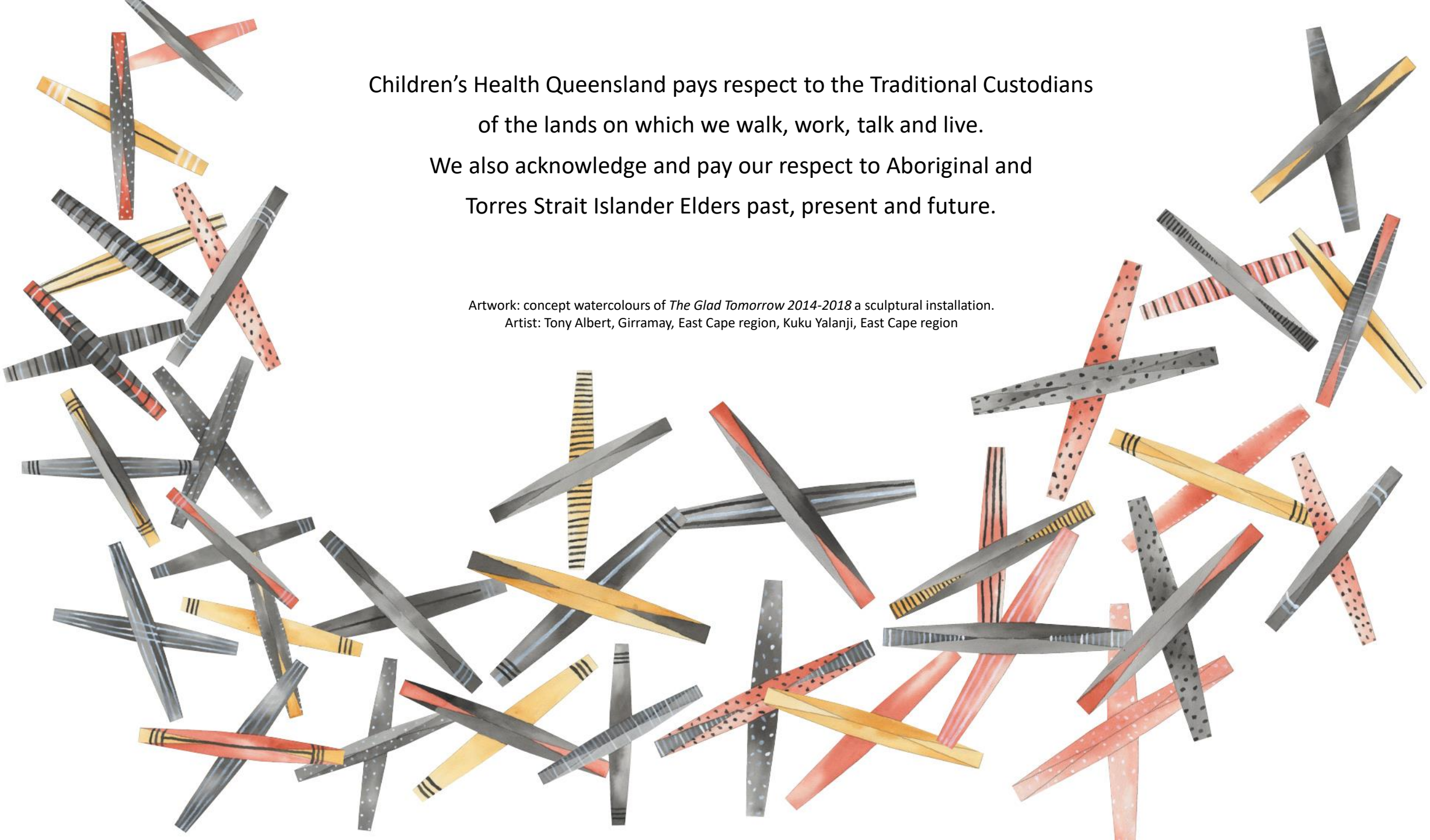
Detecting hearing loss during childhood: Exploring the benefits of a community partnership approach.

