

# Deadly Kids | Deadly Futures



## Queensland's Aboriginal and Torres Strait Islander Child Ear and Hearing Health Framework 2016-2026

A ten year framework for improving the health, early childhood development and education outcomes of Aboriginal and Torres Strait Islander children in Queensland

The Queensland Government acknowledges the traditional owners of the land and seas of this State. It acknowledges Elders both past and present, and pays respects to the Aboriginal and Torres Strait Islander communities of today.

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#### ARTWORK BY MARGIE LANKIN

The artwork featured throughout this document is Margie Lankin's interpretation of middle ear disease. The turtle represents the ear and was chosen as it is a silent creature

swimming around in the rivers and oceans. No one knows turtles are there unless they are looking for them, and like a child with an ear infection or hearing loss, middle ear disease is a silent disease—you don't know it's there unless you look.

The circles around the turtle are the referral pathways. The footsteps are the children being referred to healthcare services and the healthcare providers who deliver services in the communities.

There are also figures of people in the painting. One group is healthcare providers consulting with community members about the types of child health services to be provided in the communities. The other group is parents teaching their children to let someone know if they have any problems with their ears and how to take care of them if they have hearing loss or an ear infection.

The dots around the painting represent the Aboriginal (ochre red, black and ochre yellow) and Torres Strait Islander (blue, green and white) peoples.

#### PHOTOGRAPHS

*While every effort has been made to respect cultural traditions, Aboriginal and Torres Strait Islander people are advised this publication may contain images of people who are deceased.*

Photographs were provided by the following photographers and organisations (in alphabetical order): Deadly Ears Program, Simon McCormack, Queensland Government Image Library, Royal Flying Doctors Service, Zachary Stone, Esther Townrow, Kristen Wallin (Apunipima Cape York Health Council), Leanne White and Amanda Wood.

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The saying ‘it takes a community to raise a child’ is beautifully exemplified in the *Deadly Kids, Deadly Futures* framework as it is a shared approach between health centres, hospitals, early childhood providers and schools. I would very happily raise my child in Queensland knowing that a comprehensive holistic approach to ear health is being implemented.

The over-representation of middle ear disease in Aboriginal and Torres Strait Islander children is often only noticed when the impacts have become visible and children have missed out on so much. These could be speech delays or falling behind and doing poorly at school. Ear health is everyone’s business and the earlier the disease is identified and managed, the stronger our children will be.

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**Dr Kelvin Kong**, Chair of the Australian Society of Otolaryngology Head and Neck Surgery Indigenous Committee, Royal Australasian College of Surgeons Fellow and first Aboriginal Ear, Nose and Throat (ENT) surgeon.

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# Ministers' Foreword

## Foreword by the Ministers

The Palaszczuk Government is firmly committed to supporting Aboriginal and Torres Strait Islander families provide their children with the best, healthiest and happiest start to life.

According to the World Health Organisation, Australia's Aboriginal and Torres Strait Islander people have one of the highest rates of middle ear disease in the world. This is unacceptable and the Palaszczuk Government is determined to turn this around in Queensland. Doing nothing is not an option.

The statewide *Deadly Kids, Deadly Futures* framework is a collaborative health and education policy because the impacts of middle ear disease and associated hearing loss are not confined to the health sector alone. The disease can have life-long impacts that compound and multiply from infancy onwards as it affects school readiness and learning outcomes from early childhood into the primary school years and adolescence. The human and social costs are substantial, with the disease often described as 'a silent epidemic' as it robs Aboriginal and Torres Strait Islander children of

vital opportunities to develop, learn and flourish because they are simply unable to hear.

This is the second statewide framework for Queensland and over the next 10 years—together with Aboriginal and Torres Strait Islander community members and our partners in the non-government sector—we will build on the solid foundation established over the last five years by implementing a comprehensive set of actions. The framework puts prevention at the forefront in addition to improving and reforming existing services delivered by the health, early childhood and education sectors; developing an agile and responsive workforce; and expanding the evidence base about ways to better prevent and manage the impacts of the disease.

It's about ensuring a shift from illness to wellness for current and future generations of Aboriginal and Torres Strait Islander children and young people in Queensland.

*Deadly Kids, Deadly Futures* forms part of an ambitious policy agenda being driven by the Queensland Government

to achieve the health, early childhood development and education 'closing the gap' targets agreed through the Council of Australian Governments.

There is still a long road to travel but together and in partnership, the Queensland Government is committed to reducing the prevalence, severity and impacts of middle ear disease and associated hearing loss so all Aboriginal and Torres Strait Islander children are able to make the most of the available opportunities to be prosperous, healthy and strong.



**Cameron Dick MP**

*Minister for Health and Minister for Ambulance Services*

A handwritten signature in blue ink.



**Kate Jones MP**

*Minister for Education and Minister for Tourism, Major Events, Small Business and the Commonwealth Games*

A handwritten signature in blue ink.

# Introduction

## Children's Health Queensland Hospital and Health Service

A significant part of Children's Health Queensland Hospital and Health Service (CHQ) statewide paediatric role involves ensuring every Aboriginal and Torres Strait Islander child and young person has access to the best possible healthcare regardless of where they live in Queensland. CHQ fulfils this responsibility by providing access to best-practice family-centred care, supporting and strengthening other healthcare providers in the health system, effectively integrating services with other healthcare providers, and improving Aboriginal and Torres Strait Islander health outcomes through improved research.

The experience and impacts of middle ear disease on Aboriginal and Torres Strait Islander children in their early years is markedly different from non-Indigenous children. The reasons for this are complex and related to the myriad of social and economic factors that impact on child health. However,

to address and improve child ear and hearing health requires healthcare providers of every type—including public and private, primary and secondary, local and specialists—to prevent, identify, treat and manage ear and hearing health as a priority health condition *every time* a child presents to a healthcare professional.

The *Deadly Kids, Deadly Futures* framework is an example of CHQ's statewide leadership role as its development and implementation involves working in partnership with other hospital and health services and primary healthcare providers to embed ear and hearing health into the delivery of child health services. This is a driving focus of the framework because Aboriginal and Torres Strait Islander child ear and hearing health will only be improved when it becomes an integral component of child health models of care across the State.

By implementing the actions in the *Deadly Kids, Deadly Futures* framework, Queensland will be well on its way to achieving health equality with our first Australians and 'closing the gap' in health, early childhood and education outcomes in our lifetime.



**Rachel Hunter**  
Board Chair



**Fionnagh Dougan**  
Chief Executive

# Statement of Commitment

## Queensland Aboriginal and Islander Health Council

The Queensland Aboriginal and Islander Health Council (QAIHC) has been a key partner in the development of the *Deadly Kids, Deadly Futures* framework. QAIHC is fully committed to supporting our member organisations implement the actions over the next 10 years to improve the ear and hearing health of our children.

A real strength of this policy framework is that the actions have been developed and endorsed by both the government and the non-government sector. It demonstrates the shared understanding across the health, early childhood and education sectors that no one sector or organisation can do it alone. *Collaboration. Partnerships. Co-operation.* These are not just words—they are the approaches that need to be embedded into everything we do, say and think in order to improve the health and wellbeing of our first nations people, and most importantly, our children.

The Aboriginal and Torres Strait Islander community controlled health sector is a critical part of the healthcare system and sets high standards for delivering comprehensive, responsive and culturally appropriate primary healthcare services. Child health is a key priority for our sector, and more can and will be done over the next 10 years to increase access to high-quality comprehensive primary healthcare for babies, children, young people and families from prevention right through to treatment and management. This is the commitment QAIHC will make until the health gap has been closed for all Aboriginal and Torres Strait Islander peoples in Queensland.

Our children are the future leaders, Elders and custodians of this land and they deserve the best quality healthcare and education they can receive. This framework sets out the effort required to lift the health and education outcomes of our children, and the journey we need to go on to take us there.

Queensland has come a long way over the last 20 years in its commitment to addressing the health and education needs of our children. I believe this framework outlines a comprehensive approach to child ear and hearing health that can lead the nation. It provides the vision and practical steps needed for an experienced and capable team to support our children to listen, learn and reach their full potential.



**Elizabeth Adams**  
Chairperson



# Section 1

## Aboriginal and Torres Strait Islander child ear and hearing health in Queensland

*This section outlines the current profile of ear and hearing health in Queensland and the activities undertaken in the health, early childhood and education sectors.*



# Setting the scene: why is ear and hearing health important for Aboriginal and Torres Strait Islander children?

Aboriginal and Torres Strait Islander children currently have one of the highest rates of otitis media—or middle ear disease—in the world. Ear and hearing health is a major public health concern as hearing loss affects how a person interacts, understands and communicates with the world around them.

The impacts of middle ear disease and hearing loss are substantial at any age. But they are exacerbated and have life-long consequences when they occur during infancy and childhood because they affect developmental, social and educational opportunities. This is the lived experience of many Aboriginal and Torres Strait Islander Queenslanders today.

Aboriginal and Torres Strait Islander people have a significantly different experience of middle ear disease than most non-Indigenous Queenslanders. It is characterised by:

- ✦ **earlier onset** — Aboriginal and Torres Strait Islander babies and infants acquire the disease at a younger age;

- ✦ **higher frequency** — the disease occurs often and repeatedly;
- ✦ **greater severity** — more Aboriginal and Torres Strait Islander children experience the severest forms of the disease;
- ✦ **persistence** — the disease lasts for longer periods of time.

Middle ear disease is often accompanied by hearing loss which can last for several weeks or months at a time. In some of the severest cases, Aboriginal and Torres Strait Islander infants and babies have experienced some form of middle ear disease every month until their first birthday. This profoundly affects all domains of childhood development, including speech, language and cognitive

development, as the disease occurs—and repeatedly reoccurs—throughout critical childhood developmental milestones during the first five years of life. In some cases the recurrent nature of the disease can also lead to permanent hearing loss.

Middle ear disease is endemic in many Aboriginal and Torres Strait Islander communities, which means its prevalence has remained relatively steady and consistent over a number of years. This has resulted in the disease becoming normalised in some parts of Queensland as a substantial proportion of children from infancy onwards experience the condition on a regular basis.



**Figures 1 to 3:** Anatomy of a healthy middle ear (image on left), an ear with otitis media with effusion (middle image) and an ear with chronic suppurative otitis media (image on right). Note the fluid in the middle ear space—which may affect hearing—and the bulging eardrum in Figure 2, and the discharge coming from a perforated eardrum in Figure 3.

Chronically diseased ears and hearing loss can lead to long-term developmental and learning problems for children, creating significant challenges in the educational and home environments. As children enter and progress through early childhood education and into schooling, the disease has ramifications for school readiness, communication skills, learning abilities and educational outcomes. And in the home environment, it can affect family relationships, social skills and contribute to perceptions of behavioural problems.

The impacts of middle ear disease and associated hearing loss have far-reaching social and economic consequences because they influence the trajectory of children's lives towards adolescence and adulthood, including future employment outcomes. It is a 'chronic' disease because the effects are life-long as children are unable to make the most of available opportunities because they are unable to hear.

## When does middle ear disease become a serious health problem?

Middle ear disease is a common condition that children acquire at some stage during early childhood. It is caused by a bacterial or viral infection which gets behind the eardrum by travelling up the tube connecting the back of the throat and the ear (eustachian tube). In most cases, the condition resolves itself quickly with limited or no medical intervention.

