HEALTHY EARS FOR LIFE

Implementation of a WA Regional Earbus® Program

Pre-Budget Submission to the Australian Treasury – Budget 2022-23:
Changing Ear Health Outcomes for Aboriginal and At-Risk Children

earbus
foundation of WA

Hear Today, Shine Tomorrow

"***Prior to Earbus visits our team of staff struggled with the lack of support and knowledge for many families ... resulting in long term damage. I believe for us, located in the Pilbara, this service is a must for our children and the continuation of this program is essential for remote families.***" (Daycare Coordinator, Pilbara)

"***I was chatting with an Aboriginal student about her hopes for the future last week. She told me she would like to become an ear doctor. When I asked why she told me that she was inspired by the Earbus team. Now that's something awesome, don't you think?***" (School Principal, Goldfields)

"***On behalf of all members of the community I wish to acknowledge the importance of this service and certainly appreciate the assistance and professionalism by all members of the Earbus team. I firmly believe that the high attendance rate at the Earbus supports and represents the community's endorsement of the program.***" (School Principal)

This document is copyright and is not be reproduced in whole or part without the express permission of Earbus Foundation of Western Australia. For permission, email admin@earbus.org.au.
Earbus® is a registered trademark of Earbus Foundation of Western Australia.

TOPICS

THE FACTS

ABOUT EARBUS FOUNDATION

HEALTHY EARS FOR LIFE
Investing in a better future for Aboriginal children

“A MASSIVE PUBLIC HEALTH PROBLEM ...”
Cost Burden of Ear Disease - Annual Cost to WA Taxpayers

THE IMPACT OF OTITIS MEDIA
How ear disease eviscerates human potential

LOST GENERATIONS
How many children’s futures are at risk?

“THE MISSING PIECE OF THE JIGSAW ...”
Poverty’s Harvest – the Causes of Ear Disease in Aboriginal Communities

BREAKING THE CYCLE
Ear Disease and The Cycle of Poverty

A PLAN FOR CHANGE
A Program that Works – the Earbus Design Difference

MEASURABLE SUCCESS
Program Outcomes 2020

ACHIEVABLE CHANGE
16 Key Ear Health Program Performance Indicators that will be measured

STAGED IMPLEMENTATION PLAN
Service Delivery Timeline

INVESTING FOR CHANGE
Program Costings – operational and capital

REFERENCES

THE FACTS

There is a perception that Aboriginal and Torres Strait Islander people receive ample health funding. Likewise, there is an assumption that the public health system is addressing the complex issue of Indigenous ear health when, in reality, the problem persists with little measurable improvement - identifying the problem has largely relied on standardised child health screening that does not result in children getting well.

Otitis media is the main contributing factor to hearing loss among Aboriginal and Torres Strait Islander children, and it is both treatable and preventable. These children experience Otitis media and the resulting hearing loss much earlier, more persistently and more severely than the rest of the population. This profoundly affects their trajectory through childhood and into adulthood. It has well-documented, life-long impacts on educational participation and outcomes and psycho-social development, including speech development, that often lead to a range of adult social problems including un/underemployment and involvement with the criminal justice system.

The socio-political and behavioural (including exposure to tobacco smoke, diet, and exercise) determinants of health are especially significant for Aboriginal and Torres Strait Islander people. These include poor housing, food systems, education and employment, income and poverty and access to health care. In its broadest sense, poverty limits education and awareness of hearing health, and the capacity of families and communities to maintain healthy and hygienic environments that prevent ear disease. Social determinants such as poor nutrition, lack of running water, hygiene issues and exposure to tobacco smoke are all significant contributing factors to ear disease.

Health and housing agencies can work together to ensure that homes support healthy living, through increased housing stock, reliable access to functioning health hardware (eg toilets, showers, taps, kitchen cupboards and benches, stoves, ovens and fridges) and raising awareness of hygiene practices that support ear health. Health services also need to increase their focus on early identification, appropriate medical intervention in primary care and ongoing allied health support. In communities where there is a high risk of Otitis media and conductive hearing loss it should be standard practice to check the ear and hearing health of all young children whenever they present at clinics.

In the education sector, early years centres and kindergartens in high-risk communities can help identify hearing problems through surveillance and can provide additional support to children with a hearing impairment. Schools can play a similar role, orienting all teachers in accommodating the learning and communication needs of students with past and current hearing loss, providing specialist teaching support where necessary, and better listening environments through sound-field amplification systems and classroom acoustics.

Improved hearing health for Aboriginal and Torres Strait Islander people is intrinsically linked to broader improvements in health, education, and social and economic outcomes. The complex interaction of multiple risk factors means that action is needed across multiple sectors. This should be led by Aboriginal and Torres Strait Islander people themselves. Aboriginal and Torres Strait Islander people are significantly more likely to seek services from culturally safe health services. This in turn has implications for leadership, governance and workforce development.

OM is a highly treatable condition. Left undiagnosed and untreated it has multiple flow-on effects that ultimately perpetuate the very poverty that gives rise to the disease in the first place, thus continuing the cycle. But with effective treatment, children can avoid sustained hearing loss and have their opportunities to learn and succeed at school fully restored.

This submission proposes that the funding of a comprehensive and integrated middle ear disease screening, treatment and surveillance program in regional and remote Western Australia become a priority until such time as middle ear disease in Aboriginal and Torres Strait Islander children is measurably below the World Health Organisation benchmark of 4% in every community in Australia.

ABOUT EARBUS FOUNDATION

Earbus Foundation works to reduce the incidence of middle ear disease in Indigenous and at-risk children in Western Australia below the World Health Organisation benchmark of 4%. Disease prevalence above 4% is classified by the WHO as a “serious public health issue requiring immediate attention”.

Otitis media (middle ear disease or OM) occurs frequently in Indigenous babies – often within the first two weeks of life. Indigenous children suffer from Otitis media on average for 32 months of their first five years of life. In stark contrast, non-Indigenous children suffer, on average, for three months. It is always found where children live in conditions of poverty. The medium- and long-term impacts of childhood ear disease and hearing loss can be profound. It affects every aspect of early childhood development so that Aboriginal and Torres Strait Islander children are set up for disadvantage and underachievement.

Children learn to listen and speak before learning to read and write; hence literacy/numeracy failure (NAPLAN) when children do not develop adequate spoken language by 4 years of age. Otitis media prevalence rates mean Aboriginal children in primary school classrooms can’t hear what is going on – they can’t hear and can’t learn, which leads to poor engagement, low self-esteem and behaviour issues. Current and future generations of Indigenous children can succeed at school unhindered by the debilitating effects of Otitis media and its impacts upon their ability to learn and achieve to their full potential.

Earbus Foundation exists to support Indigenous and at-risk families and children. We work with families, communities and schools to deliver comprehensive culturally appropriate care, including referrals to tertiary treatment where required. While Earbus works exclusive in Western Australia it is clear this is a national issue, and one that must be addressed if there is to be significant progress towards Closing The Gap in a range of areas; including education, health, employment, life expectancy.

The Commonwealth Government’s Roadmap for Hearing Health, reviewed by the Council of Australian Governments (COAG) Health Council on Friday 8th of March 2019, ostensibly spearheads a coordinated effort to improve hearing health. The Roadmap identifies eight key priorities including a public awareness campaign; child ear health checks; increased availability of Australia’s sign language; improved aged care hearing services; and more support for people on low incomes. The Roadmap has a further 147 actions, highlighting the broad range of initiatives the Government and hearing sector can work together on. The actions outlined in the Roadmap should involve a wide range of stakeholders including consumer and community groups, suppliers and providers, manufacturers, and researchers.