Mikaela Dammers, Healthy Hearing QLD

04 March 2023

Children’s Health Queensland pays respect to the Traditional Custodians of the lands on which we walk, work, talk and live.

We also acknowledge and pay our respect to Aboriginal and Torres Strait Islander Elders past, present and future.



Artwork: concept watercolours of *The Glad Tomorrow 2014-2018* a sculptural installation.
Artist: Tony Albert, Girramay, East Cape region, Kuku Yalanji, East Cape region

Community Hearing Screening Program

Objective:
To ensure equitable access to hearing screening services and timely detection (diagnosis & management) of hearing loss following the newborn hearing screening period

2017

Clinics commenced in community sites to reduce wait times for non-urgent referrals (partnership with Queensland Children's Hospital Audiology and Logan Hospital Audiology departments)

2020/2021

Partnership with the Department of Education commenced with offsite visits to 10 vulnerable schools

Community Hearing Screening Clinics

Targeted approach to hearing screening

- Hearing concerns
- Speech and language concerns
- Learning or behaviour concerns
- Require hearing test prior to block therapy

Community-based clinics with low barriers to access

- Self referrals accepted (almost 50% of referrals are self-referred)
- Free onsite parking

AHA delegated model under the supervision of a Senior Audiologist

Clinics in Logan Central, Inala, Deception Bay, Goodna and Hervey Bay Community Health Clinics

Partnership with the Department of Education (screening the most vulnerable students in vulnerable schools)

2-stage screening process with onward referral pathways

Exploring the partnership: Service impacts

Community Clinics

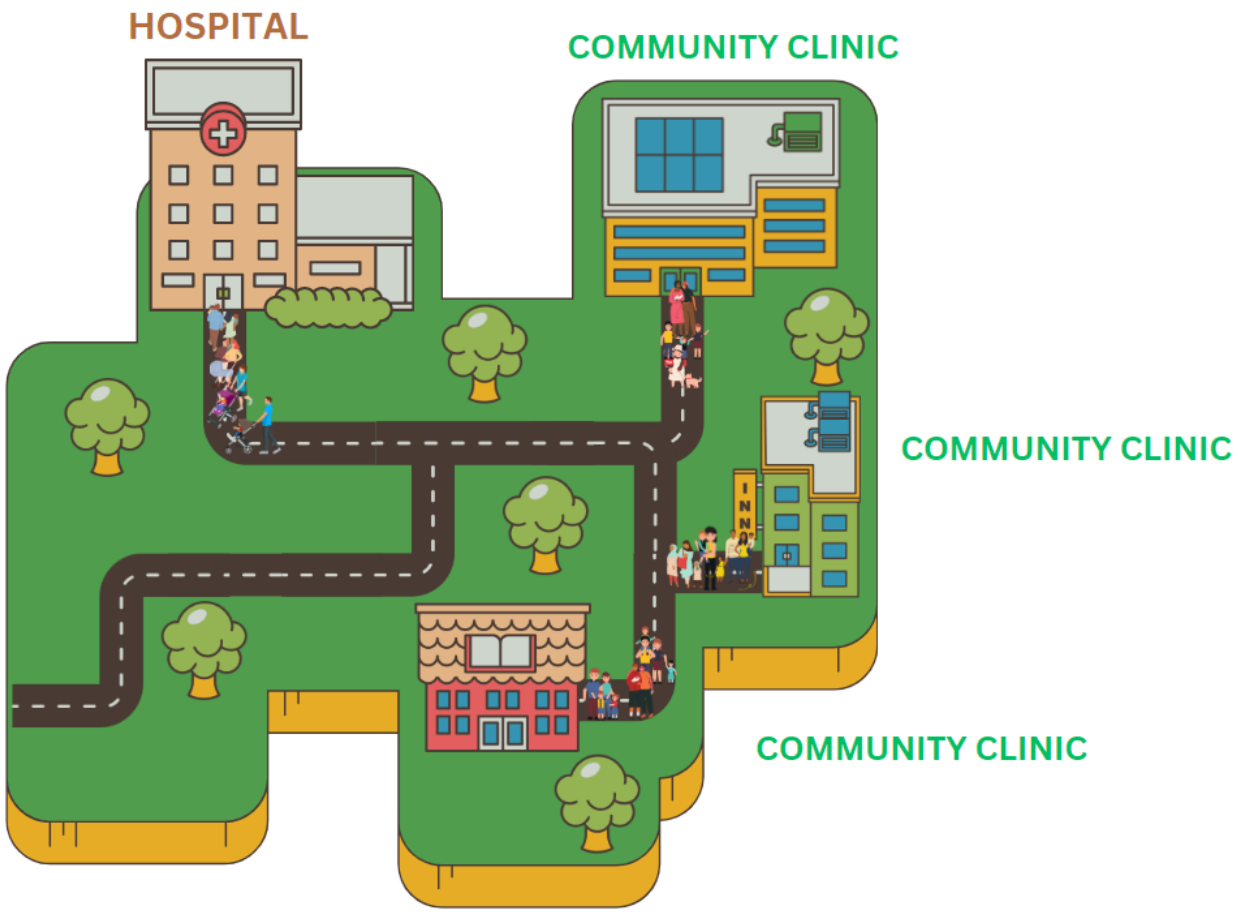
- Over 4000 children have completed their community hearing screening journey
- Demand increasing each year
  - 21 saw a total of 1085 appointments offered
  - 2022 saw a total of 1486 appointments offered
- Clearly defined onward referral pathways allow for timely diagnostic audiology services where required
- Discharge rates are high and remain largely stable over time
  - Attrition is low
- Partnerships with Paediatric Audiology Departments have reduced category 3 (non-urgent) wait times significantly
- Patient feedback is positive