The condition becomes a serious health problem when children experience it frequently and persistently, and it is accompanied by mild to severe hearing loss. Children who develop one of the severest forms of middle ear disease—chronic suppurative otitis media—are likely to continue to have ear and hearing problems as adults.

*Deadly Kids, Deadly Futures: Queensland's Aboriginal and Torres Strait Islander Child Ear and Hearing Health Framework 2016-2026* recognises middle ear disease and associated hearing loss are major public health issues. As a result, it sets out a road map to prevent and manage the impacts of the disease now and into the future. The framework details

the shared vision between the health, early childhood and schooling sectors. It shows through partnering with Aboriginal and Torres Strait Islander families and communities, current and future generations of Aboriginal and Torres Strait Islander children in Queensland will be able to listen, learn and reach their full potential.

# What is middle ear disease?

*Otitis media is the medical term for all forms of inflammation and infection of the middle ear. It is a complex condition associated with both illness and hearing loss ranging from mild to severe across a spectrum. The name is a combination of two Latin words which mean 'infection of the ear' (otitis) and 'middle' (media).*

*Throughout this document, 'middle ear disease' has been used as a general term to describe all forms of otitis media.*

*Middle ear disease is associated with conductive hearing loss resulting from dysfunction of the outer or middle ear. This interferes with the efficient transfer of sound to the inner ear. Conductive hearing loss differs from sensorineural hearing loss which results from dysfunction in the inner ear, especially the cochlea.*

*The main forms of otitis media include:*

- ▶ **Otitis media with effusion** — fluid in the middle ear without symptoms. Sometimes this is called 'glue ear'.
- ▶ **Persistent (chronic) otitis media with effusion** — fluid in the middle ear without symptoms for more than three months.
- ▶ **Acute otitis media without perforation** — bulging of the eardrum or ear pain plus fluid in the middle ear.
- ▶ **Acute otitis media with perforation** — discharge of pus through a perforation (hole) in the eardrum.
- ▶ **Recurrent acute otitis media** — three or more episodes of acute otitis media in the previous six months or four or more episodes in the last 12 months.
- ▶ **Chronic suppurative otitis media** — persistent discharge of pus through a persistent and easily visible perforation in the eardrum.
- ▶ **Dry perforation** — perforation in the eardrum without any signs of discharge or fluid behind the eardrum.

**Reference:** Commonwealth of Australia, *Recommendations for Clinical Care Guidelines on the Management of Otitis Media in Aboriginal and Torres Strait Islander Populations* (2010), 2011.



## Why do Aboriginal and Torres Strait Islander children experience the disease differently to non-Indigenous children?

There are a number of factors that help to explain why Aboriginal and Torres Strait Islander children suffer more severe, persistent and frequent forms of middle ear disease than non-Indigenous children.

Severe and chronic forms of middle ear disease are associated with poverty as the disease is influenced by a combination of social and economic risk factors. These socio-economic factors affect the behaviours of individuals, families and the overall functioning of communities and include income levels, employment opportunities, access to healthcare services, the health literacy of parents and carers, access to housing, environmental health infrastructure, access to healthy affordable food and general

living conditions. These factors are referred to as the 'social determinants of health' because they are the circumstances and conditions that shape and influence a person's health.

Middle ear disease is a serious health problem for Aboriginal and Torres Strait Islander people because they are the most socially and economically disadvantaged population group in Australia. The combination of multiple economic and social risk factors influences the severity, persistency and frequency of the disease. Similar to other health conditions, the risk factors associated with middle ear disease are linked to social and economic disadvantage, with higher rates of the disease corresponding to higher rates of disadvantage.

Refer to **Appendix 2** for further information about the social determinants of health.







## Fast facts: what does the evidence tell us?

Most of the data in Australia about middle ear disease and associated hearing loss is from epidemiological and clinical studies in rural and remote communities. Only limited national data exists about ear and hearing health from self-reported surveys, surgeries conducted in public hospitals and publicly funded audiology rehabilitation. No national prevalence data is currently collected in Australia and significant limitations exist with self-reported surveys as they are subject to under-reporting. The absence of accurate and reliable data impedes health service planning and delivery across Australia.

The following data provides an indication of health need and access to healthcare services. Collectively the data shows that even though Aboriginal and Torres Strait Islander babies, children and young people have poorer ear and hearing health than the non-Indigenous population, their access to primary and secondary healthcare is only marginally higher. This indicates potential gaps in current healthcare services and barriers to access.



0.20%



0.20%

### There is no difference in hearing loss at birth

☀ No difference exists in the rate of permanent hearing loss at the time of birth between Aboriginal and Torres Strait Islander and non-Indigenous babies in Queensland. From 2010 to 2013, an average of **0.20%** of Aboriginal and Torres Strait Islander babies had a mild, moderate or greater permanent hearing loss in one or both ears—around 2 babies per 1000 on average. Non-Indigenous babies had the same rate (0.20%).<sup>i</sup>



10 times longer

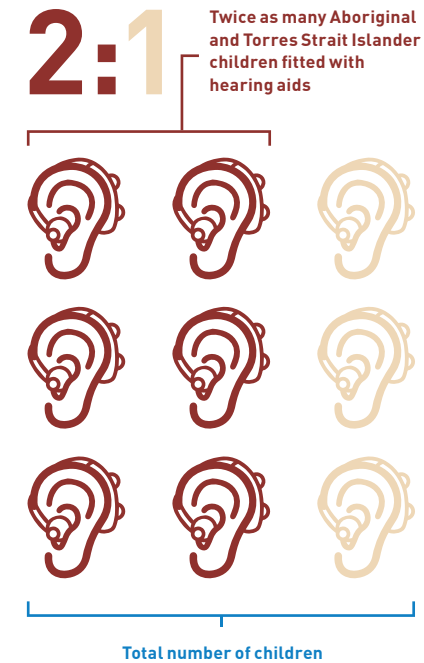
Duration of middle ear disease in Aboriginal and Torres Strait Islander children

### Aboriginal and Torres Strait Islander children have a higher incidence of middle ear disease and associated hearing loss throughout infancy and childhood

☀ On average Aboriginal and Torres Strait Islander children and young people between 2 and 20 years of age experience middle ear disease for a cumulative total of 2.7 years in comparison to 3 months for non-Indigenous children and young people—over 10 times longer.<sup>ii</sup>



- ☀ Middle ear disease—including perforated (burst) eardrums with discharge—has been diagnosed in infants as young as six to eight weeks in some Aboriginal and Torres Strait Islander communities.<sup>iii</sup>
- ☀ 2015 clinical data from the Children’s Health Queensland Deadly Ears Program in Queensland shows:
  - › conductive hearing loss was present in 45% of children and young people (0 to 17 years) who received services from specialised ENT outreach clinics in 11 sites across Queensland;
  - › the proportion of children and young people presenting at clinics with at least one type of middle ear condition was 23.9%, and
  - › the proportion of children and young people presenting with one of the severest forms of middle ear disease—chronic suppurative otitis media—was 6.7%.<sup>iv</sup>
- ☀ Clinical data from hearing health outreach programs in the Northern Territory shows:
  - › hearing loss was present in 46% of children and young people who received audiology services at their latest service in 2014-15; and
  - › the proportion of children and young people diagnosed with at least one type of middle ear condition increased from 59% in 2013-14 to 64% in 2014-15.<sup>v</sup>



### Aboriginal and Torres Strait Islander children are fitted for hearing aids at an older age

- ☀ In 2013, 8.4% (1,757) of children and young adults aged under 26 years fitted with hearing aids or cochlear implants were Aboriginal and/or Torres Strait Islander. Of these:
  - › A lower proportion of Aboriginal and Torres Strait Islander babies were fitted within the first 12 months (2%) compared to non-Indigenous babies (10%);
  - › The peak age for fitting for Aboriginal and Torres Strait Islander children occurred during the primary school years (a total of 26% at ages 5 and 6) compared to under 12 months year of age for non-Indigenous children (around 12%); and
  - › A higher proportion of Aboriginal and Torres Strait Islander clients were aided for mild hearing loss (around 70%) compared to non-Indigenous clients (around 55%), which is attributable to conductive hearing loss from middle ear disease.<sup>vii</sup>
- ☀ Australian Hearing estimates at least twice as many Aboriginal and Torres Strait Islander children are fitted with hearing aids because of conductive hearing loss from middle ear disease compared with the total number of children.<sup>viii</sup>

### Aboriginal and Torres Strait Islander people are hospitalised for ear and hearing health conditions more often than non-Indigenous people

In Queensland from July 2011 to June 2014\*:<sup>vi</sup>

- ☀ Aboriginal and Torres Strait Islander people were 11.1% more likely to be hospitalised with a principal diagnosis of ear and mastoid than non-Indigenous Queenslanders (3.0 per 1000 compared to 2.7 per 1000 for non-Indigenous Queenslanders).
- ☀ Aboriginal and Torres Strait Islander children and young people between 0 to 19 years were 30% more likely to be hospitalised for chronic (suppurative) otitis media as a principal diagnosis than non-Indigenous children and young people (1.3 times the rate):
  - › Aboriginal and Torres Strait Islander children aged 0 to 4 years had the highest age-specific rate of hospitalisations (3.6 per 1000) however the rate was only slightly higher than non-Indigenous children (3.4 per 1000); and
  - › For older age groups, the hospitalisation age-specific rate for Aboriginal and Torres Strait Islander children was 1.8 times (5 to 9 years) and 2.4 times (10 to 14 years) the age-specific rate of non-Indigenous children.

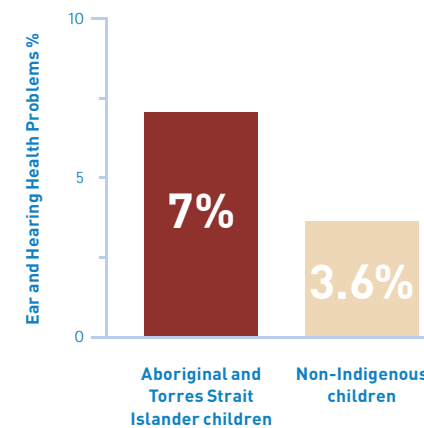
\*Age-standardised rates have been used to take into account the different age structures between Aboriginal and Torres Strait Islander and non-Indigenous populations. This has been done as Aboriginal and Torres Strait Islander people are proportionally much younger due to higher birth rates and shorter life expectancy.

