

What is known about ear health and hearing?

Diagnosis

What is otitis media (OM)?

The main types of OM are:

- **Otitis media (OM):** refers to all forms of inflammation and infection of the middle ear
- **Acute otitis media (AOM):** general term for both acute otitis media with or without perforation (a hole) in the eardrum
- **Acute otitis media without perforation (AOMwOP):** the presence of fluid behind the eardrum plus at least one of the following: bulging eardrum, red eardrum, fever, ear pain or irritability
- **Acute otitis media with perforation (AOMwiP):** discharge of pus through a perforation in the eardrum within the last 6 weeks
- **Recurrent acute otitis media (rAOM):** the occurrence of three or more attacks of AOM within six months, or four or more in the last 12 months
- **Chronic otitis media:** a persistent inflammation of the middle ear that can occur with or without perforation, either as chronic suppurative otitis media, or as otitis media with effusion (respectively)
- **Chronic suppurative otitis media (CSOM):** persistent ear discharge through a persistent perforation (hole) in the eardrum. Definition of CSOM varies in the duration of persistent ear discharge (from 2 weeks to 12 weeks). The diagnosis of CSOM is only appropriate if the eardrum perforation is seen and if it is large enough to allow discharge to flow out of the middle ear space
- **Otitis media with effusion (OME):** an inflammation of the

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More detailed information about ear health in Indigenous people can be found at:

http://www.healthinonet.ecu.edu.au/ear_review

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middle ear characterised by fluid behind the eardrum, without signs or symptoms of acute otitis media; also sometimes referred to as serous otitis media, secretory otitis media, or 'glue ear'

- **Dry perforation:** perforation of the eardrum, without any signs of discharge or fluid behind the eardrum.

View information: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010 - <http://www.healthinfonet.ecu.edu.au/key-resources/promotion-resources?lid=22141>

What are the main bacterial causes of ear disease?

Three bacterial pathogens appear to be the main cause of otitis media:

- Streptococcus pneumonia
- Haemophilus influenza
- Moraxella catarrhalis.

Streptococcus pneumonia also referred to as pneumococcus is associated with the majority of otitis media cases particularly severe cases.

View information: Review of health and hearing among Indigenous peoples - <http://www.healthinfonet.ecu.edu.au/other-health-conditions/ear/reviews/our-review>

What resources can I use to improve my diagnostic skills?

The *Ear video/DVD* was designed to assist health staff who are conducting ear examinations on young children to diagnose and manage the many forms of otitis media (OM). Four images of different types of OM are presented in the video with diagnoses and recommended treatments. Health staff can work through a further 30 images of the ear and respond in a workbook to four questions:

- which ear is it?
- what can you see?
- what's your diagnosis?
- how would you treat it?

A full set of answers can be found in The *Ear video workbook* - trainer version.

Source: The Ear Health and Education Unit at the Menzies School of Health Research and the Cooperative Research Centre for Aboriginal and Tropical Health

View information: Ear video/DVD - <http://www.healthinfonet.ecu.edu.au/key-resources/promotion-resources?lid=14985>

Images of tympanic membrane are available on the *EarInfoNet*. The video images are of the tympanic membrane during the various diagnoses of otitis media as well as one of a normal tympanic membrane. These can be used to assist in diagnosis of otitis media.

View information: Images of tympanic membrane - <http://www.healthinfonet.ecu.edu.au/key-resources/promotion-resources?lid=17286>

Source: Menzies School of Health Research

DxEAR-SL (Diagnostic Ear Assessment Resource - Self Learning)

Designed as an educational exercise to improve abilities to:

- assess tympanic membrane (TM) findings (colour, mobility, position/contour, translucency and other conditions)
- diagnosis TMs for acute otitis media, otitis media with effusion or no effusion
- practice assessing TMs and get immediate feedback.

DxEAR-SA (Diagnostic Ear Assessment Resource-Self Assessment)

Take the DxEAR-SA to measure your skill at visually diagnosing otitis media by assessing of 25 videos of tympanic membranes as acute otitis media, otitis media with effusion, or no effusion.

Source: Ploof D, Kaleida PH, Children's Hospital of Pittsburgh of UPMC, Pittsburgh

View information: DxEAR-SL (Diagnostic Ear Assessment Resource - Self Learning) and DxEAR-SA (Diagnostic Ear Assessment Resource-Self Assessment) - <http://www.healthinfonet.ecu.edu.au/key-resources/promotion-resources?lid=19346>

World Health Organization training resource on primary ear and hearing care (2006)

The WHO training resource on primary ear and hearing care comprises four training manuals (basic level, intermediate level trainer's manual, intermediate level student's workbook, advanced level). The resources equip primary level health workers and communities with simple, effective methods to reduce the burden of ear and hearing disorders. The manuals include some very clear otoscopy images.