What is missing are ambitious targets with clear deadlines, concrete plans, measurable outcomes and funding allocation to ensure those targets can be reached, and mechanisms to ensure that progress towards those targets is reported regularly. Long term goals without hard targets are merely a nice idea. Without clear and quantifiable short, medium and long-term targets – and practical measures to ensure those targets are achieved – no significant progress will be made nationwide towards reducing the incidence of middle ear disease in Indigenous and at-risk children to below the World Health Organisation benchmark of 4%. Our ultimate goal is to get the incidence rate to as close to parity as possible. At the very least, Indigenous children should have the same opportunity as other children to go through school and through life without the serious barrier of ear disease and hearing loss.

These children need people with a voice in Canberra to raise questions regarding the goals of the Roadmap for Hearing Health in regard to the ear health of Indigenous children and the reduction of Otitis media, in particular, the timeline of these goals and what practical measures (including funding and specific resource allocation) have been put in place by the Commonwealth to achieve these goals in the set timelines.

We believe NGOs like Earbus Foundation have much expertise – and passion - to contribute to meeting this national challenge. We greatly appreciate your time and attention in this matter.

HEALTHY EARS FOR LIFE

Investing in a better future for Aboriginal children

Aboriginal children have the worst ear health of any people in the world, with prevalence rates 10 times that of non-Indigenous children.[1] Ear disease often results in an avoidable hearing loss in early childhood, and children who can't hear, can't learn. Children unable to access education because of ear disease and hearing loss are denied their only realistic opportunity to escape settings of poverty, deprivation and entrenched disadvantage. HEALTHY EARS FOR LIFE invests in a better future that gives Aboriginal children the chance for lives consistent with their innate potential.

The goal is to reduce – and then maintain - the incidence and impact of chronic middle-ear disease in regional WA to below the World Health Organisation 4% prevalence benchmark, within 10 years. Currently in some remote communities 100% of children are affected.[2] In many schools over 75% of Aboriginal children cannot pass a routine hearing screen. [3]

The program will provide a professionally triaged treatment and surveillance service that visits schools, daycare centres, kindergartens, playgroups and community facilities. This proven model combines local on-the-ground screening, surveillance and follow-up supported by regular Allied Health, Primary Care and Ear Nose & Throat Specialist team visits from Perth.

A program allocation averaging $6.7 million a year is an investment in generational healing that can save the WA Budget multi-million dollars annually in treating the social impacts of ear disease. Earbus Foundation of WA will coordinate and/or deliver the full range of mobile surveillance and treatment services in a seamless treatment pathway for children at-risk of middle-ear disease. This includes Primary Care (GP or Nurse Practitioner and Nurse), Otolaryngology (ENT) and Audiology. Services to Aboriginal children and communities are planned and delivered based on mutually respectful and supportive partnerships with local Aboriginal Medical Services and local schools.

An expert and experienced paediatric Audiologist will lead the program to ensure rigorous quality control and regular monitoring of outcomes. A detailed reporting matrix tracks every child, every locality, every region and the State as a whole; data is aggregated for regular sharing with stakeholders. A highly sophisticated data analysis and management tool – EarPort – developed in partnership with Microsoft, provides KPI accountability, measures program effectiveness and allows clinical data management across the whole program. EarPort can provide trend analysis and direct allocation of resources and personnel to areas of greatest need.

Extensive prior consultation and planning will ensure the Earbus Program collaborates and shares information and ownership with existing local service providers while minimising duplication. Earbus Foundation of WA will add vital amenity to child health in the bush by increasing availability of GP, Audiology and ENT services in regional WA for quicker treatment of children. Based on current experience, Earbus Foundation expects a sustainable, marked, whole-of-region improvement is demonstrable and measurable within two years of commencement of services.

Within 3 years of starting HEALTHY EARS FOR LIFE, all regional areas of Western Australia - the Kimberley, Pilbara, Goldfields, Mid-West, South-West, Wheatbelt, Great Southern and Peel - will have an active Earbus Program. A staged implementation plan would be developed to prioritise neediest areas first.

Earbus Foundation can then work with agencies across the nation to address the issue in all states and territories.

"A MASSIVE PUBLIC HEALTH PROBLEM..."

Cost Burden of Ear Disease - Annual cost to WA Taxpayers

The World Health Organisation (WHO) specifies that a rate of chronic Otitis media above 4% in children constitutes a "*massive public health problem*" requiring urgent attention. (WHO / CIBA Foundation, 1996).

In February 2009, Access Economics released The Cost Burden of Otitis Media in Australia.[4]

Costs to the community of middle-ear disease (OM) included:

- Lost well-being due to OM (estimated to be between $1.05b and $2.6b a year);
- Productivity and other non-financial costs ($67m annually); and
- The total top-down health system expenditure on this disease in 2008 ($391.6m a year).

To estimate health system costs of middle-ear disease, Access Economics used top-down and bottom-up modelling approaches. Bottom-up costs were $163.2m a year; top-down costs were $391.6m. The true cost to the health system lies somewhere between the two.

Adjusting for a notional annualised inflation rate of 2% p.a. and attributing a 10% share of national costings to WA, the current projected costs of ear disease in Western Australia are:

- Total WA health system annual expenditure in 2022 using a mid-line estimate figure will be over $40 million a year;
- By 2027 this expenditure will be $48.25 million a year; and
- Annual productivity losses will be $9.7m in 2027.

Otitis media has other substantial costs to the WA community and economy that have not been independently modelled. Costs to WA state and independent education systems arise from children suffering educational and developmental delays, low levels of literacy and numeracy, school absences, behaviour issues and disengagement.

Costs summary to the justice system result from children being truant from school and entering the juvenile justice system. High rates of recidivism can lead to life-long entanglement in the justice system. The program would seek, where inter-agency cooperation is available, to establish of the presence or history of middle-ear disease among incarcerated Aboriginal juveniles and offer treatment support and intervention as needed.

Access Economics calculated the annual cost of Otitis media to the Australian community to be $1.5 billion a year. These costs include productivity losses, direct health system costs, transfer (including deadweight) costs and the need for additional education and support services. This estimate does not include a dollar cost for over-representation in the criminal and juvenile justice systems, thus rendering this a conservative assessment.

Adjusted for inflation the equivalent cost in 2022 is well over $1.98 billion per year. WA, with 10% of the nation's population, can expect a $180 million a year expenditure on Otitis media with the greatest burden of disease borne by Aboriginal children, families and communities.

THE IMPACT OF OTITIS MEDIA

How ear disease eviscerates human potential

*"... **hearing impairment is a significant contributor to the causal pathway that represents a failure basically of education and health to deal with those issues and they get picked up by the justice system ... hearing loss may not cause criminal activity, when considering the stigmatising effects of hearing impairment on self-concept, educational attainment and social skills, there is a causal link to criminal activity.**"* (Senate Committees on Community Affairs, 2010).

The 2010 Senate Inquiry "Hear Us: Inquiry into hearing health in Australia" recognised that OM-induced hearing loss could affect a child's life in many ways; poor educational outcomes (p.128), disengagement from education (p.129) and poor employment outcomes (p.121). OM leaves children unable to hear well or communicate effectively; sometimes results in poor balance and coordination; and leaves children with poor social and brain development.

