

Ear Problems in Children

Screening

Any history of ear pain or discharge should result in ear screening at clinic presentation. Children or parents may not always report these symptoms.

All children under the age of 10 should have their ears opportunistically examined at any clinic presentation. This means examination of both ears with an otoscope and further testing, including audiometry, if indicated.

It is important to check past clinical records to determine if there is a previous history of middle ear infection, because chronic problems can lead to hearing loss, developmental delay and serious systemic infections such as mastoiditis. By checking past history and adequacy of treatment you can prevent deafness and other serious complications.

For prevention of ear problems in children refer to the [Preventing Ear Infections in Children](#) protocol.

Case Definitions

Acute Otitis Media (AOM) without Perforation

Presence of fluid behind the eardrum with or without one of: red ear drum, fever, irritability, bulging ear drum, recent discharge of pus and ear pain. Fluid behind the drum can be reliably diagnosed using pneumatic otoscopy or tympanometry.

Acute Otitis Media (AOM) with Perforation

The discharge of pus through a hole in the eardrum for less than 2 weeks.

Recurrent Acute Otitis Media

Three or more episodes of AOM with or without perforation in a 6 month period, or occurrence of four or more episodes in the last 12 months.

Chronic Suppurative Otitis Media (CSOM)

Persistent discharge of pus from a hole in the eardrum for more than 2 weeks.

Otitis Media with Effusion (Glue Ear)

Presence of fluid behind the eardrum with no signs of infection and an immobile drum on pneumatic otoscopy or type B tympanogram.

Dry Perforation

Perforation in the eardrum for more than 2 weeks with no pus or fluid behind the eardrum.

Otitis Externa

Infection of the ear canal with an intact eardrum. Can be bacterial, viral or fungal. Fungal otitis externa (tropical ear) may arise de novo or secondary to antibacterial ear drop use. Appears as 'wet newspaper' debris in the ear canal. White fungus is usually *Candida albicans* and black fungus *Aspergillus niger*.

Mastoiditis

Systemic infection arising from the mastoid process causing dull ache and tenderness with associated redness and swelling of the mastoid process and the ear. Always needs discussion with the Paediatrician.

Cholesteatoma

Skin growing through a perforated ear drum into the middle ear or an accumulation of dead skin without a retracted pocket of the eardrum. This can erode into the inner ear and intracranial structures causing life-threatening complications including meningitis, and brain abscess. An ENT opinion is always required.

Impetigo of the Pinna

Skin infection caused by *Staphylococcus aureus* or Group A *Streptococcus*. Presents as crusted lesions/sores or blistering on the pinna of the ear (refer to the [Skin Infections](#) protocol for management).

Compacted Wax

Hard wax compacted in the ear canal.

Principles of Management

Acute Otitis Media (AOM) with or without Perforation

Management

For acute otitis media with perforation, pus should be removed from the canal by dry mopping with tissue spears and/or syringing with dilute Betadine (see Box 1).

Oral paracetamol 15mg/kg orally every 4-6 hours when required for pain (max 4 doses in 24 hours).

Oral amoxicillin 25mg/kg/dose twice daily (max 1g per dose) (see Box 4) for 7 days. Alternative is single dose of oral azithromycin* 30mg/kg (1g maximum) (see Box 4). This can be used in penicillin allergy or if associated with trachoma infection in the eye.

Follow Up

Review at day 7, if no response, increase dose of oral amoxicillin to 45mg/kg/dose twice daily (max 1g per dose) (see Box 5) for a further 7 days. Alternative treatment is a second dose of oral azithromycin, if penicillin allergy or if associated with trachoma.

If a perforation is present and there is persistent discharge despite 7 days of oral antibiotics, topical ciprofloxacin drops should be added. The ear should be filled with 5 or more drops twice a day for 5 days with planned review and then treated as chronic suppurative otitis media (see Box 2).

Recurrent Acute Otitis Media

Management

Needs to be discussed with the Paediatrician, but oral amoxicillin prophylaxis with 25mg/kg/dose twice daily (max 1g per dose) (see Box 4) for 3-6 months could be considered for those under 2 years of age. Alternative is oral azithromycin* 30mg/kg (1g maximum) (see Box 4) once a week for 3 months.

