital/ Kaleidoscope Children's Health Network.

The otitis media (middle ear infection) fact sheet is available at:

<http://kidshealth.schn.health.nsw.gov.au/fact-sheets/ears/otitis-media-middle-ear-infection>

This document was last reviewed 24 May 2014.

Disclaimer: this fact sheet is for educational purposes only. Please consult with your doctor or other health professional to make sure this information is right for your child.

Appendix 4

Otitis media clinical expert reference group

A/Prof Catherine Birman (Chair from April 2012) ENT Consultant, Sydney Children's Hospitals Network (Westmead)

Dr Allan James (Chair til April 2012) Director of Paediatric Services, Illawarra Shoalhaven Local Health District

Ms Karyn Fahy (Secretariat) Coordinator, Children's Healthcare Network, Western Region

Professor John Whitehall Foundation Chair, Paediatrics and Child Health, University of Western Sydney

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