Hearing Pathways: School visits

- Community Hearing Screening has partnered with the Department of Education to see more than 500 children.
- Preliminary data suggests up to 25% of the children seen via the school hearing clinics have not previously accessed the health system in any capacity.
- Initial partnership included 10 schools in Metro South and has now expanded to include:
  - 20 schools in greater Brisbane region (Metro North and Metro South combined)
  - 4 schools in Hervey Bay
  - 4 schools in Maryborough

Reducing wait times…..

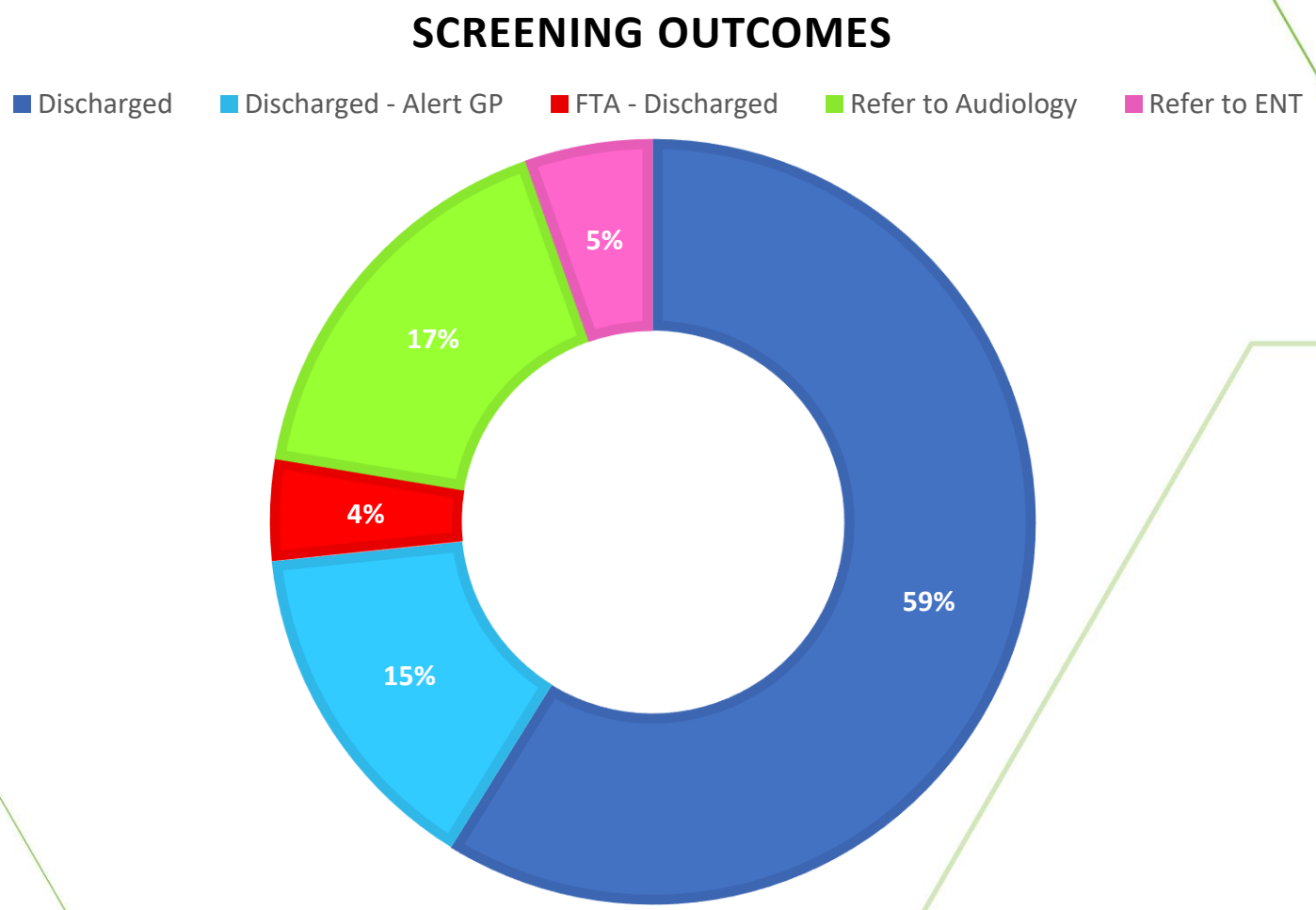
- Initial partnership with Queensland Children's Hospital and Logan Hospital audiology departments reduced category 3 (non-urgent) wait times from 12 months to 8-12 weeks.
- Recent partnership with Ipswich Hospital has reduced category 3 wait times from over 2 years to 8 months (appointments continue to be offered with further reduction in wait times expected).
- Non-urgent referrals seen with minimal wait time and allowing for timely intervention where required.



Community-Based Clinics: What have we discovered?

- **29 permanent hearing losses**
  - 3 have been referred to the QCH Cochlear Implant Program
- **Total discharge rate of 75%**
  - 65% were discharged following their first screening appointment
- **10% of children seen with First Nations heritage**
- **Age of diagnosis varied significantly from 2 years to 16 years**

Community Hearing Screening Program: What the statistics are suggesting?



Department of Education partnership: What we have discovered……

- **9 permanent hearing losses**
- **Approximately 25% of students have never accessed the health care system previously**
- **Approximately 30% of students seen via Hearing Pathways were First Nations students**
- **38% of students identified with hearing loss were not achieving a C standard in English**
- Partnership approach allows greater support for some of the most vulnerable students:
  - Facilitating attendance at diagnostic audiology and/or ENT appointments
  - Educators aware of hearing loss (Incl. temporary losses resulting from middle ear dysfunction), allowing for appropriate modifications and monitoring

Case study 1

Female aged 3 years – seen via Community Hearing Screening

Background…

- Referred by Mater Integrated Refugee Health Service
- Concerns with speech and hearing
- Arrived from Sudan in 2022