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Follow Up

Review monthly to check for 'break through' infections.

Refer to an ENT specialist if infections occur while taking antibiotics as myringotomy and grommets may be needed.

Chronic Suppurative Otitis Media (CSOM)

Management

Pus should be removed from the canal by dry mopping with tissue spears and/or syringing with dilute Betadine (see Box 1).

Topical ciprofloxacin ear drops (without steroid) – the ear should be filled with 5 or more drops twice a day for 5 days (see Box 2).

Follow Up

Review at day 7, if ears still discharging pus, continue tissue spearing and/or syringing and ciprofloxacin drops. Consider giving ciprofloxacin, 5 drops twice daily, in the clinic under supervision with doctor review in a week.

Continue with weekly reviews until resolved.

Will need hearing testing (audiology) on resolution.

Anyone with attic perforation (hole in the top section of the ear drum) should be discussed with an ENT specialist immediately.

If after 2 months, the ear is still discharging THEN refer to an audiologist and ENT specialist for a hearing test and possible surgery. Continue treatment whilst awaiting review.

Otitis Media with Effusion (Glue Ear)

Management

Antibiotics are not routinely recommended.

Follow Up

Recall for review at three months for a hearing assessment if bilateral effusions are still present.

Refer to ENT if hearing impaired >30db on assessment.

Dry Perforation

Management

Advise parent/carer to bring the child into the clinic if any discharge, pus or ear pain.

Swimming should not be discouraged routinely. If swimming is known to be associated with new or persistent ear infections in an individual, it is reasonable to recommend keeping the ear dry.

Follow Up

Review at 3 months and if perforation is still present, refer for audiology testing and ENT review.

Otitis Externa

Management

Collect a charcoal swab from ear for MC&S and fungal culture.

Clean the ear canal by tissue spearing/gentle syringing with dilute Betadine (see Box1). This is to be done in the clinic only. Patients should be advised NOT to put anything in the ears at home.

Keep the ear dry (no swimming and use cotton plugs in shower) while the canal is still infected.

If severe infection (e.g. high fever, very swollen ear canal, tender lymph nodes behind the ear), consider mastoiditis.

If pain is present, give oral paracetamol 15mg/kg orally every 4-6 hours when required (max 4 doses in 24 hours).

If severe pain, discuss with a senior doctor and consider stronger analgesia.

If suspected bacterial infection, commence ciprofloxacin ear drops, 3-4 drops 3-4 times a day for 7 days.

If suspected fungal infection, remove debris with syringing and use Otocomb Otic or Locacorten Vioform drops 4 drops twice daily for 7 days.

For fungal infections with perforation, clean outer ear with dilute Betadine (see Box1). If persisting at review, discuss with a senior doctor and ENT.

For severe infections, insert a wick (see Box 3) coated with Kenacomb. Use ciprofloxacin drops every 2 hours for 3 days, then remove the wick and continue drops 3 times daily for a week.

Follow Up

Review at day 2 and day 7 to make sure infection is settling. If not, discuss with a senior doctor, the child may need admission (consider mastoiditis).

Mastoiditis and Cholesteatoma

Management

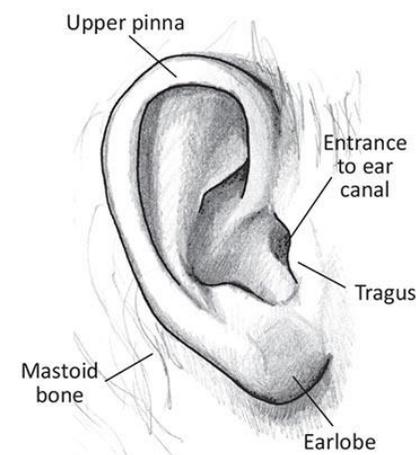
Discuss both with a senior doctor and refer urgently to the regional Paediatricians and ENT for review.

Mastoiditis is likely to need urgent admission with IV antibiotics. Consider oral antibiotics ONLY after discussion with the Paediatrician.

Compacted Wax

Management

If impacting on hearing, may require Cerumol drops to soften the wax for 1-2 days and then gentle syringing (see Box 1).