Source: The World Health Organisation

View information: The WHO training resource on primary ear and hearing care - <http://www.healthinfonet.ecu.edu.au/key-resources/promotion-resources?lid=14988>

I have a limited budget, what ear examination equipment should I buy?

Determine what are the most common ear conditions in your population. If there is a high prevalence of eardrum perforations, you might need equipment to clean the canal, e.g. headlight, suction, ear canal instruments.

LumiView (Welch Allyn) or Voroscope (Vorotek): instruments which illuminate the ear canal and leave both hands free to use instruments. Models are either eyeglass-mounted (for individuals who need corrective lenses) or headband-mounted for general use in a clinic. Other uses include for suturing, taking Pap smear tests, etc.

If there is a high prevalence of OME (intact eardrums), pneumatic otoscopy and tympanometry are useful (tympanometry is not performed on ears with obvious pus or drum perforation)

Both techniques:

- describe the movement of intact eardrums
- help to distinguish between an air-filled middle ear and a fluid-filled middle ear
- help to distinguish a small, dry perforation from a healed perforation
- help to identify blocked or clear ventilation tubes
- require the examiner to undergo training in use and interpretation.

A pneumatic bulb is an inexpensive addition to the standard otoscope. The user needs training but it's quick to learn if they have basic otoscopy skills. Tympanometry is more expensive, needs a power source, the user needs training, it's harder to interpret and easier to make mistakes.

Source: Australian Medicare Local Alliance

Is there a manual for Aboriginal Health Workers on ear disease?

The *Aboriginal ear health manual* (2008) provides information on the anatomy and function of the ear and preventive measures for ear problems. It details causes, types and effects of hearing loss together with common ear conditions. Diagrams and images are used to describe how to examine ears and algorithms for treatment strategies are provided.

View information: The Aboriginal ear health manual - <http://www.healthinonet.ecu.edu.au/key-resources/promotion-resources?lid=14716>

Medical

What is covered in the *Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010*?

The updated *Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010* is designed to facilitate the delivery of comprehensive, effective and appropriate ear health programs. The guidelines provide practical treatment plans.

The guidelines are made up of 10 components:

1. A table of practical treatment plans which summarise the management of childhood otitis media in populations at high risk of CSOM.

sections on:

2. Prevention of otitis media and hearing loss
3. Diagnosis of otitis media
4. Prognosis following OM
5. Medical management for each of the OM presentations
6. Audiological assessment and management of any associated hearing loss. This is a new section that was not in the 2001 guidelines.
7. Practical considerations relevant to health care delivery for populations affected by OM.
8. Prioritisation of services where resources are limited. This is also a new section that was not in the 2001 guidelines.
9. A set of clinical care algorithms for each OM presentation
10. A list of key messages for primary health care providers working with populations affected by OM.

The aim of all these components is to offer a series of clear recommendations that are:

- based on the best available evidence
- acceptable to a multi-disciplinary expert panel
- Presented in plain English.

View information: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010 - <http://www.healthinonet.ecu.edu.au/other-health-conditions/ear/reviews/background-information>

Who are the intended users of the *Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010*?

The intended users of the guidelines are health professionals who work with Aboriginal and Torres Strait Islander populations. This includes Aboriginal Health workers, Aboriginal ear health workers, primary care and specialist physicians, nurses, remote area nurses and nurse practitioners, audiologists, audiometrists, speech therapists, and child development specialists.

View information: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010 - <http://www.healthinfonet.ecu.edu.au/other-health-conditions/ear/reviews/background-information>

Why do the Guidelines recommend Ciprofloxacin drops for CSOM instead of Sofradex?

The guidelines recommend Ciprofloxacin for CSOM instead of Sofradex as there is a very small risk of ototoxicity (damage to the cochlea) from the active ingredients of Sofradex - refer to comparative trials referenced in the Guidelines.

Source: Australian Medicare Local Alliance

View information: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010 - <http://www.healthinfonet.ecu.edu.au/other-health-conditions/ear/reviews/background-information>

Can I still use Sofradex?

Sofradex should only be used for infections in the external canal, i.e. otitis externa/Swimmer's ear/Tropical ear (when the eardrum is intact), but not for CSOM.

Source: Australian Medicare Local Alliance

When can/should I syringe the ears?

Ears can be syringed if there is profuse mucopus present in the canal or a foreign body such as an insect. Also, syringe to remove profuse soft wax or after using eardrops to soften impacted wax (if the eardrum is known to be intact).

Source: Australian Medicare Local Alliance

How else can I clean discharge, wax or foreign bodies from the ears?