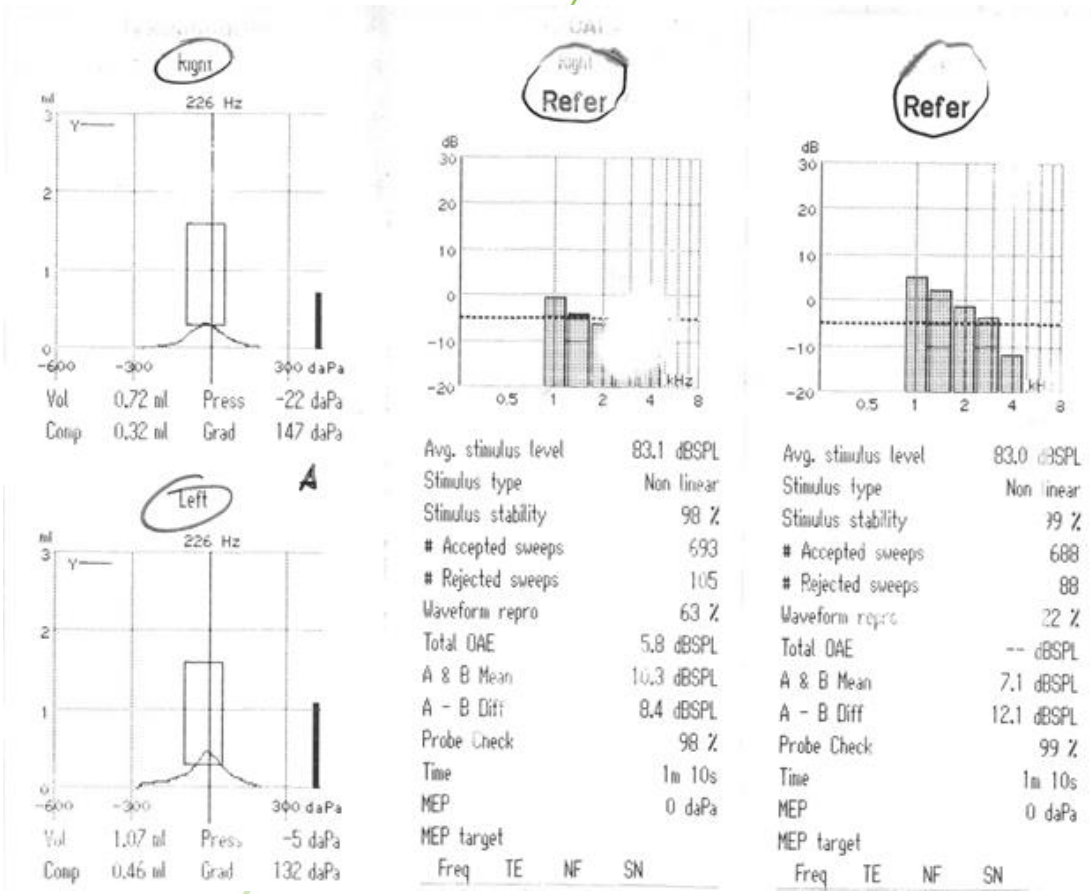
- Mum has been concerned with child's hearing since approximately 7 months of age
- Child trailed hearing aids in Sudan unsuccessfully
- Non-verbal (used hand gestures to communicate)