Referring to the large-scale incidence of OM and related hearing impairments in Aboriginal and Torres Strait Islander Australians, the Senate inquiry found that: "Evidence … strongly suggests that its roots lie in poverty and disadvantage, that it impacts on education and employment outcomes and that it has a strong association with (Aboriginal and Torres Strait Islander Australians) engagement in the criminal justice system." [5]

Children with untreated Otitis media can show up to 2 years' delay in reading and communication skills (a high number of Aboriginal children need on-going educational support). Inability to successfully engage with education has significant flow-on effects. Long term poor ear health can impoverish life chances; Aboriginal children who fail at school grow up with less opportunity for employment, are more likely to be dependent on welfare and entrenched into a life of poverty. These children are essentially isolated from the world around them.

Aboriginal children in Australia experience an average of 32 months of middle-ear infections between the ages of 0 and 5 years, compared to just three months for non-Aboriginal children. (Australian Bureau of Statistics, 2008, p134). [6]

LOST GENERATIONS

How many children's futures are at risk?

"***There is a crisis in Aboriginal ear and hearing health in Australia. Aboriginal people suffer ear disease and hearing loss at up to ten times the rate of non-Aboriginal Australians, and arguably the highest rate of any people in the world.***" [8]

The Roadmap to Close the Gap for Hearing (H. Coates et al, 2013) identifies 106,000 children estimated to suffer chronic suppurative OM; over 300,000 Australians suffer hearing loss from middle-ear disease, with a high representation of Aboriginal adults and children.

In a May 2015 policy briefing paper the WA Commissioner for Young People states there are 36,000 Aboriginal children age 0-18 in Western Australia, representing 42% of the Aboriginal population of WA. About 60% of this number (21,600) lives outside the Perth metropolitan area. [9]

The WA Department of Health's Otitis Media Model of Care (January 2013) summarises the prevalence issues and challenges: "It is estimated that in 2008 almost 600,000 Australians were affected by mild to moderate temporary hearing impairment from AOM or OME, more than 150,000 had perforation of an ear drum and 100,000 had CSOM. In addition, an estimated 420 Australians were likely to suffer mastoiditis and 385 have intracranial complications as a result of AOM.

The World Health Organization considers Australian Aboriginal people as one of the population groups requiring urgent action to address CSOM as a significant public health problem. While there is no comprehensive surveillance of CSOM in Aboriginal communities, the prevalence has been estimated to be between 5 and 70% 9,11,5. Child health checks in the Northern Territory have found that CSOM persists into the late primary school years 12 and anecdotal reports suggest this is also the case in Western Australian Aboriginal communities.

There are anecdotal reports that a significant number of Aboriginal adults have long term dry perforations of one or both ear drums, most likely as a consequence of childhood CSOM.

While rates of CSOM in remote Aboriginal communities are unacceptably high, rates are also well above acceptable levels in rural and urban Aboriginal communities." (WA Department of Health's Otitis Media Model of Care (January 2013) p.11) [10]

The rate of middle ear infection among Indigenous Australians far exceeds the level that the WHO describes as 'a massive public health problem … which needs urgent attention'.

The root causes of such a high prevalence of Otitis media are the home environmental conditions associated with poverty – overcrowded housing, poor nutrition, poor sanitation and passive smoking. The consequences of early onset hearing loss can be devastating for Indigenous Australians. Their capacity to access education – arguably the best way out of the poverty cycle - is limited. [11]

Otitis media is a highly treatable condition. Left undiagnosed and untreated it has multiple flow-on effects that ultimately perpetuate the very poverty that gives rise to the disease in the first place, thus continuing the cycle. But with effective treatment, children can avoid sustained hearing loss and have their opportunities to learn and succeed at school fully restored.

"***Your service is invaluable. There are so many children and families out there that need support and intervention that sometimes it is soul destroying. You help to bring light. Thank you.***" (School Principal, Goldfields)

"THE MISSING PIECE OF THE JIGSAW..."

Poverty's Harvest – the Causes of Ear Disease in Aboriginal Communities

"***I believe that hearing loss is a missing piece of the puzzle of Indigenous disadvantage, and while it remains a missing piece of the puzzle viable solutions are not easy to come by***." (Dr Damien Howard) [12]

Recurrent middle ear infections, or Otitis media (OM), is the most common ear disease among Aboriginal children. It is typically caused by bacterial and viral pathogens. Research suggests that the viruses and bacteria were introduced from crowded European cities into the previously isolated Aboriginal communities, and that Aboriginal people had no immunity to the viruses. [13]

Ear disease is a complex and multi-factorial condition; secondary causes include:

- poor health care (e.g. poor hand and face hygiene; limited access to primary care);
- smoking;
- poor diet; and
- crowded and unhealthy housing which facilitates transmission of bacteria.

"A good cold can halve my hearing ability"

Living with hearing impairment

Celeste Liddle, an Arrernte Australian woman writing for the SMH and Guardian, and a National Indigenous Organiser, shares how her hearing impairment will affect her for the rest of her life:

"***When I was about seven years old, I was sent to speech therapy. Over a few months, I worked with a therapist to correct patterns of discussion and counteract a well-developed mumble which I had acquired. In the years that followed, many people remarked on my comparatively refined 'accent' and are usually shocked when I tell them how I acquired it. So why then, as a child, did I mumble? It was because, like many Aboriginal children, years of chronic ear disease had left me speaking how I heard the words being said to me.***

"While I had navigated the system educationally in these younger years so that somehow my writing and reading skills became quite advanced, I continually had issues grasping spoken instruction. This led to behavioural issues such as frustration and social withdrawal. I was beyond awkward and introverted. Speech therapy and the insertion of grommets was the beginning of what has been a lifetime of treatment for ear ailments. Even now, a good cold can halve my hearing ability for up to three weeks, tinnitus is a fact of life, and perforated ear drums are normal ...

"Despite the fact that I will have ear problems for life and indeed am facing restorative operations and severe hearing loss later on, I am forever thankful that my issues were picked up and that I was able to access appropriate treatment as a child. This treatment allowed me to catch up to my peers at school as well as develop mechanisms to cope with my limitations. My focus on writing as a key communication mode is indeed a huge part of learning to work with these limitations. The likelihood of me eventually finishing school and going on to university would have been severely diminished had these problems not been addressed." [14]

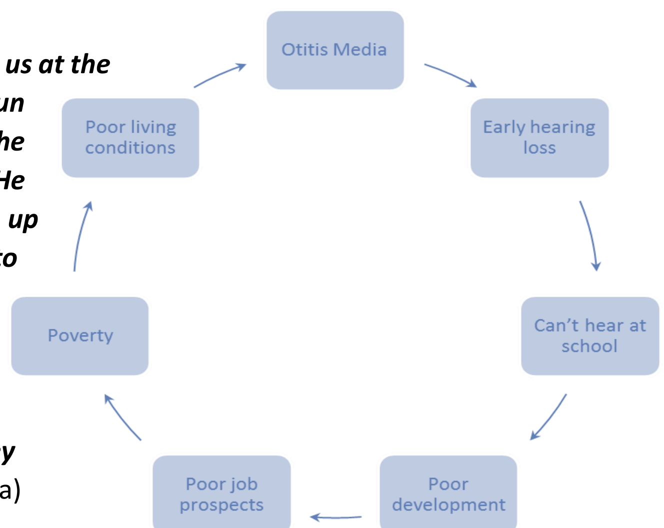
BREAKING THE CYCLE

Ear Disease and The Cycle of Poverty [15]

"Hearing loss ... has both enormous social and economic impacts, limiting the education, employment and social participation of what would otherwise be healthy people. Hearing loss...is part of the vicious circle of poverty and poor health that exists.