Impacted wax may need to be softened with eardrops, e.g. Cerumol, Waxsol, or a solution of bicarbonate of soda. Dry or soft wax and some foreign bodies can be removed with alligator forceps or a wax loop using a head-light or other illuminating/magnifying instrument. Tissue/toilet paper spears are the method of choice for families to remove pus discharge before putting in eardrops. If available in the clinic, suction can be used. Cotton buds are not effective for removing wax or discharge - they are too fat and not sufficiently absorbent.

Source: Australian Medicare Local Alliance

How do I make tissue spears?

The *Tissue spears: do it right* DVD resource shows health personnel and families how to clean pus out of the ear using tissue spears. Diagrams, images and short videos are used to demonstrate. This resource should ideally be used by health professionals with clients and families so that they can help them understand some of the more complex ideas portrayed.

Source: Menzies School of Health Research

View information: The tissue spears: do it right DVD - <http://www.healthinfonet.ecu.edu.au/key-resources/promotion-resources?lid=16457>

Are there any resources available to give to families about ear disease?

The resources recommended for parents and carers are:

- a parent and carers brochure on key ear health messages
- a set of memory cards to be used as a fun interactive activity
- colouring-in and dot-to-dot sheets
- a photobook
- an activity book featuring the characters of Kathy and Ernie.

The resource materials are available to download from the Care for kids' ears website and hard copies of the resource materials can be requested using an online order form.

View information: Care for kids - <http://www.healthinfonet.ecu.edu.au/key-resources/promotion-resources?lid=21226>

Audiological

What is conductive hearing loss?

Conductive hearing loss results from dysfunction of the outer or middle ear that interferes with the efficient transfer of sound to the inner ear. It is characterised by a loss in sound intensity.

View information: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010 - <http://www.healthinfonet.ecu.edu.au/other-health-conditions/ear/reviews/background-information>

What is sensorineural hearing loss?

Sensorineural hearing loss results from dysfunction in the inner ear (especially the cochlea). This is where sound vibrations are converted into neural signals. This type of hearing loss may also occur secondary to dysfunction of any part of the auditory nerve.

View information: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010 - <http://www.healthinfonet.ecu.edu.au/other-health-conditions/ear/reviews/background-information>

Hearing tests are recommended for many ear conditions - how often should they be performed for patients with chronic problems?

If a referred patient is found to have a significant hearing loss requiring hearing rehabilitation services, the audiology service (typically Australian Hearing) will manage the hearing review schedule to meet the individual's rehabilitation goals.

A patient with chronic ear disease who has adequate hearing on the first hearing test should still be considered at-risk for hearing loss and be referred again in 6 months if the ear condition has not improved. A patient should also have a review hearing assessment if there is a change in his/her ear state.

A patient should be referred for hearing assessment if the patient, family or teacher observes deteriorating responsiveness to sound.
Source: Australian Medicare Local Alliance

I cannot access audiology assessment readily - what can I do locally?

Basic hearing tests can be performed on children from the age of about five years in primary health clinics if there is suitable equipment, a quiet environment and a trained tester available. (See COMHeLP - the Audiology Australia Guidelines for more information).

Also, advise families and teachers to use clear communication (see Section E. Audiological), e.g. speak clearly and slightly more slowly, pause and wait for a response.
Source: Australian Medicare Local Alliance

I cannot access speech pathology services readily - what can I do locally?

Encourage families to stimulate verbal communication: talk to babies and children about what they are doing and what you are doing. Talk a lot - speak to them close up and in a clear voice. Tell stories, draw pictures, read books (with or without printed words). Accept and encourage all attempts at talking. Use other services, e.g. HIPPY, if available in your local area.
Source: Australian Medicare Local Alliance

What services does Australian Hearing offer?

Australian Hearing services include provision of hearing services to Aboriginal and Torres Strait Islander children and eligible adults. It produces a range of information fact-sheets and brochures on specific topics for Aboriginal and Torres Strait Islander communities including otitis media and sound-field systems in the classroom. The website also provides general information brochures on topics such as hearing loss, hearing aids and noise exposure.
Source: Australian Hearing

View information: Australian Hearing - <http://www.hearing.com.au/fact-sheets>

What is tympanometry?

An electro-acoustic measurement of the stiffness, mass and resistance of the middle ear (more simply described as mobility of the eardrum). This test can be used to describe normal or abnormal middle ear function.

Source: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010

View information: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010 - <http://www.healthinfonet.ecu.edu.au/other-health-conditions/ear/reviews/background-information>

What is pneumatic otoscopy?

The combination of simple otoscopy with the observation of eardrum movement when air is blown into the ear canal. Pneumatic otoscopy is able to determine mobility of the eardrum. Reduced mobility of an intact eardrum is a good indication of the presence of middle ear fluid.

View information: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010 - <http://www.healthinfonet.ecu.edu.au/other-health-conditions/ear/reviews/background-information>

What can I use to help explain hearing loss to my families?