Aboriginal and Torres Strait Islander people were



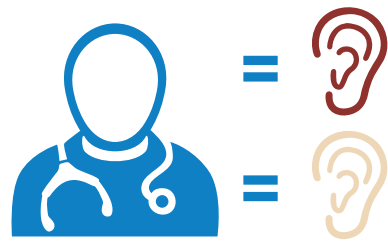
**11.1%**  
more likely

to be hospitalised than non-Indigenous Queenslanders with a principal diagnosis of diseases of the ear and mastoid



### Aboriginal and Torres Strait Islander people report higher rates of ear and hearing health problems in national surveys

- ☀ In 2012-13, one in eight (12 per cent) of Aboriginal and Torres Strait Islander people reported having diseases of the ear and mastoid and/or hearing problems in remote and non-remote areas. This was 1.3 times higher than non-Indigenous Australians.<sup>ix</sup>
- ☀ Seven per cent of Aboriginal and Torres Strait Islander children aged 0 to 14 years were reported as having ear and hearing problems compared to 3.6 per cent for non-Indigenous children—nearly twice the rate.<sup>x</sup>

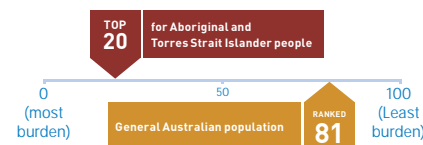


**Roughly comparable access to GPs**

### Access to primary healthcare is lower than expected and the care provided varies considerably

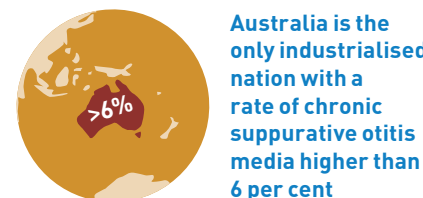
- ✦ National survey data between 2008 to 2013 shows the rate of middle ear hearing and ear problems managed by GPs for Aboriginal, Torres Strait Islander and non-Indigenous children aged 0 to 14 years was roughly comparable—70 per 1000 for Aboriginal and Torres Strait Islander children and 67 per 1000 for non-Indigenous children.<sup>xi</sup>
- ✦ Clinical audit data from 46 primary healthcare and community clinics managed by Hospital and Health Services in Queensland (n=2298 records of children audited) shows in 2012-13:
  - › an average of 71% of children attending the clinics received an ear examination (otoscopic examination with or without screening audiometry)—ranging from 0 to 100% across sites;
  - › of those children who received an ear examination, between 0 to 45% were identified as having a chronic or recurrent ear infection; and
  - › there was wide variation in the ongoing care provided to children with chronic ear infections ranging from 0 to 100%—follow-up examination (average of 93%), advice (85%), antibiotics prescription (89%), action plan (68%), referral to audiology (62%) and referral to ENT (59%).<sup>xii</sup>

### Middle ear disease burden rank



### Middle ear disease is a significant contributor to the overall ‘burden of disease’ or ill-health of Aboriginal and Torres Strait Islander people

Middle ear disease is one of the top 20 diseases contributing to the burden of disease of Aboriginal and Torres Strait Islander people (ranked 20 for males and 18 for females). In contrast, middle ear disease is ranked 81st in contributing to the disease burden of the general Australian population.<sup>xiii</sup>



**Australia is the only industrialised nation with a rate of chronic suppurative otitis media higher than 6 per cent**

### Australia’s first nation peoples have one of the highest rates of middle ear disease in the world

Australia remains the only industrialised western country with rates of one of the severest forms of middle ear disease (chronic suppurative otitis media) above 6 per cent for its first nation peoples.<sup>xiv</sup>

## Case study: The ear and hearing health of Aboriginal and Torres Strait Islander people in South-East Queensland

*The Institute for Urban Indigenous Health (IUIH) was established in 2009 by four Aboriginal and Torres Strait Islander community controlled health services in South East Queensland to provide comprehensive, integrated and efficient health care to urban-based Aboriginal and Torres Strait Islander people.*

Over the last six years, IUIH has grown significantly and now supports a network of 18 primary health care clinics from the Lockyer Valley in the west, Caboolture in the north, Stradbroke Island in the east to the New South Wales border in the south. The clinics have improved Indigenous people’s access to primary health care dramatically since 2009—the active Aboriginal and Torres Strait Islander client population has increased three-fold, the number of comprehensive preventative health assessments conducted per annum has increased 22-fold and annual chronic disease GP management plans has increased nine-fold. IUIH also provides outreach allied health services to regional areas and conducts regular audiology clinics in Hervey Bay through the local Aboriginal and Torres Strait Islander community controlled health service.

Ear and hearing health is a key component of the clinical primary health care provided by IUIH to Aboriginal and Torres Strait Islander children and adults across South East Queensland. Recent data from 2014-15 shows of the 445 paediatric audiology assessments provided by IUIH, 31.2% (n=139) had some degree of hearing loss in one or both ears ranging from mild to moderate. Of these, a substantial proportion of the hearing losses — at least 74.1 per cent (n=103)—was attributable to conductive hearing loss most commonly acquired from middle ear disease. A similar profile of hearing health was found at two of the recent IUIH Deadly Choices community days held in Browns Plains and Bilinga in 2015 with 32% of participants (adults and children) who received a tympanometry screen (20 at Browns Plains and 31 at Bilinga) requiring follow-up care from a GP, audiologist or ENT specialist. Of these, only a very small proportion (less than 5%) were already seeing an ear specialist.

In the absence of national ear and hearing health prevalence data, the IUIH service data shows the need for ear and hearing health services remains high for Aboriginal and Torres Strait Islander people living in metropolitan areas.

Reference: Institute for Urban Indigenous Health, unpublished data provided in August 2015.

## Case study: Prevalence rates of middle ear disease and associated hearing loss in a remote Aboriginal and Torres Strait Islander community in North West Queensland

In 2012, Children's Health Queensland's Deadly Ears Program, with funding from The Bryan Foundation and the Hear and Say Centre for Deaf Children, collaborated with the Doomadgee Aboriginal Shire Council to research the prevalence rates of middle ear problems and associated hearing loss in the community.

Of the 138 school children from pre-prep to Year 4 that received an ear and hearing screen and diagnostic audiology—ranging in ages from 4 to 9 years—102 children (73.9%) failed the screen and 60 children (43.5%) had some level of hearing loss ranging from mild (38.4%) to moderate (5.1%). Of those children with hearing loss, the youngest age group in pre-prep had the highest rate of hearing loss (55.6%) and the lowest rate was in the oldest age group in Year 4 (22.7%).

Based on the study, it is estimated between 40 to 50% of Aboriginal and Torres Strait Islander school-aged children in comparable communities could be experiencing fluctuating hearing loss at any one time.

Reference: Children's Health Queensland Hospital and Health Service, Deadly Ears Program unpublished data.

## How do we compare internationally?

The World Health Organisation (WHO) defines prevalence rates of chronic suppurative otitis media (CSOM) above 1 per cent as an avoidable burden of disease. Prevalence rates equal to or above 4 per cent are indicative of a massive public health problem requiring urgent attention.

In the most recent international survey conducted by the WHO in 2004, Aboriginal and Torres Strait Islander people were found to have the highest prevalence of CSOM compared to all other populations surveyed—between 28 to 43 per cent.

Only five countries were classified in the same category as Aboriginal and Torres Strait Islander people and had prevalence rates equal or above 4 per cent. They were Tanzania, India, Solomon Islands, Guam and Greenland.

Reference: World Health Organisation. *Chronic suppurative otitis media: burden of illness and management options*. Geneva: WHO, 2004.





# What has been done in the past to improve the ear and hearing health of Aboriginal and Torres Strait Islander children?

Child ear and hearing health has been identified as a major public health condition in various national and state policies since the landmark *National Aboriginal Health Strategy* was released in 1989. At a state level, it remains a priority child health condition in the Queensland Government's Aboriginal and Torres Strait Islander 2015-2018 investment strategy—*Making Tracks towards closing the gap in health outcomes for Indigenous Queenslanders by 2033*. At a national level, child ear and hearing health is included in the *National Aboriginal and Torres Strait Islander Health Plan 2013-2023*, which guides healthcare planning and delivery in each of the States and Territories. These policy commitments have resulted in the delivery of a number of national and Queensland specific ear and hearing health initiatives which have improved access to services for children and their families. They have also increased the awareness of service providers and community members about the long-term consequences of the disease if not effectively prevented and managed.

## Deadly Ears, Deadly Kids, Deadly Communities 2009-2013

Under the previous five year framework in Queensland—*Deadly Ears, Deadly Kids, Deadly Communities 2009-2013*—an extensive range of initiatives, programs and services were delivered to improve the ear and hearing health of Aboriginal and Torres Strait Islander children across the health, early childhood and schooling sectors. Some of the activities conducted since 2009 are outlined on pages 27 and 28.

The University of Queensland independently evaluated the effectiveness of the previous framework in 2014-15 and found progress had been made towards achieving many of its long-term goals.

Some of the key findings included:

- ✦ **a reduction in the incidence and impact of middle ear disease and associated hearing loss** amongst children accessing specialist ear, hearing health and allied healthcare services from the Children's Health Queensland's Deadly Ears Program;

- ✦ **improved coordination** of services;
- ✦ **increased awareness** of policy makers, service providers and community members about the short, medium and long-term impacts of the disease on social, educational and employment outcomes;
- ✦ **increased access** to a range of services for Aboriginal and Torres Strait Islander children; and
- ✦ **improved design and delivery** of various health, early education and schooling programs and services to ensure they were effective and culturally responsive.

Critically, the evaluation found that while existing services and programs were effective, ongoing and sustained effort is required across multiple sectors and service providers to reduce the prevalence and impacts of middle ear disease and associated hearing loss.

## Health

Revised clinical care guidelines and clinical practice manuals, including the *Primary Clinical Care Manual*, *Chronic Conditions Manual* (1st Edition) and *Personal Health Record*, to align with the national clinical guidelines\* and ensure health professionals remain up-to-date about the best practice clinical care for children with middle ear disease and associated hearing loss.

Conducted specialist audiology and ear, nose and throat (ENT) outreach clinics in 12 rural and remote locations across Queensland that had limited access to specialist ear and hearing health services. There were over 12,200 presentations to clinics, 6,800 audiology assessments and 1,480 ENT surgeries conducted since outreach services commenced in 2008 until the end of 2015. Since 2010, treatment resulted in the rate of chronic suppurative otitis media more than halving in children presenting to the clinic from 16.1% (n=172) to 6.7% (n=104) in 2015. In the 0 to 4 age group, the rate reduced from 18.6% in 2010 (n=63) to 5.8% in 2015 (n=26).

Delivered ear and hearing screening training to over 1000 healthcare professionals from primary and community healthcare providers in urban, regional and remote areas.

Established a hearing health research and innovation hub at the South East Queensland Centre of Excellence in Aboriginal and Torres Strait Islander Primary Health Care.

Undertook the 'Baby Binungs' pilot project to improve the prevention, detection and management of middle ear disease in children aged 0 to 4 years. The project involved providing targeted health promotion training to local healthcare staff conducting newborn hearing screens to educate parents about the early onset of middle ear disease. The findings from the pilot project are being used to inform statewide service reforms.

Coordinated the 'Speech Pathology Paediatric Indigenous Network' to support new and experienced speech pathologists deliver culturally responsive services with Aboriginal and Torres Strait Islander children and their families. The network has 170 members from urban, regional and remote locations across Australia.

The Queensland Aboriginal and Islander Health Council (QAIHC) established a Hearing Health Program to strengthen the capacity of Community Controlled Health Services to deliver effective and comprehensive ear and hearing primary healthcare to Aboriginal and Torres Strait Islander children and families.

\*Recommendations for Clinical Care Guidelines on the Management of Otitis Media in Aboriginal and Torres Strait Islander Populations 2010.

## Early childhood and schooling

Developed and delivered targeted practice and service improvements in Children and Family Centres in Palm Island, Mornington Island and Doomadgee to effectively recognise and manage the impacts of middle ear disease and associated hearing loss.

Developed and delivered an online professional development training course *Deadly Kids Can Listen and Learn* for early childhood educators and teachers to identify the signs and symptoms of middle ear disease and associated hearing loss. Over 150 early childhood educators and teachers have accessed the course since it commenced in 2009.