Unemployment is notably higher among people with hearing impairment, and their earnings are substantially lower than the non-hearing-impaired population. The social impacts of hearing loss are manifested through social isolation, psychological illnesses, depression, anxiety and economics. The health impact of ear disease is manifested through expenditures for hospitalization, disability associated with the complications of ear disease .... people with ear disease are frequently the poorest of the poor, geographically isolated from medical services, who cannot afford the costs for travel and accommodations when seeking care. On the other hand, the medical system frequently lacks resources for supplies and equipment such as basic microscopes; plus, physicians lack the training and skills to treat ear disease. And often enough, too, physicians lack the incentive to treat impoverished patients who are unable to pay for services. So suffering continues even among the wealth of pathology and the enormous need." [16]

"***J's grommet operation was in May. The Earbus staff met us at the hospital and even had Starlight Captains there to have fun with all the kids who were having operations. Since the operation J has started talking much faster than before. He is saying two or three words together now and keeping up with the other kids. He can even hear me when I sing out to him now, but before he didn't hear me. I am happy the Earbus mob still check on him every month. I have to keep his ears dry now that he has the grommets in, but that is much easier than having ear infections or being blocked up with fluid. J may have fallen way behind if they hadn't been there ...***" (Aboriginal Mum of 2 yr-old J, Pilbara)



A PLAN FOR CHANGE

A Program that Works - The Earbus Design Difference

Government struggles to support or encourage innovation in the social arena, contracts between government and delivery organizations stifle creativity and adaptation ... These were and still are huge problems. They mean that services for some of the most vulnerable in society are often bureaucratic, one size fits all solutions—despite this being a group that suffers the most difficulties, needs the most tailored solutions, and causes some of the highest costs to the state and therefore the taxpayer. They mean that innovative, holistic services are occasional pinpoints of light, rather than being universally accessible. They mean that we are providing an array of services to some of the most vulnerable in society without actually knowing if they work and without gathering the knowledge to improve them or know whether they should be provided in the future. [17]

Despite decades of investment through public health systems across Australia, ear disease in Aboriginal children remains at unacceptably high levels, well in excess of WHO benchmarks. The national experts from the Australian Collaboration on Hearing and Education (ACHE) meeting in Canberra in 2011 recognised Aboriginal ear disease as a "wicked problem". [18]

"Wicked policy problems are difficult to tackle effectively using the techniques traditionally used by the public sector. Traditional policy thinking suggests that the best way to work through a policy problem is to follow an orderly and linear process, working from problem to solution...The consensus in the literature, however, is that such a linear, traditional approach to policy formulation is an inadequate way to work with wicked policy problems. This is because part of the wickedness of an issue lies in the interactions between causal factors, conflicting policy objectives and disagreement over the appropriate solution. Linear thinking is inadequate to encompass such interactivity and uncertainty. The shortcomings of a linear approach are also due to the social complexity of wicked problems. The handling of wicked problems requires holistic rather than linear thinking. This is thinking capable of grasping the big picture, including the interrelationships between the full range of causal factors and policy objectives." [19]

Earbus Program design tackles ear disease holistically, closely aligning with traditional Aboriginal perspectives on health. The innovative WA Earbus model was designed by Aboriginal people for Aboriginal communities. The critical design elements that differentiate this intervention from previous linear approaches are:

DESIGN ELEMENT 1 - Seamless and Integrated Services
Services delivered at the same time in same location – Audiology, GP, ENT, AHW, Nurse and more. Clinicians work in inter-disciplinary mode. All Clinicians have immediate access to child clinical records. Treatment protocols are based on national OM Treatment Guidelines and the WA-specific Aboriginal Ear Health Manual authored by Professor Harvey Coates AM.

DESIGN ELEMENT 2 - Leak-free treatment pathway
As all services are provided on-site on same day there is NO loss to follow-up. Children access all services immediately – otoscopy, tympanometry, betadine wash, ear wax removal, GP/NP primary care, medication, ENT consult, foreign body removal. Dedicated case management for each child provides continuous clinical accountability.

DESIGN ELEMENT 3 - Surveillance, not "Screening
Ear disease is often asymptomatic, fluctuating by nature and has seasonal spikes in many parts of WA. This requires regular, systematic surveillance with fast clinical treatment response.

DESIGN ELEMENT 4 - Primary Health Care Focus
Earbus Program is designed to treat communities of Aboriginal children via a primary health care focus, not narrow specialisation on ears. This supports general wellness as a means of nurturing healthy ears, determined

by community need. Earbus skills up its consultant GPs and NPs by having them work as team members alongside ENT Surgeons, Nurses, Audiologists and Aboriginal Health Workers using recognised OM Guidelines. In turn, these Earbus GPs upskill local GPs and NPs to better manage ear disease and its particular presentations in Aboriginal children.

DESIGN ELEMENT 5 - Service Delivery via Schools
Many clinic-based visiting specialist services suffer from high DNA (did not attend) rates resulting in episodic engagement, breakdowns in treatment pathways and over-reliance on opportunistic screening. Schools have the longest on-going relationships with families and communities, often spanning 20 years or more per family. Schools are often the most functional, trusted and respected entity in regional and remote communities.

DESIGN ELEMENT 6 - Partnerships with AMS and Community
Aboriginal Medical Services are indispensable partners in assisting the Earbus model to be customised for local needs and culturally safe. Local Aboriginal Health Workers connect Earbus to local families and communities. Sharing of clinical data allows the local AMS to provide high-quality continuing care between Earbus visits.

DESIGN ELEMENT 7 - Regular and Consistent Follow-Up
Regular regional visits (often monthly but based on need) from a Specialist Clinical team of ENT, Audiology and GP/NP ensure continuity of high-quality care. Earbus tries to ensure children see same clinician wherever possible. Telehealth service options are incorporated as needed.

DESIGN ELEMENT 8 - Local Surgery provision
Surgical procedures – grommets, grafts and adenoidectomies – are performed at nearest local hospital with adequately equipped operating theatres and available staffing. Complex surgery cases referred to Perth only where no local option exists. Children in the surgical pathway are closely monitored so that family movement and transience is not a barrier to children accessing services.

DESIGN ELEMENT 9 - Cultural Safety and Respect
All Earbus staff undergo comprehensive cultural training with regular updates. By working in close partnership with AMS staff and Region Manager Indigenous Education, Earbus makes sure it aligns with local cultural practice.

DESIGN ELEMENT 10 - Continuous improvement
Multiple feedback mechanisms to reflect on clinical practice and Program delivery including Annual Clinical Roundtable, local Stakeholder Group meetings and direct reports from travelling consultant clinicians. Earbus Program is subject to comprehensively internal review twice a year.

DESIGN ELEMENT 11 - Localising the Template, Building Capacity
Each community has different strengths, people, resources, local services and needs. Earbus adjusts the delivery of services in every location to add value and build a sense of local ownership of the Earbus Program and enhance local capacity.