Ear Problems in Children

Therapeutic Protocols

Box 1: Tissue spearing (dry mopping) and syringing

Tissue spearing: Twist a tissue to create a spear (avoid using toilet paper). Ensure the spear is not too thin and floppy or too fat and unable to fit in the ear canal. Insert the spear gently into the ear canal. Leave for about 20 seconds and rotate whilst slowly removing. Repeat until clear.

Syringing: Fill a 20mL or 50mL syringe with diluted Betadine (1:20) or sterile water and attach 1-2cm of soft tubing (e.g. cut off butterfly giving set). Point the tubing to the top of the ear canal and apply gentle pressure to the syringe plunger. Use a container (e.g. specimen cup, kidney dish) placed under the ear to catch the water. Consider asking the child or parent/carer to hold the container. Ensure the water temperature is not too warm or too cold by testing on your forearm or elbow prior to using.

Box 2: Instilling ear drops

Fill the ear canal with ear drops and apply pressure to the tragus of the ear to pump the drops through the perforation into the middle ear. This mechanical flushing technique is essential to get drainage and aeration of the middle ear.

Box 3: Inserting a wick

Pope (Merocel) ear wicks are recommended (availability will vary from site to site). These ear wicks are made of compressed cellulose which is thin enough to slip into the occluded ear canal and expands when wet. If not available, try using alligator forceps to insert quarter-inch gauze (but this is more painful). After a wick is inserted, water must be kept out of the ear, and the patient must be instructed to use soft wax ear plugs while showering.

Box 4

Weight (kg)	Dose of amoxicillin 25mg/kg	Dose of azithromycin 30mg/kg
5	125mg (2.5mL) twice a day	150mg (3.75mL)
7	175mg (3.5mL) twice a day	210mg (5.25mL)
9	225mg (4.5mL) twice a day	270mg (6.75mL)
10	250mg (5mL) twice a day	300mg (7.5mL)
12	300mg (6mL) twice a day	360mg (9mL)
15	375mg (7.5mL) twice a day	450mg (11.25mL)
17	425mg (8.5mL) twice a day	510mg (12.75mL)
20	500mg (10mL) twice a day	600mg (15mL)
22	550mg (11mL) twice a day	660mg (16.5mL)
25	625mg (12.5mL) twice a day	750mg (18.75mL)
27	675mg (13.5mL) twice a day	810mg (20.25mL)
30	750mg (15mL) twice a day	900mg (22.5mL)

Box 5

Weight (kg)	Dose of amoxicillin 45mg/kg
5	225mg (4.5mL) twice a day
7	315mg (6.5mL) twice a day
9	405mg (8mL) twice a day
10	450mg (9mL) twice a day
12	540mg (11mL) twice a day
15	675mg (13.5mL) twice a day
17	765mg (15.5mL) twice a day
20	900mg (18mL) twice a day
22	990mg (20mL) twice a day
>25	1g (20mL) twice a day

Refer/Discuss

Discuss anything you are unsure of with an experienced Aboriginal health worker, nurse or senior doctor. It is okay to ask for help if you are not yet confident with looking in ears.

Refer to the Paediatrician and/or ENT specialist as specified in this protocol according to clinical diagnosis.

Any child with an attic perforation should be referred to an ENT surgeon immediately.

Any child with perforation persisting for more than 3 months, refer to both an audiologist and ENT specialist.

In any child with hearing loss >30dB detected by a primary health worker and those with recurrent infections, consider an audiologist and ENT specialist referral.

Resources

Morris P, Leach A, Shah P, Nelson S, Anand A, Daby J, et al. Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations. Canberra: OATSIH publications: Department of Health and Ageing; 2010
[https://www.health.gov.au/internet/main/publishing.nsf/Content/B8A6602C7714B46FCA257EC300837185/\\$File/Recommendation-for-clinical-guidelines-Otitis-Media.pdf](https://www.health.gov.au/internet/main/publishing.nsf/Content/B8A6602C7714B46FCA257EC300837185/$File/Recommendation-for-clinical-guidelines-Otitis-Media.pdf)

Ear disease images:
https://yourdecision.oten.tafensw.edu.au/theme/bootstrap/LOCO/Sterilisation/images/ear_disease_poster_11.png

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