Completed capital works in 15 remote Aboriginal and Torres Strait Islander communities and fitted-out new school facilities with sound amplification systems to improve the listening environments for students.

Introduced building regulations for all new kindergartens built on state school sites with high proportions of Aboriginal and Torres Strait Islander children to include fixed or portable sound amplification systems as part of the building specifications.

Developed the *Healthy Early Years Training Strategy* to embed best practice health and hygiene practices and approaches into the early childhood education and care sector. Key components of the strategy included the development of learner and training guides, and assessment tools at the Certificate III, Diploma and Advanced Diploma levels.



## Case study: Healthy ears in Eidsvold lead to a reduction in specialist outreach ear services for Aboriginal and Torres Strait Islander children

*Eidsvold is an example of a small town that has substantially improved the ear and hearing health of Aboriginal and Torres Strait Islander children over the last six years.*

Eidsvold has a population of around 630 people—with a third of the population identifying as Aboriginal and Torres Strait Islander—and is approximately 180km south-west of Bundaberg.

Since 2008, the middle ear disease presentations at specialist outreach ENT (ear, nose and throat) clinics have steadily decreased. Rates of children presenting with middle ear problems decreased from a high of 83.3% when the clinic first started to 11.9% in 2014. In the final three years of the clinic, only two of 217 children presented with chronic suppurative otitis media. These changes were the result of six years of perseverance, partnerships and planned activity initiated by local community members and supported by the Wide Bay Hospital and Health Service and the statewide Children's Health Queensland's Deadly Ears Program to improve the delivery of ear and hearing health services for children.

Over the last six years community members and service providers participated in a wide range of activities focused on improving ear health. This included running health education and awareness programs, training local healthcare workers to screen for middle ear disease and hearing loss, training childcare workers and teachers to identify the signs and symptoms of middle ear disease and conducting routine and opportunistic screens of children's ears conducted every time a child presented to the local community health clinic or visited a GP. Incorporating ear and hearing screening into every type of child health check—even if a child had no symptoms and presented to the local health service or hospital with a sore toe—was critical to reducing the incidence of middle ear disease in Eidsvold.

Child ear and hearing health remains a local health priority in Eidsvold today and continues to be proactively managed by families, the local health service, childcare organisations and schools.

Reference: Children's Health Queensland Hospital and Health Service, Deadly Ears QChild data. Unpublished data extracted July 2015.



## Case study: Embedding ear and hearing health into primary healthcare for Mums and Bubs through the *Baby One Program* in the Cape York

Apunipima Cape York Health Council, a community controlled Aboriginal health organisation providing primary healthcare to 11 communities in the Cape York, commenced the *Baby One Program* in 2014. The *Baby One Program* forms part of a suite of child health services delivered by the health service to increase early intervention in hearing health and close the gap in middle ear disease, speech-language delay and educational disadvantage across the Cape York.

The *Baby One Program* is a health worker led non-clinical health promotion and prevention program that involves a schedule of 15 home visits that begins during the antenatal period and continues over the child's first 1000 days. Ear and hearing health has become a core component of the program in recognition of the impacts of the social determinants of health—including hygiene, breast feeding, nutrition, passive smoking—on child ear and hearing health. All child and maternal health staff employed by Apunipima Cape York Health Council receive comprehensive training in ear and health assessments, and the health service has set a target to increase the rates of Medicare 715 child health checks at 12, 15, 18 and 24 months of age.

Apunipima Cape York Health Council is committed to improving child ear and hearing health in the primary health sector and has identified it as a priority health condition across the Cape York in the critical 0 to 3 age group.

Reference: Apunipima Cape York Health Council, 2015.





## Overview of the statewide Deadly Ears Program delivered by Children's Health Queensland Hospital and Health Service

*The Deadly Ears Program commenced in 2008 as a five year program to improve the ear and hearing health of Aboriginal and Torres Strait Islander children.*

The Minister for Health launched the program to address the high rates of the disease experienced by Aboriginal and Torres Strait Islander children across Queensland by delivering targeted services and coordinating the efforts of other service providers and stakeholders. Over the last six years the program has grown substantially and currently undertakes a range of functions including frontline service delivery, workforce training and professional development, organisational capacity building, research and statewide policy and sector reform.

A key component of the Deadly Ears Program remains the delivery of targeted healthcare services and support in a designated number of 'partner communities' across Queensland to effectively prevent, identify, treat and manage the impacts of middle ear disease and associated hearing loss. The services provided in these sites are extensive and including conducting specialist outreach audiology and ENT clinics and surgeries, delivering competency based training to local healthcare professionals, and supporting local health services, early childhood providers and schools embed public health and allied health approaches into the design and delivery of their own services. These capacity building activities are fundamental as they enable local service providers to deliver appropriate services for children and families.

The suite of targeted services and support provided by the Deadly Ears Program has proven to be effective in improving the ear and hearing health of Aboriginal and Torres Strait Islander children and young people in these communities as shown by some of the recent clinical service and surgical outcome data:

### Hearing health profile of children and young people receiving clinical services:

- ✦ since the program commenced clinical services in 2008 until the end of 2015, there have been over 12,200 assessments of children by ENT specialists, 6,800 audiological assessments and 1,480 ENT surgeries;
- ✦ hearing loss in children and young people receiving services from the audiology and ENT clinics has steadily reduced from 59% in 2010 to 45% in 2015—a decrease of nearly 15%;
- ✦ the proportion of children and young people presenting at ENT clinics with chronic suppurative otitis media has more than halved from a high of 16% in 2010 to 6.7% in 2015—and in the critical 0 to 4 age group, it reduced by two-thirds (from 18.6 to 5.8%); and
- ✦ the proportion of children and young people diagnosed with at least one middle ear condition at ENT clinics steadily decreased from 65% in 2010 to 23.9% in 2015—and in the 0 to 4 age group, it reduced from three quarters of all children presenting at clinics (75%) to below one third (30%).

### Surgical outcomes for children and young people who received some type of ENT surgical intervention\*:

- ✦ hearing loss reduced from 59% pre-surgery to 47% at their third post-operative appointment (2 years after surgery);

- ✦ the diagnosis of at least one middle ear condition decreased from 74% pre-operative to 37% at their third post-operative appointment; and
- ✦ chronic suppurative otitis media decreased from 17% pre-surgery to 11% at their third post-operative appointment.

The program has won a number of awards over the last six years including the 2015 Queensland Health Excellence in Performance Award (Highly Commended), the 2010 Queensland Health Close the Gap Award and the 2010 Perioperative Nursing Association of Queensland Award for Best Perioperative Nursing Team. Individual staff members have also been recognised for their achievements, and their awards include the Australian Medical Association of Queensland's Award of Distinction, the Charles Perkins Scholarship to Oxford University and the Children's Health Queensland's Rising Star Award.

The Deadly Ears Program secured recurrent funding in 2014 in recognition of its effectiveness in improving the ear and hearing health outcomes of Aboriginal and Torres Strait Islander children.

\*surgical outcome data has significant limitations as not all children who receive surgery subsequently attend post-operative appointments. The data is informative in showing general trends.

Reference: Children's Health Queensland Hospital and Health Service, Deadly Ears QChild data. Unpublished data extracted July 2015.

# Section 2

**Priority areas for action  
for the next 10 years**

*This section identifies the priority areas for action to improve the ear and hearing health of Aboriginal and Torres Strait Islander children in Queensland.*





## What needs to be improved over the next ten years to reduce the rates and impacts of middle ear disease and associated hearing loss on Aboriginal and Torres Strait Islander children?

Despite substantial activity being directed to preventing and managing the impacts of middle ear disease and associated hearing loss in Queensland over the last 10 years, ongoing effort, innovation and service delivery improvements are required to reduce the rates and impacts of middle ear disease and associated hearing loss on Aboriginal and Torres Strait Islander children. And to be effective, these services and approaches need to be targeted, culturally responsive and evidence-based.

A key learning from the previous framework—and identified in the University of Queensland evaluation—is that sustained and long-term improvements in ear and hearing health are dependent on the combined efforts

of the health, early childhood and education sectors across a number of fundamental building blocks.

Three of these building blocks—and critical challenges for the next ten

years—involve **prioritising health promotion and disease prevention, strengthening primary healthcare and implementing effective early intervention approaches.**

### Health promotion and disease prevention

Supporting individuals, families and communities to reduce the modifiable risk factors associated with middle ear disease and address the social determinants of health.

### Primary healthcare

Supporting the prevention, early identification and containment of middle ear disease by strengthening the primary healthcare sector to treat and manage the disease before it becomes a chronic health problem.

### Early intervention

Implementing effective early intervention approaches to ensure children are afforded every chance to maximise health, social, education and learning opportunities in the future.



## Prioritising health promotion and disease prevention

### WHAT IS IT?

An important part of disease prevention is health promotion. This involves supporting individuals, families and communities to increase control over the social determinants of their health and reduce the risk factors associated with disease and ill-health. One of the most important priorities for the healthcare system today is preventing and delaying disease and illness to help people remain as healthy as possible for as long as possible.

### WHAT NEEDS TO BE DONE?

Promoting and protecting child ear and hearing health cannot be undertaken by the health sector alone—it is a responsibility shared by individuals, families, communities, community-based organisations, private health services and local, state and federal governments. Public and preventative health messages and environmental health approaches that reduce the risks associated with middle ear disease and associated hearing loss need to be actively promoted.

### WHAT WILL BE ACHIEVED?

By modifying the behaviours of individuals and reducing risk factors through the delivery of health promotion and disease prevention approaches across the health, early childhood and education sectors, the rates of middle ear disease and conductive hearing loss will be reduced. This will result in fewer Aboriginal and Torres Strait Islander children experiencing severe, persistent and frequent forms of the disease.

*\*Refer to **Appendix 2** for further information about the social determinants of health.*





## Strengthening primary healthcare

### WHAT IS IT?

Primary healthcare is first-level care provided by GPs, nurses, Aboriginal and Torres Strait Islander health workers and other allied healthcare providers outside of hospitals. It is often the first point of contact people have with the health system and encompasses a number of activities to help people take responsibility for their health and remain healthy. These include health promotion, illness prevention, early intervention, case management, ongoing care, advocacy and community development.

### WHAT NEEDS TO BE DONE?

Increased effort is required to strengthen the primary healthcare sector to prevent, identify, treat and manage the impacts of middle ear disease and associated hearing loss as part of regular child health checks and opportunistic care, especially in the 0 to 4 age group. Ear and hearing health—encompassing primary prevention, early detection, treatment and management of illness and disease when it occurs—needs to become embedded as a routine component of all child health services across the State, with effective referral pathways established to access specialist healthcare.

### WHAT WILL BE ACHIEVED?

By strengthening the role of the primary healthcare sector to prevent, identify, treat and proactively manage the impacts of middle ear disease and associated hearing loss, it is anticipated the need for ear surgeries, audiology rehabilitation (including hearing aids) and other acute hospital-based services and support will decline.





# Implementing effective early intervention approaches

## WHAT IS IT?

The best line of defence to manage the impacts of middle ear disease and associated hearing loss is for each sector to have the skills and knowledge to implement a range of early intervention approaches. The earlier a child with middle ear disease and associated hearing loss is provided with support, the greater the likelihood developmental and functional impacts will be minimized on their speech, communication and learning skills. Across and within every sector—health, early childhood and education—children and their families need access to effective services and support as early as possible to break the cycle of the disease.