DESIGN ELEMENT 12 - Surgery List Management
All local resources are mobilised as needed to assist families and children attend pre- and post- op clinics and Surgery Lists in local Hospitals. The aim is for every listed child to attend every list, every time. Current attendance rate at Earbus surgery lists is over 92% across regional WA.

DESIGN ELEMENT 13 – Trust as the Key
Earbus focuses on building strong relationships of trust with Aboriginal children, families and communities as the basis for continuing engagement and involvement, collaboration and empowerment leading to genuine self-determination in health decision making.

MEASURABLE SUCCESS

Program Outcomes by Region 2020

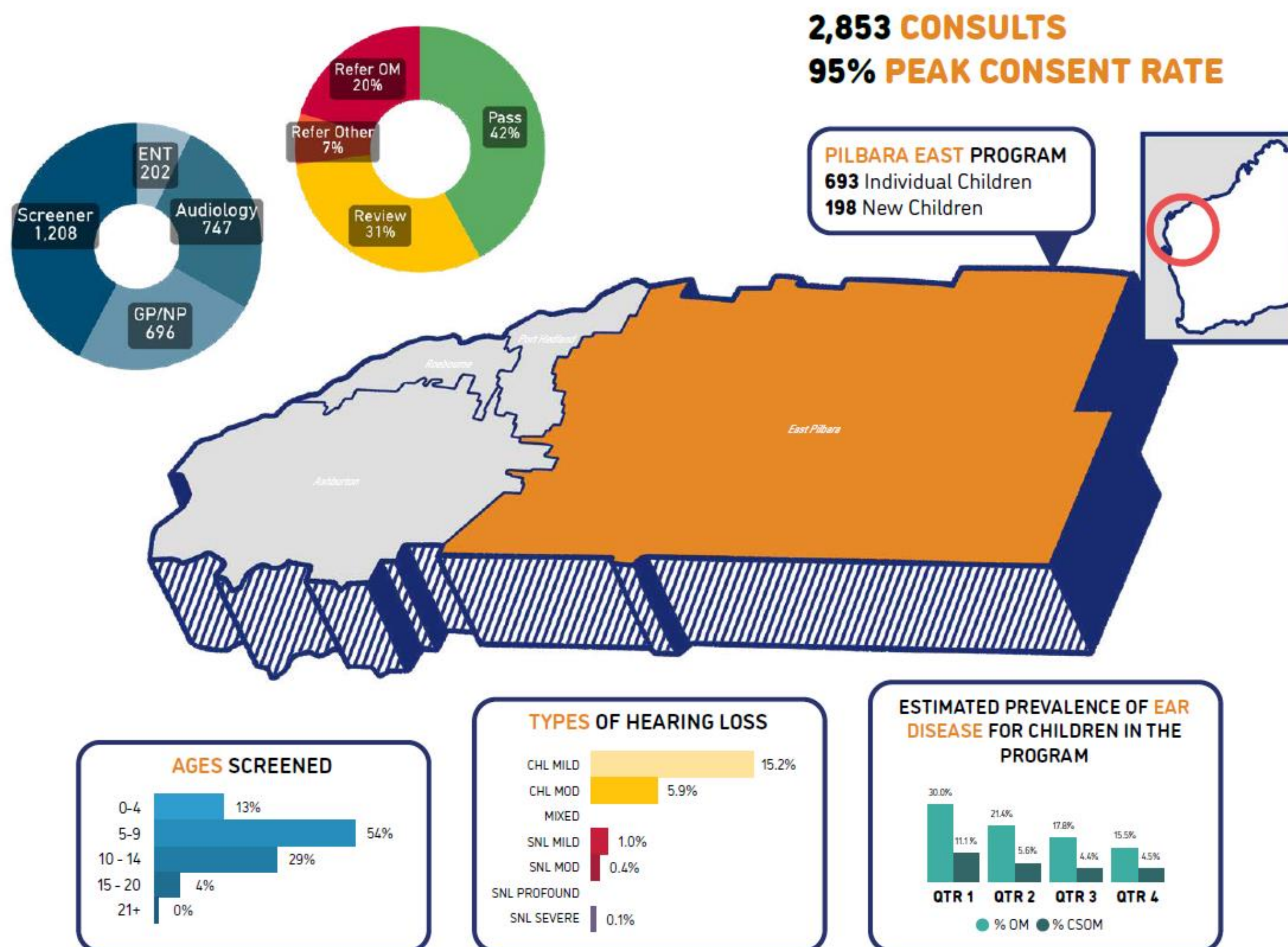
The following data is recorded and analysed on every Earbus visit:

- Tympanometry results data (objective middle ear measurement)
- Number of children in local community who should be offered a service
- Number of children with Otitis media and Chronic Suppurative Otitis media
- Rates, type and degree of Hearing Loss
- Number of children referred to Audiology, GP & ENT specialist
- Number of children with intact ear drums
- Rates of other medical conditions (e.g. scabies, impetigo etc.)
- Surgical attendance rates
- Type of surgery
- Consent rates (as a measure of engagement with families)

The focus on data means our program is continuously and constantly evaluated for effectiveness and quality.

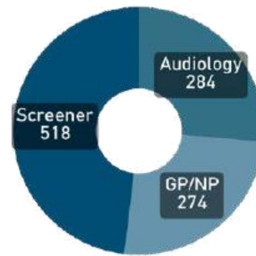
The data tracks significant improvements in prevalence of ear disease, hearing loss and chronic ear disease across our existing sites.

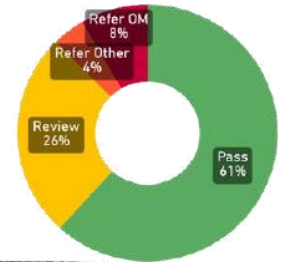
We are unaware of any other program with this same detailed focus and measurable documented outcomes.