- Appointment offered within 3 weeks of receiving referral

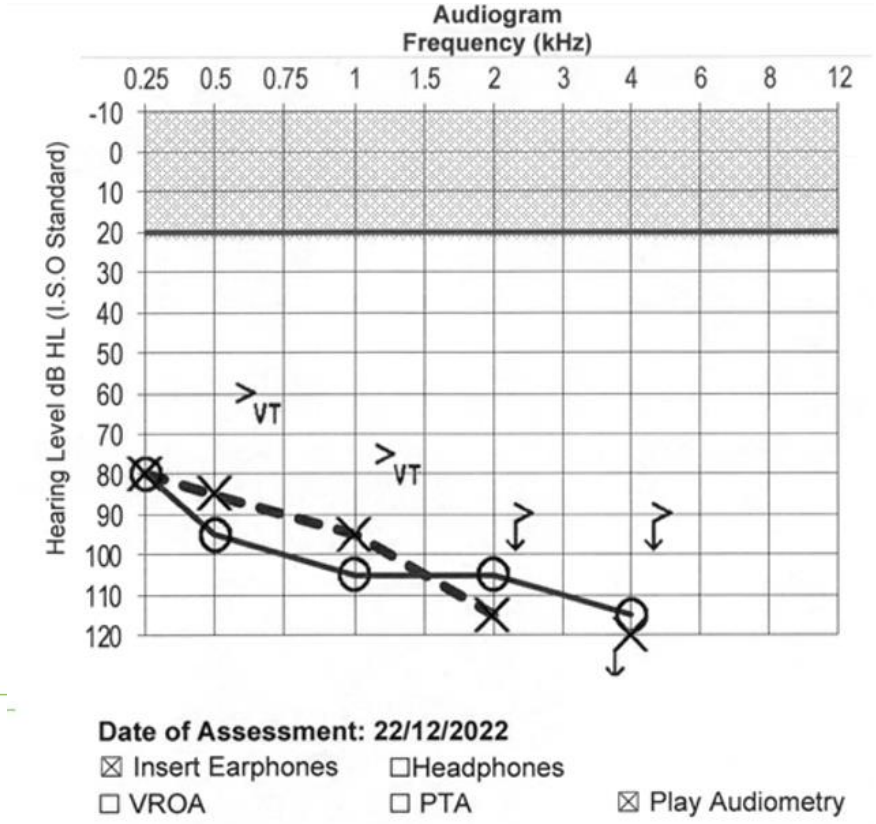
Community Hearing Screen 28/11/2022

- Child could not be conditioned for PTS (screening audiometer with AHA protocol to not exceed reasonable limits)
- Tympanometry: Bilateral pass (type A)
- TEOAEs: Bilateral refer

- Referred to QCH for a diagnostic audiology assessment (category 1)
- Urgent referral requested due to reported history and results obtained



Audiology QCH 22/12/2022



TYMPANOMETRY (226Hz)		
Ear	Right	Left
SC (ml)	0.3	0.3
MEP (daPa)	5	-15
ECV (ml)	0.7	0.9
Type	A	A

- Diagnosed with a severe to profound SNHL in both ears
- Referred to Hearing Australia
- ENT strongly recommended (referral received 24/01/2023)

- Hearing loss confirmed on 04/01/2023
- Referred to the HIP at QCH 25/01/2023
- Currently undergoing assessment for CIs

- Entire journey from referral to Community Hearing Screening to HIP referral less than 12 weeks

Case study 2

Male aged 7 years – seen via the Department of Education partnership

Version control: v01. DD/MM/YYYY

Background…….

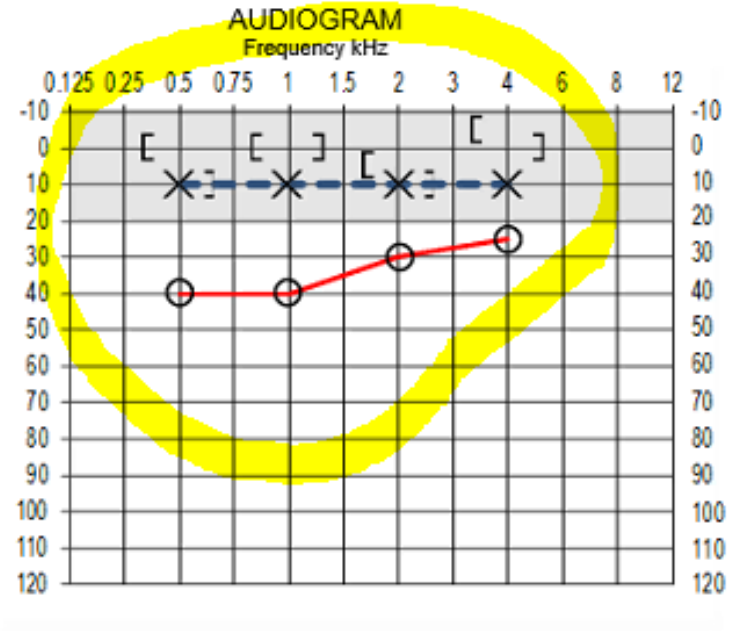
- Passed neonatal screening at birth
- Concerns with speech and language development
- Teachers concerned with hearing
- Failed Sound Scouts screening at school