## WHAT NEEDS TO BE DONE?

Early intervention approaches can be applied across the health, early childhood and schooling sectors in a number of ways as outlined in the box below.

## WHAT WILL BE ACHIEVED?

By implementing effective early intervention approaches across each sector, it is anticipated the long-term social, educational and employment impacts of middle ear disease and associated hearing loss on Aboriginal and Torres Strait Islander people will be reduced.

EARLY INTERVENTION APPROACHES		
Health	Early childhood development	Schooling
Prioritise ear and hearing healthcare provision in the 0 to 4 age group.	Encourage families to access primary healthcare providers to check their children's ear and hearing health.	Implement 'whole-of-classroom' practices to improve the listening and learning environment of all children.
Provide intensive support to babies and their families during the first 12 months of life because babies who develop middle ear disease before their first birthday are at greater risk of repeatedly contracting the disease.	Introduce policies and practices for early childhood educators to implement preventative approaches (for example, hygiene practices) and identify the signs and symptoms of middle ear disease and associated hearing loss.	Prioritise the delivery of support and adjustments for students from pre-Prep to Year 1 with learning and/or speech, language communication needs caused by hearing loss from middle ear disease.





## The critical role of the Aboriginal and Torres Strait Islander community controlled health sector in the prevention, identification, treatment and management of middle ear disease and associated hearing loss

*Aboriginal and Torres Strait Islander Community Controlled Health Services have performed a vital role in Australia's healthcare system since their establishment in the 1970s.*

The cultural dimension of health is embedded across every aspect of the design, delivery and governance of community controlled health services, with services responding to the '... physical, social, spiritual and emotional needs of Aboriginal and Torres Strait Islander people'. Community control is based on the principle of self-determination with Aboriginal and Torres Strait Islander people having control (decision-making) over the primary health services provided in their communities. The National Aboriginal Community Controlled Health Organisation defines primary health care as:

*... a holistic approach which incorporates body, mind, spirit, land, environment, custom and socio-economic status. Primary health care is an Aboriginal construct that includes essential, integrated care based upon practical, scientifically sound and socially acceptable procedures and technology made accessible to communities as close as possible to where they live through their full participation in the spirit of self-reliance and self-determination. The provision of this calibre of health care requires an intimate knowledge of the community and its health problems, with the community itself providing the most effective and appropriate way to address its main health problems, including promotive, preventative, curative and rehabilitative services.*

In Queensland, 25 Aboriginal and Torres Strait Islander community controlled health services deliver primary healthcare services. These services have a critical role in preventing and managing the impacts of middle ear disease and associated hearing loss as service utilisation rates show approximately 40% of Aboriginal and Torres Strait Islander people access primary healthcare from a community controlled health service. Strengthening and building a strong and responsive Aboriginal and Torres Strait Islander community controlled health sector is essential for improving ear and hearing health and achieving substantial health gains for future generations of Aboriginal and Torres Strait Islander children.



Reference: Queensland Aboriginal and Islander Health Council (QAIHC). Unpublished data provided in August 2015.



## Overview of the national otitis media guidelines

The updated national clinical care guidelines\* released in 2010 and prepared by the Menzies School of Health Research summarises the latest evidence-based practice for primary healthcare providers to deliver comprehensive, effective and appropriate care for Aboriginal and Torres Strait Islander people with middle ear disease. It includes clinical practice guidelines and standard treatment protocols for the prevention, early detection, prognosis and medical management of middle ear disease, together with practical service planning ideas for healthcare providers to embed ear and hearing health into existing models of care. Adherence to and implementation of the national clinical care guidelines by primary healthcare providers will substantially strengthen the sector to identify and manage the progression of the disease.

*\*Recommendations for Clinical Care Guidelines on the Management of Otitis Media in Aboriginal and Torres Strait Islander Populations 2010*

## What can parents and carers do to promote and protect children's ear and hearing health?

There are a number of practical actions parents and carers can undertake to protect and look after their children's ears and hearing health. Some health promotion and disease prevention practices include:

- ✦ Not smoking during pregnancy or near children;
- ✦ Breastfeeding babies until around 12 months of age if mothers are able to;
- ✦ Ensuring children receive all their scheduled immunisations during infancy and childhood;
- ✦ Keeping the home environment and children's bedding and clothing clean;
- ✦ Providing children with a healthy diet with lots of fruit and vegetables;
- ✦ Encouraging regular hand and face washing as a basic hygiene practice; and
- ✦ Getting baby's ears checked regularly by a child health nurse, health worker or doctor.



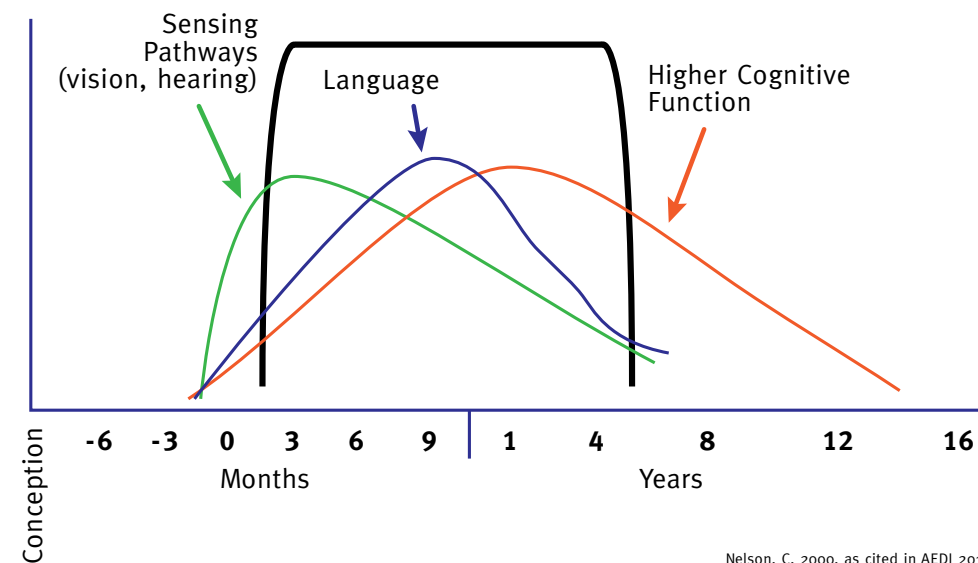
## 10 minutes you say?

It takes about 10 minutes for a doctor, nurse or Aboriginal and Torres Strait Islander health worker to screen for middle ear disease and associated hearing loss. Depending on the age of the child, the national clinical guidelines\* recommend performing up to three tests—otoscopy, tympanometry and audiometry—every time an Aboriginal and Torres Strait Islander child presents to a healthcare facility to identify, treat and manage the disease at the earliest opportunity, even if no symptoms are present. Aboriginal and Torres Strait Islander parents and carers are encouraged to request these tests if healthcare professionals are not screening for middle ear disease and associated hearing loss at routine and opportunistic health care checks.

*\*Recommendations for Clinical Care Guidelines on the Management of Otitis Media in Aboriginal and Torres Strait Islander Populations 2010*



## Impacts: Human brain development



Nelson, C, 2000, as cited in AEDI 2011

## The importance of minimising the impact of middle ear disease and associated hearing loss in early childhood

A key reason the 0 to 4 age group has been identified as a priority population group is because healthy brain development—including language and higher cognitive functions—is dependent on children within this age group developing neural connections for specific functions across different areas of the brain. These neural connections develop rapidly in the earliest years of life then gradually decrease (see diagram—graph source: C.A. Nelson, 2000 as cited in AEDI 2011), with complex brain processes dependent on earlier neural connections being established.

When children experience frequent, persistent and severe episodes of middle ear disease and associated hearing loss, it can impair and delay auditory processing, speech and language development skills due to earlier phases of brain development being affected.

The black line in the diagram identifies the peak prevalence of middle ear disease and associated hearing loss for Aboriginal and Torres Strait Islander children, which is also the peak period when neural connections are being established.

**Reference:** Adapted by the Queensland Government from Shonkoff, J and Phillips D, Committee on Integrating the Science of Early Childhood Development. From *Neurons to Neighbourhoods: The Science of Early Childhood Development*. Washington DC, USA: National Academies Press, 2000.



# Section 3

## Implementation

*This section outlines the implementation arrangements for the next 10 years including the vision, objective, outcomes, key deliverables, performance measures and actions.*

# Vision, objective, outcomes and key deliverables for the next ten years

*Deadly Kids, Deadly Futures: Queensland's Aboriginal and Torres Strait Islander Child Ear and Hearing Health Framework 2016-2026* has been developed and endorsed by a range of government and non-government service providers and stakeholders across the health, early childhood and education sectors.

It outlines the shared goals of service providers and stakeholders, the actions to be undertaken and how progress will be measured. The framework details how services will be improved for Aboriginal and Torres Strait Islander children and how long-term change will be effected for future generations of children.



## Vision

All Aboriginal and Torres Strait Islander children in Queensland have healthy ears and can listen, learn and reach their full potential.

## Objective

To improve the health, early childhood and schooling outcomes of Aboriginal and Torres Strait Islander children by preventing and managing the impacts of middle ear disease and associated hearing loss.

### Health outcome

The incidence and impacts of middle ear disease and associated hearing loss on Aboriginal and Torres Strait Islander children are reduced.

### Early childhood development outcome

Aboriginal and Torres Strait Islander children are 'school ready' by managing the impacts of middle ear disease and associated hearing loss during the early years of childhood.

### Schooling outcome

The educational impacts of middle ear disease and associated hearing loss are addressed for Aboriginal and Torres Strait Islander students in state, Catholic and independent schools.

## Key deliverables

- 1 Health promotion and prevention:** Enable and empower families, communities and local service providers to increase the protective factors and reduce the risk factors associated with child health, including middle ear disease and associated hearing loss.
- 2 Service delivery improvements:** Enhance and expand the services and support provided to children to manage the impacts of middle ear disease and associated hearing loss.
- 3 Workforce development:** Enable healthcare professionals and educators to provide support and services to children to manage the impacts of middle ear disease and associated hearing loss.
- 4 Data collection and research:** Build the evidence base to improve the planning, delivery and effectiveness of services to manage the impacts of middle ear disease and associated hearing loss.





## 2016-2026 Implementation Plan

A number of performance targets have been included to track progress over the next 10 years in the health, early childhood and schooling sectors. Performance targets identified by an asterisk (\*) do not have agreed data sources. A key activity over the next 10 years will be to assist service providers to collect consistent data to report against these targets.

# HEALTH

**Outcome:** The incidence and impacts of middle ear disease and associated hearing loss on Aboriginal and Torres Strait Islander children are reduced.

### Performance targets

- 1** Increased proportion of babies and children aged 0 to 4 years receiving otoscopy and tympanometry on every occasion of service from primary healthcare providers and community health clinics\*.
- 2** Increased proportion of children under 5 years old receiving audiology rehabilitation (including hearing aids).
- 3** All children receive ENT treatment within clinically recommended times.
- 4** Improvement in the ear and hearing health of children accessing specialist audiology and ENT surgeries.