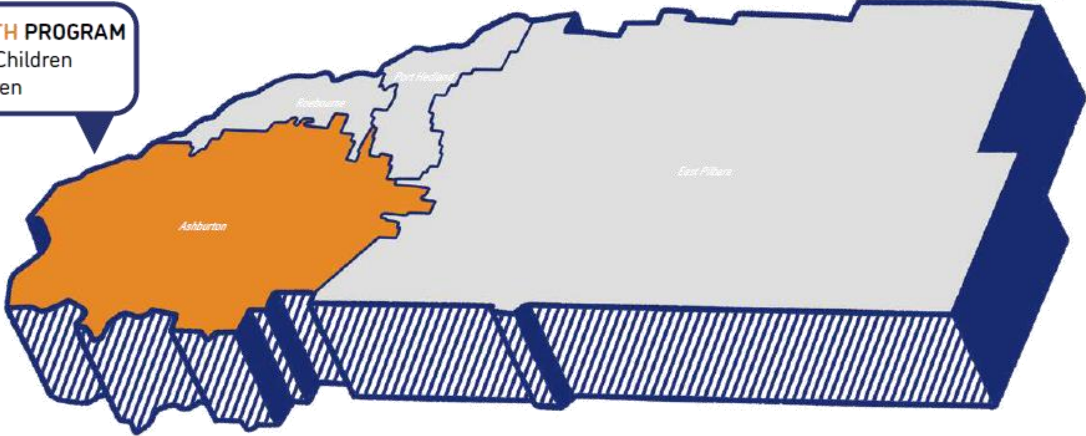
MEASURABLE SUCCESS

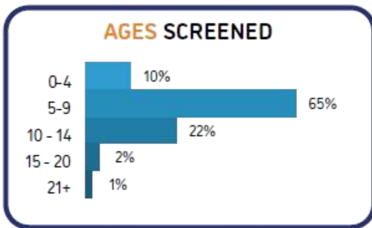
1,076 CONSULTS
66% PEAK CONSENT RATE

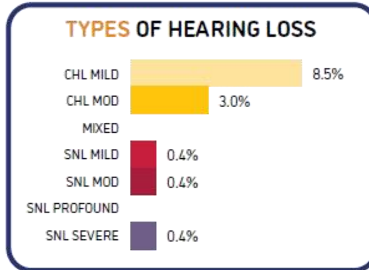


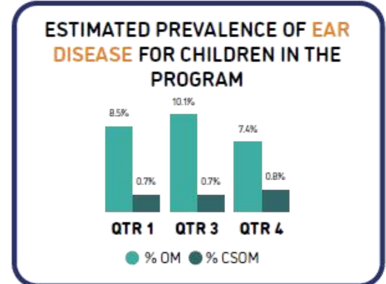


PILBARA SOUTH PROGRAM
234 Individual Children
232 New Children

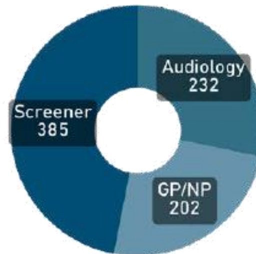


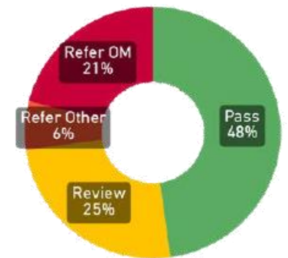




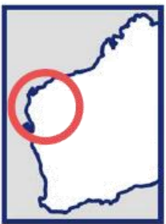


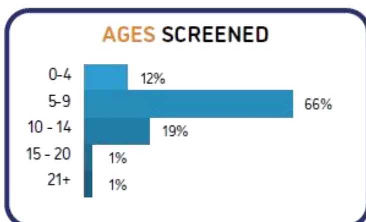
819 CONSULTS
36% PEAK CONSENT RATE

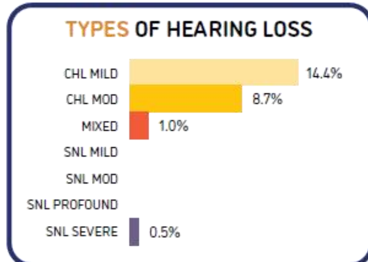


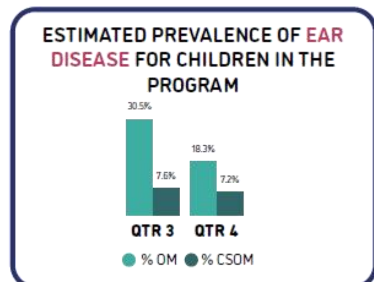


PILBARA CENTRAL PROGRAM
195 Individual Children
195 New Children





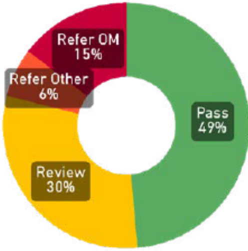


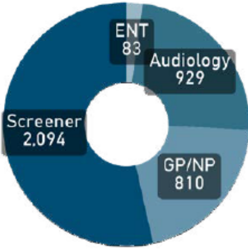


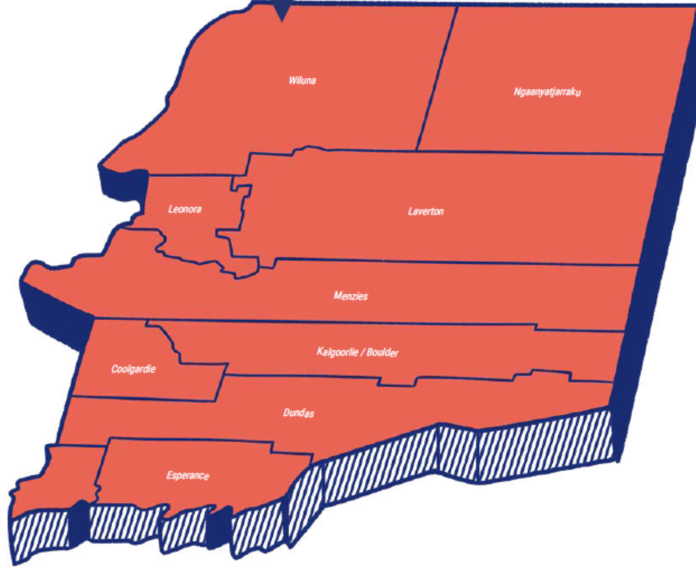
MEASURABLE SUCCESS

3,916 CONSULTS
88% PEAK CONSENT RATE

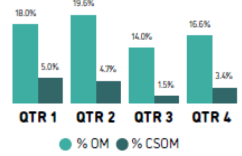
GOLDFIELDS PROGRAM
658 Individual Children
120 New Children



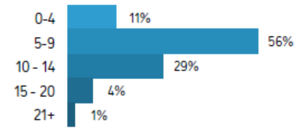




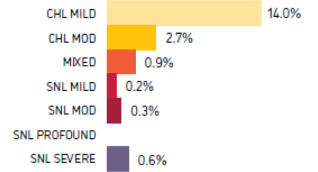
ESTIMATED PREVALENCE OF EAR DISEASE FOR CHILDREN IN THE PROGRAM

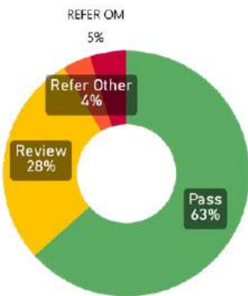


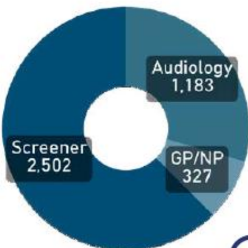
AGES SCREENED

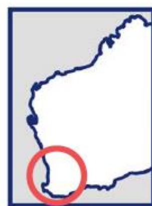


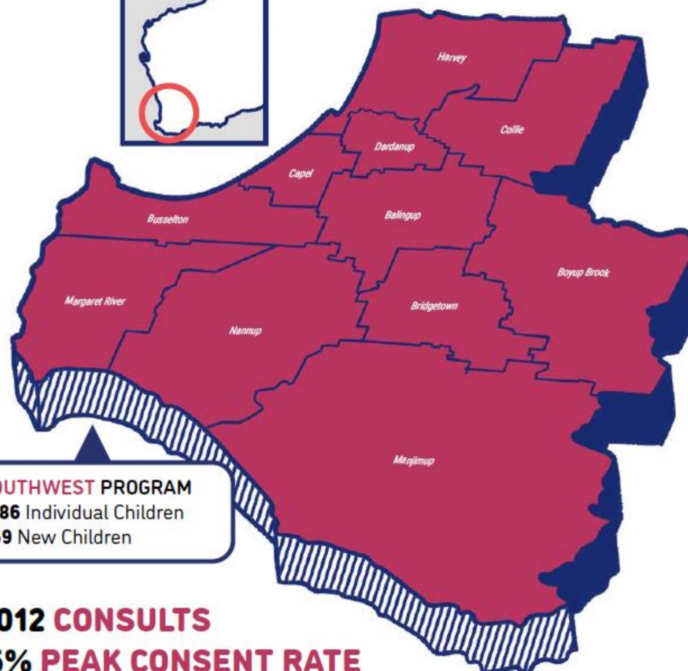
TYPES OF HEARING LOSS







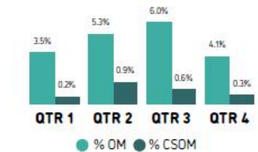




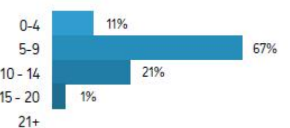
SOUTHWEST PROGRAM
1086 Individual Children
459 New Children