Ear troubles is a book has been designed to help health workers and others talk to parents about conductive hearing loss.

View information: Ear troubles - <http://www.healthinonet.ecu.edu.au/key-resources/promotion-resources?lid=14984>

How can I get hearing help for an adult patient?

Hearing rehabilitation starts with an assessment of hearing and hearing needs, so find out who in your area does this. See Further Learning, Resources for a list of State/Territory and National hearing services. See Commonwealth Hearing Services Program and Hearing Aid Bank.

Source: Australian Medicare Local Alliance

Surgical

What is a myringotomy?

Myringotomy is a surgical incision in the eardrum to drain fluid.
Source: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010

View information: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010 - <http://www.healthinonet.ecu.edu.au/other-health-conditions/ear/reviews/background-information>

What is a myringoplasty?

Myringoplasty is a surgical operation to repair a damage eardrum.
Source: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010

View information: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010 - <http://www.healthinonet.ecu.edu.au/other-health-conditions/ear/reviews/background-information>

What is a tympanoplasty?

Tympanoplasty is a surgical operation to correct damage to the middle ear and restore the integrity of the eardrum and bones of the middle ear.

Source: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010

View information: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010 - <http://www.healthinonet.ecu.edu.au/other-health-conditions/ear/reviews/background-information>

What are grommets?

Grommets are also known as 'tympanostomy tubes', 'ventilation tubes' or a 'PE tubes', they are small tubes surgically placed across the eardrum to re-establish ventilation to the middle ear.

Source: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010

View information: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010 - <http://www.healthinonet.ecu.edu.au/other-health-conditions/ear/reviews/background-information>

Priorities

What are the key messages for Primary Health Care Providers?

1. Tell families that Aboriginal children are at risk of otitis media.
2. Inform families that improved living standards, maternal education, breast feeding, a smoke-free environment and pneumococcal vaccination will lead to improvements in OM.
3. Encourage families to attend the health clinic as soon as possible when they develop ear pain or discharge.
4. It is recommended that children have their ears examined regularly even when well.
5. It is recommended that all Aboriginal children with Acute Otitis Media be treated with antibiotics (amoxicillin) until the bulging and discharge has resolved.

Source: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010

View information: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010 - <http://www.healthinonet.ecu.edu.au/other-health-conditions/ear/reviews/background-information>

What are the best treatment options for otitis media?

The updated *Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010* is designed to facilitate the delivery of comprehensive, effective and appropriate ear health programs.

The guidelines provide practical treatment plans.

Source: Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations 2010

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What are the key messages for Primary Health Care Providers?

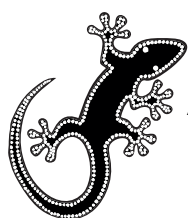
- Tell families that Aboriginal children are at greatest risk of severe otitis media.
- Inform families that improved living standards, maternal education, breast feeding, a smoke-free environment and pneumococcal vaccination will lead to improvements in severe OM.
- Encourage families to attend the health clinic as soon as possible when they develop ear pain or discharge.
- It is recommended that children have their ears examined regularly even when well.
- It is recommended that all Aboriginal children with Acute Otitis Media be treated with antibiotics (amoxicillin) until the bulging and discharge has resolved.

How can I connect to other people working in ear health?

The *EarInfoNetwork* yarning place enables people to share information, knowledge and experience with other people working in ear health around Australia.

Source: *EarInfoNet*

View information: yarning places - <http://yarning.org.au>



Australian Indigenous HealthInfoNet

The Australian Indigenous HealthInfoNet is an innovative Internet resource that contributes to 'closing the gap' in health between Indigenous and other Australians by informing practice and policy in Indigenous health.

Two concepts underpin the HealthInfoNet's work. The first is evidence-informed decision-making, whereby practitioners and policy-makers have access to the best available research and other information. This concept is linked with that of translational research (TR), which involves making research and other information available in a form that has immediate, practical utility. Implementation of these two concepts involves synthesis, exchange and ethical application of knowledge through ongoing interaction with key stakeholders.

The HealthInfoNet's work in TR at a population-health level, in which it is at the forefront internationally, addresses the knowledge needs of a wide range of potential users, including policy-makers, health service providers, program managers, clinicians, Indigenous health workers, and other health professionals. The HealthInfoNet also provides easy-to-read and summarised material for students and the general community.

The HealthInfoNet encourages and supports information-sharing among practitioners, policy-makers and others working to improve Indigenous health – its free on line yarning places enable people across the country to share information, knowledge and experience. The HealthInfoNet is funded mainly by the Australian Department of Health and Ageing. Its award-winning web resource (www.healthinfo.net.ecu.edu.au) is free and available to everyone.

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Untitled

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