### Key service partners and stakeholders

- ✧ Children's Health Queensland Hospital and Health Service
- ✧ Hospital and Health Services across Queensland
- ✧ Department of Health
- ✧ Queensland Aboriginal and Islander Health Council
- ✧ Institute for Urban Indigenous Health
- ✧ Apunipima Cape York Health Council
- ✧ Royal Flying Doctor Service
- ✧ CheckUP
- ✧ Australian Hearing
- ✧ Commonwealth Department of Health

## Deliverables

### Health promotion and prevention

## Key actions

- ✂ Promote behaviour change at the family level by enabling parents and carers to respond to the determinants of health and improve children's health.
- ✂ Increase the knowledge of parents and carers to identify the signs and symptoms of middle ear disease early and respond to the impacts on early childhood development, including speech, language, learning and cognitive development.
- ✂ Embed effective public and preventative health approaches into the design and delivery of local primary and community healthcare services.
- ✂ Strengthen partnerships between Aboriginal Shire Councils and local healthcare providers to enhance the delivery of environmental health programs by reinforcing the link between environmental health, living conditions and preventable childhood diseases.
- ✂ Support local organisations to implement 'whole-of-community' approaches to health and wellbeing that promotes ear health as a critical part of childhood health and development.

## Deliverables

### Service delivery improvements

## Key actions

- ✂ Increase the usage of hearing aids for children aged 0 to 4 with hearing loss and reduce age of first fitting to minimise the impact on language development and learning in the school-aged years.
- ✂ Ensure babies identified as having a higher risk of acquiring hearing loss from the newborn hearing screening services have access to effective healthcare from local healthcare providers and specialist services, including hearing rehabilitation and allied healthcare.
- ✂ Support primary healthcare providers and community health clinics to:
  - › embed ear and hearing health assessments, review, treatment and management into routine and opportunistic care for all children and young people, with the 0 to 4 age group prioritised as the key client group;
  - › redesign and integrate existing school-based hearing screening clinics into comprehensive child health models of care; and
  - › implement models of care which use the Medicare payment system to incentivise ear and hearing healthcare as part of routine and opportunistic child health checks.
- ✂ Enhance the delivery of specialist paediatric ENT clinical services, diagnostic and rehabilitative audiology and allied healthcare to urban, regional and remote areas with limited access to specialist services.
- ✂ Streamline referral and clinical care pathways between primary healthcare providers and ENT specialists.
- ✂ Ensure the systems, practices and reporting of primary healthcare providers and community health clinics, specialist providers and funding bodies align to the national otitis media guidelines.



## Deliverables

### Workforce development

## Key actions

- ⚡ Enhance the skills, knowledge and competency of healthcare professionals in the primary, secondary and tertiary sectors and their professional associations to:
  - › Understand the impacts of undiagnosed and/or untreated middle ear disease and associated hearing loss on child development;
  - › Conduct ear and hearing assessments, review checks, management and onward referral;
  - › Incorporate public and preventative health approaches into the design and delivery of healthcare services;
  - › Improve the identification, management and treatment of middle ear disease and associated hearing loss; and
  - › Manage the developmental impacts of middle ear disease and associated hearing loss.
- ⚡ Increase the level and type of training and professional development provided to GPs and advanced practice nurses about the identification, treatment and management of middle ear disease, associated hearing loss and developmental impacts.
- ⚡ Ensure the university and VET sector embed within their curricula information and practice opportunities for healthcare professionals about middle ear disease, associated hearing loss and childhood development that align with the national otitis media guidelines.

## Deliverables

### Data collection and research

## Key actions

- ⚡ Advocate for the introduction of nationally consistent data collection by healthcare providers on the diagnosis and management of middle ear disease, associated hearing loss and childhood development impacts.
- ⚡ Support the introduction of hearing health performance indicators for Aboriginal and Torres Strait Islander community controlled health services in Queensland.
- ⚡ Develop and implement a best-practice audiology management of care for children with mild to moderate fluctuating hearing loss who currently have limited access to audiology rehabilitation options.
- ⚡ Develop and implement a best-practice allied health model of care to increase the accessibility of allied healthcare services from the earliest opportunity.
- ⚡ Undertake research about the nature, pattern and clinical course of middle ear disease, associated hearing loss and its impacts on childhood development, including the health promotion and protective factors that prevent disease progression.

# EARLY CHILDHOOD DEVELOPMENT

**Outcome:** Aboriginal and Torres Strait Islander children are ‘school ready’ by managing the impacts of middle ear disease and associated hearing loss during the early years of childhood.

## Performance targets

- 1 Reduction in the proportion of Aboriginal and Torres Strait Islander children who are developmentally vulnerable on two or more domains in the Australian Early Development Census.
- 2 Increased proportion of Aboriginal and Torres Strait Islander children participating in approved early childhood education and care programs.

## Key service partners and stakeholders

- ✦ Department of Education and Training
- ✦ Children’s Health Queensland Hospital and Health Service
- ✦ Department of Health
- ✦ Queensland Aboriginal and Islander Health Council
- ✦ Commonwealth Department of Health
- ✦ Early childhood education and care sector

## Deliverables

## Key actions

### Health promotion and prevention

- ✦ Encourage early childhood education and care providers to embed and implement public and preventative health approaches into their operating practices to reduce the risk factors associated with childhood diseases and illnesses, including middle ear disease.
- ✦ Support early childhood education and care providers to implement stronger infection control and hygiene practices and processes to effectively respond to outbreaks of communicable diseases.
- ✦ Support early childhood education and care providers to inform and educate parents about the impacts of middle ear disease and associated hearing loss on early childhood development outcomes and the importance of early intervention.

### Service delivery improvements

- ✦ Encourage early childhood education and care providers in areas with a high proportion of Aboriginal and Torres Strait Islander children to identify middle ear disease and associated hearing loss as a priority health condition in relevant operational policies and procedures.
- ✦ Encourage and support early childhood education and care providers to implement effective practice approaches to enhance the listening, language, learning and play skills of children with impacts from middle ear disease and associated hearing loss.
- ✦ Advocate for listening (acoustic) requirements to be incorporated into early childhood sections within the Building Code of Australia and encourage private providers to build environments that meet these standards.



## Deliverables

### Workforce development

- ⚙️ Work with relevant stakeholders to enhance the skills, knowledge and competency of early childhood education and care educators to identify the signs and symptoms of middle ear disease and associated hearing loss, and effectively manage its impacts.

### Data collection and research

- ⚙️ Promote and engage in data collection and research processes with relevant stakeholders to:
  - › Inform, review and evaluate management approaches for Aboriginal and Torres Strait Islander children with identified hearing loss; and
  - › Implement effective classroom modifications to improve the listening and learning environments of children.

## Key actions



# SCHOOLING

**Outcome:** The educational impacts of middle ear disease and associated hearing loss are addressed for Aboriginal and Torres Strait Islander students in state, Catholic and independent schools.

## Performance targets

- 1 Increased awareness of middle ear disease and associated hearing loss and its impact on educational outcomes.
- 2 Increased access to supports and services for teachers and students to address the educational impacts of middle ear disease and associated hearing loss.

## Key service partners and stakeholders

- Department of Education and Training
- Queensland Catholic Education Commission
- Independent Schools Queensland
- Children's Health Queensland Hospital and Health Service
- Queensland Aboriginal and Islander Health Council
- Commonwealth Department of Health

## Deliverables

### Health promotion and prevention

- Increase the capacity of schools to embed and implement public and preventative health approaches into their operating practices to reduce the risk factors associated with childhood diseases and illnesses, including middle ear disease.
- Support schools to implement best practice infection control and hygiene practices and processes to effectively respond to outbreaks of communicable diseases.
- Support schools to provide parental education about the impacts of middle ear disease and associated hearing loss on educational outcomes for children.

### Service delivery improvements

- Support schools to implement whole-of-school and whole-of-classroom approaches to meet the communication, learning and listening needs of all students, including children with middle ear disease, associated hearing loss and developmental impacts.
- Build and renew existing school infrastructure design to meet minimum standards for acoustic environments.
- Support schools to develop effective referral and information sharing processes and pathways with local primary healthcare and allied health service providers.
- Prioritise the delivery of support and adjustments for students from pre-Prep to Year 1 with language, speech, learning or communication needs caused by hearing loss from middle ear disease.

## Key actions



## Deliverables

## Key actions

### Workforce development

- ✦ Work with relevant stakeholders to enhance the skills, knowledge and competency of principals, educators, teacher aides, home-school liaison officers and school-based nurses to identify the signs and symptoms of middle ear disease and associated hearing loss, and effectively manage its impacts.

### Data collection and research

- ✦ Promote and engage in data collection and research processes with relevant stakeholders to:
  - › Inform, review and evaluate management approaches for Aboriginal and Torres Strait Islander children with identified hearing loss; and
  - › Implement effective whole-of-classroom and school-level modifications to improve the listening and learning environments of students.



# How will the activities in the 2016-2026 Implementation Plan stay on track and be monitored?

Each year an annual action plan will be released outlining the specific activities service providers and stakeholders will undertake against the 2016-2026 Implementation Plan.

Progress will be monitored and published annually, and an internal mid-term review conducted during 2020. An independent evaluation will be undertaken before the expiry of the 2016-2026 framework to assess if the policy objectives have been achieved against the performance measures and targets.

The framework will be governed by a multi-sector steering committee jointly managed by Queensland Health and the Department of Education and Training. An expert advisor will provide strategic guidance to the steering committee and working groups will be formed to lead targeted reform and service improvement projects in the health, early childhood and education sectors.

Steering committee and working group members will include representatives from the following sectors and agencies:

- ✦ Queensland Health (Hospital and Health Services and the Department of Health)
- ✦ Department of Education and Training
- ✦ Queensland Aboriginal and Islander Health Council
- ✦ Institute for Urban Indigenous Health
- ✦ Apunipima Cape York Health Council
- ✦ Royal Flying Doctor Service
- ✦ Queensland Catholic Education Commission
- ✦ Independent Schools Queensland
- ✦ CheckUP
- ✦ Australian Hearing
- ✦ Commonwealth Department of Health



*Deadly Kids, Deadly Futures: Queensland's Aboriginal and Torres Strait Islander Child Ear and Hearing Health Framework 2016-2026* is supported by the following organisations:





## Appendix 1: A best practice model to improve the ear and hearing health of Aboriginal and Torres Strait Islander children

The following evidence-based best practice model is an example of how to operationalise many of the system and service planning actions from the 10 year framework into a practical service delivery model that can be implemented by local service providers across the health, early childhood and education sectors. The model is recommended by the Children's Health Queensland's Deadly Ears Program for incorporation into local operational service delivery plans, where appropriate and relevant.

A key feature of the model involves embedding ear and hearing healthcare into existing child health services rather than relying on the delivery of stand-alone ear and hearing services such as hearing screen programs conducted in primary schools. The reason for this is the fluctuating nature of middle ear disease and associated hearing loss which occurs on a regular basis. This means a hearing screen program, conducted on average twice a year at a school, is unlikely to identify all children with ear and hearing problems as the disease and hearing loss fluctuates.

Much debate exists about the effectiveness of hearing screen programs in schools as they can identify potential ear and hearing

health problems but do not prevent, manage or treat the disease. Another limitation is the lack of follow-up and support provided to families to ensure children identified with potential ear and hearing problems access primary healthcare. The Deadly Ears Program recognises the value of hearing screen programs within schools as part of a comprehensive model of care as it is another access point into the primary healthcare system. However, it does not recommend hearing screen programs in schools as the predominant or only type of ear and hearing health service.