4,012 CONSULTS
85% PEAK CONSENT RATE

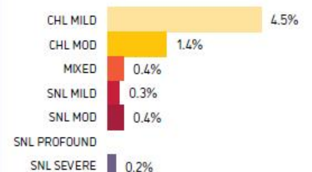
ESTIMATED PREVALENCE OF EAR DISEASE FOR CHILDREN IN THE PROGRAM



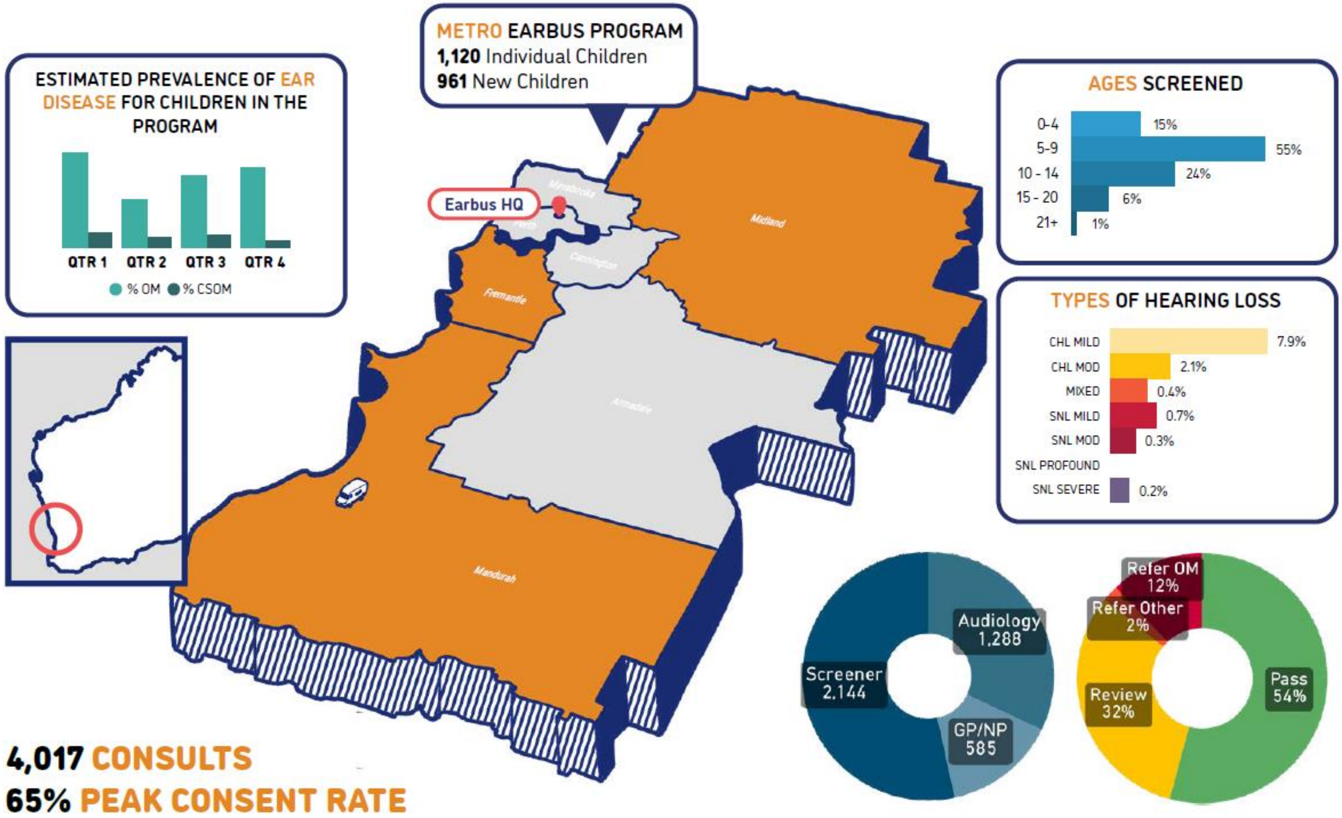
AGES SCREENED

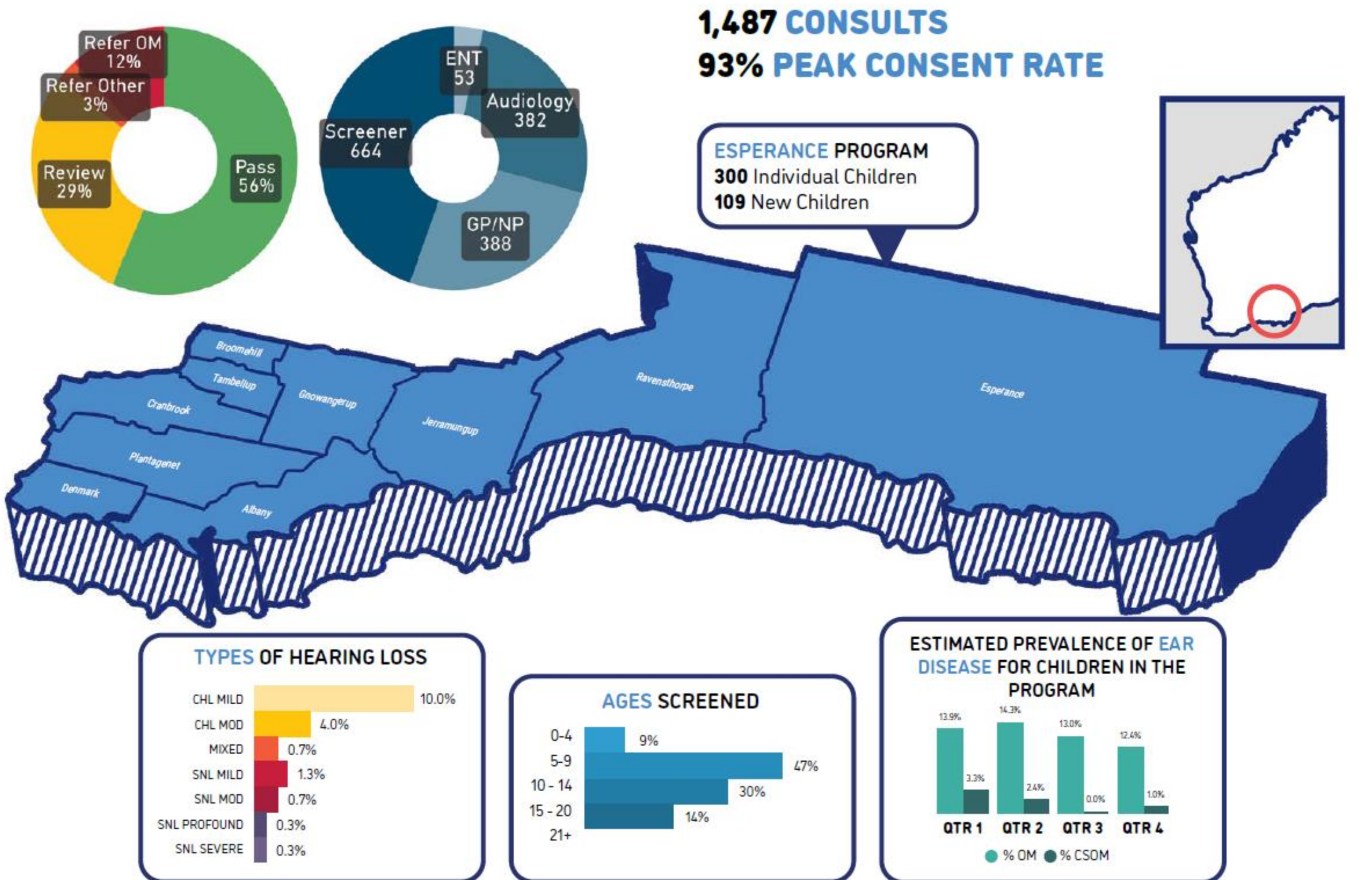


TYPES OF HEARING LOSS



MEASURABLE SUCCESS





ACHIEVABLE CHANGE

16 Key Ear Health Program Performance Indicators that will be measured

	KEY PERFORMANCE DATA	EXPLANATORY NOTES
	Activity/Output Data	
1	Number Of Aboriginal and At-Risk Children	Accurate tracking of how many Aboriginal children age 0-18 are in each community - reviewed regularly to maintain accuracy
2	Number of Consents	Informed written carer consent obtained once for duration of child's school attendance. Verbal consents noted and treated.
3	Consent Rate as a %	Aim for a Consent rate of no less than 80% within 3 months of program commencement in each location
4	Children screened and treated as raw number and %	Every consented child in every location seen at least twice a year. High priority (refer) children seen every visit, & Low priority (review) seen at least quarterly
	Outcomes Data	
5	Tympanometry PASS	Type A tympanogram with unremarkable Otoscopy results
6	Tympanometry REVIEW	Type As or AD or Type C tympanogram with no additional complications. Type C includes sub-types Cs and CD
7	Tympanometry REFER	Type B (High) and Type B (Low) tympanogram refer to GP/NP
8	Children with Chronic OM asa %	Active discharge in one or both ears Wet or Moist Perforated Tympanic Membrane Confirmed diagnosis of Chronic Suppurative OM by ENT Specialist
9	Children with Conductive Hearing Loss as a %	Assessed by Audiologist using Pure Tone Audiometry testing and bone conduction using recognised international industry thresholds
10	ENT Referrals	Number and % of children referred to ENT by primary care physician
11	Intact Ear Drum %	Total number of tympanic membranes (eardrums) not perforated
12	Non-Ear primary care treatments as a %	Percentage of children referred or self-referring for primary care consultation for non-ear related health issues
13	Surgery Listings	Percentage of children listed by a consulting ENT Specialist as requiring ear surgery
14	Surgery attendance	Percentage of children listed for hospital-based surgery who attended for surgery
15	Surgery Type - grommets, grafts etc	Tracking analysis of surgery types as a percentage of total surgery performed
16	Educational Data - longitudinal change	In line with holistic and integrated program commitment we will work with other agencies i.e. schools to capture relevant attendance, behaviour and educational achievement measures that are influenced by Ear Health program effectiveness

"***There were no visible signs but he (Aboriginal child) had the TV up really loud, I had to repeat things to him and he would talk really loudly. Now he is interacting more with people. He used to be quite withdrawn, but now he's a chatterbox. I am really grateful for your service to the community and I can only encourage other parents to use you and listen to your advice.***" (Aboriginal Grandfather and Health Worker)

SITE & REGION CLASSIFICATION USING CLINICAL DATA

Clinical outcomes data can be aggregated to give an indication of how each community is progressing in bringing ear disease under control. Earbus has developed a “traffic light” system of determining community need for resources, support and services. The classification model would be used once 50% of children have been seen and treated in any one location. Data on individual communities would be shared only with that local community. However, by aggregating data each region can be profiled and tracked to show changes in ear health outcomes.

CLASSIFICATION	**Clinical Data Parameter 1**	**Clinical Data Parameter 2**	**Clinical Data Parameter 3**
Criterion	**Chronic Otitis media**	**Referral to GP for OM**	**Avoidable Hearing Loss**
HOT SPOT (red)	10% or more have Wet eardrum perforation Discharging ear CSOM diagnosis	25% or more refer to GP based on Otoscopic observation or Type B (low) tympanometry	20% or more have an avoidable conductive hearing loss as measured by audiologist using PTA on at least 4 key frequencies
WORK-IN-PROGRESS (amber)	4% or more but less than 10% have Wet eardrum perforation Discharging ear CSOM diagnosis	Between 10 and 24% refer to GP based on Otoscopic observation or Type B (low) tympanometry	10- 19% have an avoidable conductive hearing loss as measured by audiologist using PTA on at least 4 key frequencies
UNDER CONTROL (green)	Less than 4% have Wet eardrum perforation Discharging ear CSOM diagnosis	Less than 10% refer to GP based on Otoscopic observation or Type B (low) tympanometry	Less than 10% have an avoidable conductive hearing loss as measured by audiologist using PTA on at least 4 key frequencies

REFERENCES

1. Senate Inquiry of the 42nd Australian Parliament – "Hear Us: Inquiry into Hearing Health in Australia" 2010 p.xv.
2. Earbus Foundation Clinical data.
3. Earbus Foundation Clinical data.
4. Report by Access Economics Pty Ltd for Glaxo Smith Kline, The Cost Burden of Otitis Media in Australia, February 2009.
5. Senate Inquiry of the 42nd Australian Parliament – "Hear Us: Inquiry into Hearing Health in Australia" 2010
6. Australian Bureau of Statistics, 2008, p134.
7. http://www.aph.gov.au/senate/committee/clac_ctte/hearing_health/report/c08.htm#anc4
8. Senate Community Affairs References Committee, 2010, poxy.
9. https://www.ccyp.wa.gov.au/media/1319/policy-brief-wmf-education-and-aboriginal-children-and-young-people-may-2015.pdf, p.3.
10. WA Department of Health's Otitis Media Model of Care, January 2013 p.11.
11. Senate Inquiry of the 42nd Australian Parliament – "Hear Us: Inquiry into Hearing Health in Australia" 2010.
12. Senate Inquiry of the 42nd Australian Parliament, Committee Hansard, 16 Feb 2010, p. 100.
13. www.CreativeSpirits.info, Aboriginal culture - Health - Ear health and hearing loss.
14. www.CreativeSpirits.info, Aboriginal culture - Health - Ear health and hearing loss.
15. Developed in partnership with Nick Ingram Consulting.
16. Source: http://geoutreach.org/page6.
17. A. Dear et al: Social Impact Bonds: The Early Years, July 2016 p.12.
18. ACHE brought together experts from across Australia including ENTs, Audiologists, Educators, Speech Pathologists, NACCHO, Australian Hearing, Corporate representatives and private providers.
19. Australian Government; Australian Public Service Commission quoted at http://www.apsc.gov.au/publications-and-media/archive/publications-archive/tackling-wicked-problems.