A more effective and efficient model is to deliver comprehensive healthcare services targeting the 0 to 4 year age group to prevent, treat and manage

the impacts of middle ear disease and associated hearing loss as early and as soon as possible, followed by children in the 4 to 6 age group. Once a comprehensive suite of child health services are delivered, hearing screen programs in schools can play a supplementary role.

The following best practice model recommended by the Deadly Ears Program aims to strengthen the primary healthcare sector to diagnose and manage the impacts of middle ear disease and associated hearing loss as part of routine child health checks and provide opportunistic care on every occasion of service rather than relying on stand-alone hearing screen programs. And for early childhood education and care providers and

schools, it aims to support the implementation of standardised whole-of-classroom approaches based on the current evidence that estimates between 40 to 50 per cent of Aboriginal and Torres Strait Islander students could be experiencing hearing loss from middle ear disease at any one time.

Some school-based hearing screen programs have been delivered for many years and reorientating the current service delivery model will take some time. However, rather than ceasing hearing screen programs, it is recommended they are conducted in schools during the first six months of children commencing in pre-Prep, Prep and Year 1, and families are supported to access primary healthcare. In this

way, targeted hearing screen programs can supplement the provision of comprehensive primary healthcare to Aboriginal and Torres Strait Islander children by alerting families, carers and schools to possible ear and hearing health problems.

In the medium to long-term, it is recommended local healthcare providers transition towards creating a comprehensive approach to child health that identifies ear and hearing problems at every point of contact across the health system and the reliance on school-based hearing screen programs as the predominant method of identifying child ear and hearing health is reduced.



### Does a 'fail' or 'refer' from a hearing screen mean a child has ear and hearing problems?

The purpose of a hearing screen is to identify if a child has an increased chance of having ear or hearing health problems before any signs or symptoms arise. A hearing screen is not a diagnosis of middle ear disease or hearing loss. A 'fail' or 'refer' from a hearing screen means a potential problem has been identified with a child's ears or hearing and a follow-up (or review) screen is required in three months to see if the problem remains. If the ear and hearing problem still exists, a referral is made for the parent or carer to take the child to a GP, audiologist or specialist ear and hearing team for assessment. A hearing screen only identifies a possible ear and hearing health problem—it is not a diagnosis.

# Deadly Ears best practice model for improving Aboriginal and Torres Strait Islander child ear and hearing health

**ELEMENT ONE:** Delivery of routine otoscopy, tympanometry and audiometry prioritising 0 to 4 year olds and at-risk children in accordance with the national otitis media guidelines and best practice screening guidelines.

Expected result	Services provided	Performance management and monitoring
<b>1.1</b> All children aged 0 to 4 years receive routine ear health examination/ review (including otoscopy, tympanometry and audiometry as appropriate) and related ear health education.	Child health checks incorporating (video) otoscopy, tympanometry and audiometry are conducted at age appropriate stages.	Ear and hearing checks conducted as part of regular child health checks.
		Proportion of 0 to 4 year olds receiving routine Child Health Checks.
		Adherence to recommended Child Health Check process.
		Staff trained to conduct ear and hearing checks.
		Equipment available to conduct ear and hearing checks.
	Opportunistic otoscopy (and where appropriate tympanometry and audiometry) is conducted for all children presenting to health services.	Standard paediatric assessment guidelines include opportunistic otoscopy (and where appropriate tympanometry and audiometry).
		Staff trained to conduct ear and hearing checks for opportunistic assessment.
		Equipment available to conduct ear and hearing checks.

	Effective data management and recall systems embedded in practice for medical follow-up.	Patient recall system is effective and routinely used.
		Relevant patient information shared with other local, visiting and specialist healthcare providers involved in the patient's continuum of care.
	Information and education is provided at the time of ear checks about: <ul style="list-style-type: none"> <li>the impacts of conductive hearing loss arising from middle ear disease, and</li> <li>practical strategies for families and carers to reduce the modifiable risk factors in the home environment.</li> </ul>	Hearing health information and resources are available and distributed to families and carers.
		Local workforce has received training on ear and hearing health and its impacts on childhood development.
<b>1.2</b> As per 1.1 but for all children aged 4 to 6 years in schools.	Within the first six months of school, hearing screening and reviews are conducted for children in pre-prep, prep and Year 1 with communication of results back to schools and families/carers.	Screening and reviews conducted within the first six months of school year.
		Equipment available to conduct ear and hearing checks.
		Formal communication processes established and implemented with schools and families
<b>1.3</b> Where feasible, implement surveillance programs for other 'at risk' children.	Regular surveillance occurs for children aged 4 to 6 years who are not accessing school and children affected by the impacts of hearing loss attributable to middle ear disease.	'At risk' children identified.
		Type of surveillance services/programs being provided to 'at risk' children.
		Effectiveness of surveillance services/programs provided to 'at risk' children.





**ELEMENT TWO:** Follow up, treatment and referral for middle ear disease, associated hearing loss and childhood developmental impacts occurs in accordance with the national otitis media guidelines.

Expected result	Services provided	Performance management and monitoring
<b>2.1</b> All children requiring follow-up ear and hearing health care have access to appropriate medical follow-up.	Medical treatment, follow-up and referral by primary healthcare providers and community health clinics occurs in line with the national guidelines.	Health workforce practices are consistent with the national otitis media guidelines.
	Children who require specialist hearing services are referred to audiology, allied health and ENT services as per the national guidelines and local referral pathways.	Orientation, training and workforce development processes adhere to the national guidelines.
	Caregivers are provided with appropriate information and support services about:	Local referral pathways established and documented.
	<ul style="list-style-type: none"> <li>✦ Early intervention and medical management of middle ear disease, and</li> <li>✦ Managing the impacts of middle ear disease and associated hearing loss at home.</li> </ul>	Hearing health information and resources are available and provided to families and carers.
<b>2.2</b> Children and families attend all relevant audiology, allied health and specialist ENT appointments.	Relevant and timely patient information, including ear and hearing health test results, are provided to families and specialist healthcare providers (audiology, allied health and ENT providers).	Local workforce received competency-based training on ear and hearing health and its impacts on childhood development.
		Ear and hearing health results provided to families and carers.  Timely provision of patient information, including test results, to specialist healthcare providers.

	Barriers for children and families to attend specialist ENT clinics and surgery appointments are addressed by primary healthcare providers and community health clinics.	Patient failure to attend (FTA) rates at specialist ENT clinics and surgery appointments.
	Primary healthcare providers and community health clinics in remote locations receive copies of patient referrals to support patients attend specialist appointments, including travel arrangements.	Referral and discharge pathways established between primary health care provider/community health clinic and specialist healthcare providers.  Patient follow-up and recall processes established and implemented.
<b>2.3</b> Implementation of post-intervention guidelines by families and nominated primary healthcare providers.	Treatment and test results from specialist healthcare providers (audiology, allied health and ENT providers) are charted in patient file by nominated primary healthcare providers and community health clinics.	Referral and discharge pathways established between primary health care provider/community health clinic and specialist healthcare providers.
	Post-intervention follow-up completed at the appropriate time by nominated primary healthcare providers and community health clinics.	Compliance with treatment plans and/or discharge summaries from specialist healthcare providers.
		Patient follow-up and recall processes established and implemented.
		Case conferences with specialist healthcare providers.
	Primary healthcare providers and community health clinics support families to attend post-intervention reviews.	Patient failure to attend (FTA) rates at specialist ENT clinics and surgery appointments.

**ELEMENT THREE:** Children identified with ear problems, hearing loss and/or related difficulties in communication, play and learning have access to appropriate health and education support services.

Expected result	Services provided	Performance management and monitoring
<b>3.1</b> All staff working in early childhood education and care (ECEC) settings and schools are engaging with relevant families and utilising referral pathways for further medical and allied healthcare.	Staff engage with families to discuss children in their care presenting with signs, symptoms and/or related impacts of middle ear disease and/or hearing loss.	Local workforce receive training to identify children with the signs and symptoms of hearing loss.
		Operational model and service plan details systems, processes and practices for liaising with local healthcare providers.
		Ear and hearing health information and resources are available and distributed to families and carers.
	Staff are utilising local services and referral pathways required to support children presenting with potential middle ear disease.	Local referral pathways established and documented between ECEC providers or schools and local healthcare providers.
		Local referral pathways established and documented between ECEC providers, schools and specialist allied health providers.
	Staff are utilising available services and referral pathways required to support children with hearing loss and related child developmental impacts.	Local allied health workforce receive training and/or professional development to enhance practice.



3.2 All children have access to timely allied health services that are evidence-based and culturally responsive.	Allied healthcare professionals engage with key community organisations and families to guide service planning, referral processes, service delivery and evaluation.	Scope and frequency of allied health services provided.
		Utilisation/access rates to allied health services.
		Local referral pathways established and documented.
	Hearing support and prescribed hearing devices are accessed and used to optimise participation for children with hearing loss.	Formal communication processes established and implemented with schools and families.
		Local referral pathways established and documented.
		Uptake of prescribed hearing devices (amplification).
		Waitlist time for children to receive prescribed hearing devices (amplification)
		Information about hearing support and prescribed hearing devices available and provided to families and carers.

**ELEMENT FOUR:** Play and language learning environments are positively designed to manage the impacts of hearing loss on child development and educational outcomes.

Expected result	Services provided	Performance management and monitoring
4.1 Early childhood education and care (ECEC) providers and education facilities provide supportive learning environments inclusive of hearing health, as per best practice guidelines, including formal and informal early years settings.	Whole-of-service approaches are implemented to embed hearing health promotion practices into routine operational day-to-day practices.	Hearing health promotion practices embedded into routine operational practices.
		Orientation, training and workforce development processes include hearing health promotion practices.
	Relevant environments for play and language learning are systematically evaluated to enhance child development and educational outcomes.	Classrooms have effective acoustic environments.
		Improvement goals established for acoustic and listening environments.
		Appropriate use of effective teaching strategies and practices for play and language learning.
		Structured opportunities for play and language learning occur regularly and consistently.



**ELEMENT FIVE:** Ear and hearing health promotion approaches are embedded into the service delivery model (policies and practices) of local community-based organisations.

Expected result	Services provided	Performance management and monitoring
<b>5.1</b> Community members and local community-based organisations have access to the knowledge, skills and resources required to reduce the rates of middle ear disease and manage the associated health and developmental impacts.	Key stakeholders and community-wide points of influence are provided with the necessary information to embed health promotion and education approaches into the delivery of local services.	Participation and involvement in community engagement processes.
		Community members have an understanding of middle ear disease, recurrence and its impacts on health, childhood development and educational outcomes.
<b>5.2</b> Social determinants of health are being addressed over short, medium and long-term.	Key stakeholders and community-wide points of influence undertake local actions to address the social determinants of health.	Evidence of families self-referring to local healthcare providers when children have ear and hearing health problems.
		Relevant community-level action plans or strategies include actions to address the social determinants of health.
		Evidence of local service providers embedding health promotion and prevention approaches into the design and delivery of services.



## Appendix 2: Social determinants model of ear and hearing health for Aboriginal and Torres Strait Islander children

The Children's Health Queensland's Deadly Ears Program has developed a social determinants model of ear and hearing health to explain the complex interrelationships between the social determinants of health and the modifiable risk factors for Aboriginal and Torres Strait Islander children.

Central to the model is the World Health Organisation (WHO) definition which explains the social determinants of health as the conditions in which people are born, grow, live, work and age. As outlined by the WHO '*...these circumstances are shaped by the distribution of money, power and resources at global, national and local levels. The social determinants of health are mostly responsible for health inequities—the unfair and avoidable differences in health status seen within and between countries.*'<sup>xv</sup>

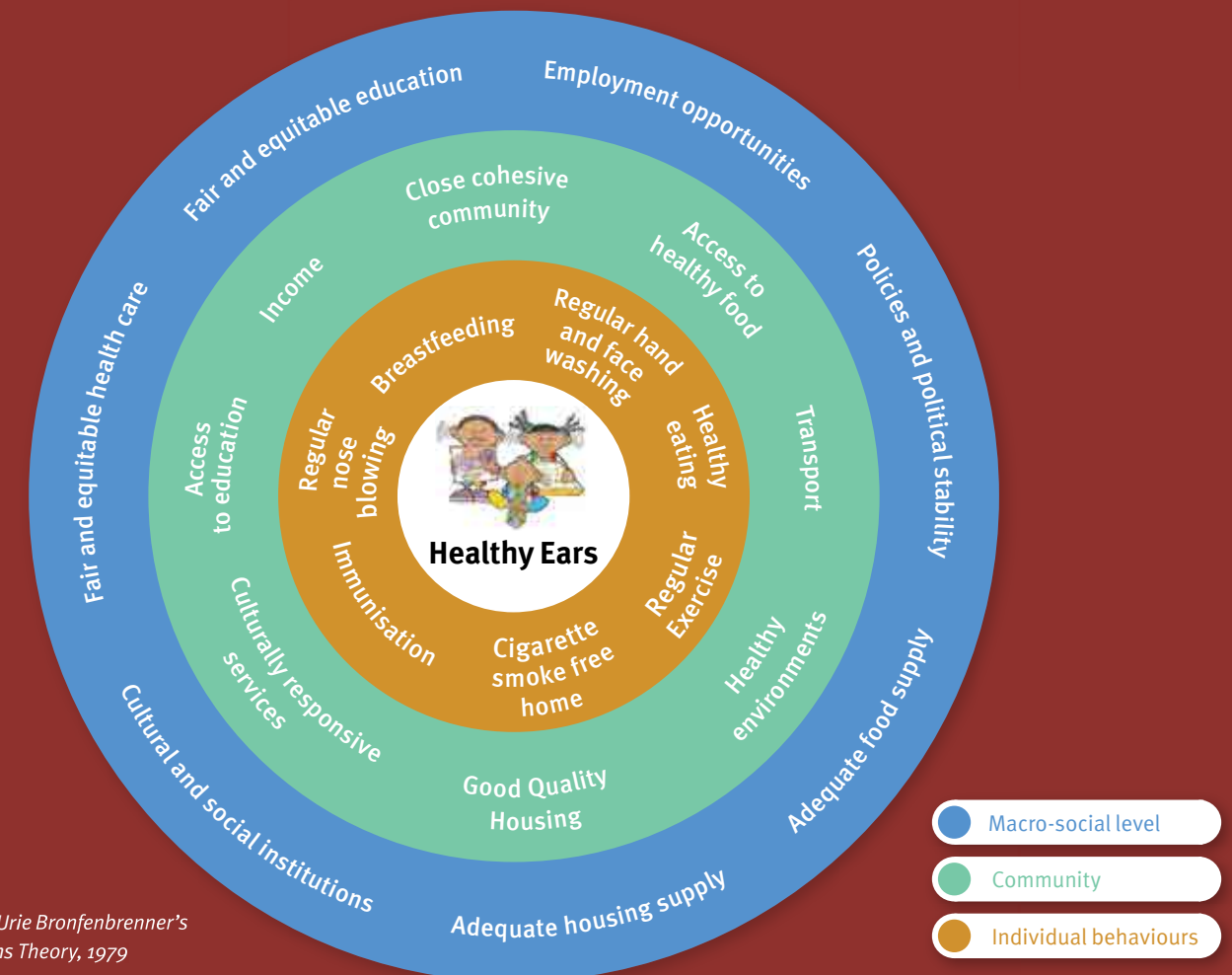
The model is utilised by the Deadly Ears Program team when working with stakeholders such as health care professionals, early childhood service

providers, schools and pre-service students, and is often used to answer the question '*... why do Aboriginal and Torres Strait Islander children experience middle ear disease more severely, persistently and frequently than non-Indigenous children?*'. The model attempts to explain the complex and interrelated nature of the various factors that influence child ear and hearing health at a macro, community and individual level. Critically, the model demonstrates the difficulty in isolating a distinct and sole cause for middle ear disease and shows that holistic approaches need to be adopted to promote and protect children's ear and hearing health.

### The model outlines:

- ✦ the many and varying protective factors required for a child to have healthy ears and good hearing;
- ✦ the socio-economic factors that indirectly and directly impact on a child and their ears and hearing; and
- ✦ the shared responsibility between individuals, families, communities, community-based organisations, private health services and local, state and federal governments to improve children's ear and hearing health.

## Deadly Ears social determinants model of ear and hearing health for Aboriginal and Torres Strait Islander children



As adapted from Urie Bronfenbrenner's Ecological Systems Theory, 1979

Level	Protective Factors	Relevance
<p><b>MACRO-SOCIAL:</b> Influences that are developed and led from a national and state perspective. These factors are typically driven by government priorities and are often the levers used to address the health needs of the population, improve equity and add quality to services and outcomes.</p>	Employment Opportunities	<p>These protective factors relate to an environment that is stable and provides the necessary foundations for a supportive environment. It is essential these top level factors exist as they have direct influence and feedback to the other levels and their environments. For example employment opportunities need to be available in order for income to be within the community and for individuals to be able to access healthy eating options.</p>
	Policies and Political Stability	
	Adequate Food Supply	
	Adequate Housing Supply	
	Cultural and Social Institutions	
	Fair and Equitable Health Care	
	Fair and Equitable Education	
<p><b>COMMUNITY:</b> Factors surrounding the individual in their immediate natural and built environment. These factors are not in the individual's control to influence but access to these services and resources are paramount for these protective factors to be effective and enable an individual's behaviour to be carried out.</p>	Transport	<p>Access to transport can be a significant barrier or enabler to an individual accessing a service. An individual's inability to access vital services (for example health and education) can contribute to poor health outcomes.</p>

Level	Protective Factors	Relevance
<p><b>COMMUNITY</b></p>	Culturally Responsive Services	<p>Culturally responsive services does not mean being responsive to Aboriginal and/or Torres Strait Islander culture explicitly (for example, Aboriginal and Torres Strait Islander community controlled health services or Aboriginal and Torres Strait Islander health workers) but conceptually indicates a service is inclusive, considerate and responsive to their client's needs.</p>
	Access to Education	<p>Education provides an essential foundation to an individual and community's ability to provide for self and others particularly through the development of literacy and numeracy skills. Evidence suggest that higher education attainment may provide a pathway to better individual and community health by creating opportunities for employment and increase in wealth.</p>
	Income	<p>Income is used as a measure of socio-economic status, with evidence linking poorer health outcomes for those at the lower level of the social gradient of health. Income impacts on an individual's ability to engage in health promoting behaviours such as healthy eating. There is also evidence to suggest that those engaged in meaningful employment have improved health due to the cognitive aspects of engaging in the labour force and contributing to the economic market of their community.</p>



Level	Protective Factors	Relevance
COMMUNITY	Close “cohesive” community	The formation of close “cohesive” communities is an outcome of social capital. Social capital and consequently “cohesive” communities are beneficial for an individual’s and community’s health largely due to the trust and reciprocity generated from relationships and networks.
	Access to Healthy Food	A diet that is healthy and balanced leads to improved overall health and enables an individual to fight infection and illnesses as well as to recover from episodes of ill health faster. A fundamental part of this process is having adequate access to healthy food (food security) and an ability to create healthy meals (food literacy).
	Healthy Environments	There is strong evidence indicating an associated risk between an environment that is ‘unhealthy’ and increased risk in infectious conditions and illnesses such as middle ear disease. A healthy environment includes adequate animal and waste management practices, tidy outdoor spaces, sanitation facilities and clean waterways.
	Good Quality Housing	Good quality housing is a fundamental requirement for health and includes having adequate water supplies, washing facilities, good sanitation and an appropriate number of people for that dwelling.

Level	Protective Factors	Relevance
INDIVIDUAL BEHAVIOURS: <i>Individual behaviours that are required to protect ears and promote good hearing. An individual has control over and the ability to directly influence these behaviours.</i>	Breast Feeding	Evidence shows breastfeeding strengthens a child’s immunity to disease and illness. It is encouraged that if a mother can breast feed as long as they can, this can reduce the risk of middle ear disease and other illnesses.
	Regular Hand and Face Washing	Middle ear disease is a disease caused by bacteria and viruses. Regular hand and face washing aids in the management of germs as it is a basic hygiene practice.
	Regular Nose Blowing	Middle ear disease is a disease caused by bacteria and viruses with nasal discharge carrying the germs that contribute to this. Evidence shows that nose blowing, especially if followed by hand and face washing, is a contributing behaviour to managing the spread of germs through active hygiene practices.
	Regular Exercise	Regular exercise or physical activity is a protective factor for general good health. Evidence shows individual’s that are regularly active have improved social and emotional wellbeing, improved general health, are able to recover from illness more quickly and can fight off infections better.

Level	Protective Factors	Relevance
INDIVIDUAL BEHAVIOURS	Cigarette Smoke Free Home	Cigarette smoke filled environments contribute to an unhealthy environment with evidence suggesting passive smoking (second hand smoking) is just as detrimental to a person's health as being a smoker. In regards to middle ear disease, cigarette smoke stimulates the mucosa build up in the middle ear.
	Immunisation	Immunisations, as per the immunisation schedule, equip children with the ability to develop their immunity against communicable diseases helping them to stay as healthy as possible. Immunisation in a person's early stages of life is a critical preventative health care strategy.
	Healthy Eating	Healthy eating is a protective factor for general good health. Evidence shows that if individual has a healthy diet they are able to fight infections better, recover from illness more quickly and have improved overall health. This behaviour is dependent on an individual's access to healthy foods (food security) and their ability to make healthy meals (food literacy).





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For further information about the Deadly Ears Program, please visit the website [[https://www.health.qld.gov.au/deadly\\_ears/](https://www.health.qld.gov.au/deadly_ears/)], the Deadly Ears Facebook page [[www.fb.com/DeadlyEars](http://www.fb.com/DeadlyEars)] or contact:

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<sup>iv</sup> Children's Health Queensland Hospital and Health Service, Deadly Ears Program unpublished data.

<sup>v</sup> Australian Institute of Health and Welfare 2015. Hearing health outreach services to Aboriginal and Torres Strait Islander children and young people in the Northern Territory: 2012-13 to 2014-15. Cat. no. IHW 163. Canberra: AIHW.

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<sup>vii</sup> Australian Hearing, Demographic Details of young Australians aged less than 26 years with a hearing impairment who have been fitted with a hearing aid or cochlear implant at 31 December 2013, 2014.

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<sup>ix</sup> Australian Bureau of Statistics, Australian Aboriginal and Torres Strait Islander Health Survey (NATSIHS): First Results, Australia, 2013.

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