- Seen as part of the Community Hearing Screening partnership with the Department of Education via school hearing clinic in October 2020 and April 2021

- ENT referral recommended however referral not received.
  - Reviewed in November 2021 to ensure child did not slip through the cracks.
  - Family encouraged/ supported to see GP for ENT referral

- Referral made in Jan 2022 – appointment in April 2022 not attended.
  - Collaboration with Queensland Health and Department of Education to facilitate attendance in July 2022

Diagnostic Audiology Results (July 2022)



Audiogram Key	Right	Binaural	Left
Air conduction (AC) unmasked	○		X
AC masked	●		⧗
Bone conduction (BC) unmasked	<		>
BC masked	[		]
Free field AC (loudspeaker) unaided		□	

Tympanometry 226 Hz		
	Right	Left
Ear Canal Volume (mL)	0.7	1.0
Static Compliance (mL)	-	0.5
Middle Ear Pressure (daPa)	-	-13
Type	*B*	*A*

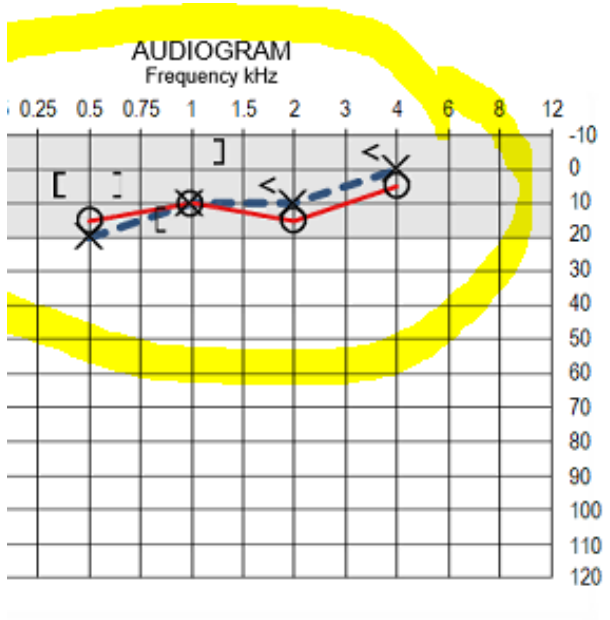
TEOAEs (SNR)							
Freq (kHz)	1	1.5	2	3	4	6	8
Right Ear	x	x	x	x	x	N/A	N/A
Left Ear	x	9.9	14.0	14.6	7.1	N/A	N/A

Acoustic Reflexes					
Probe	Stimulus	500	1000	2000	4000
RIGHT	Ipsi				
RIGHT	Contra				
LEFT	Ipsi				
LEFT	Contra				

ENT appointment (July 2022)

- Significant wax build-up noted in right ear
- Wax removed by ENT
- Audiogram following wax removal showed hearing within normal limits in both ears

- Mum supported by Hearing Pathways to attend appointment during school hours.



Audiogram Key	Right	Binaural	Left
Air conduction (AC) unmasked	○		X
AC masked	●		⧗
Bone conduction (BC) unmasked	<		>
BC masked	[		]
Free field AC (loudspeaker) unaided		□	

Tympanometry 226 Hz		
	Right	Left
Ear Canal Volume (mL)	0.8	0.8
Static Compliance (mL)	0.3	0.3
Middle Ear Pressure (daPa)	-29	-3
Type	A	A

TEOAEs (SNR)							
z)	1	1.5	2	3	4	6	8
r	9.6	15.8	15.6	7.8	6.6	NA	NA
	13.9	13.5	15.2	11.8	9.1	NA	NA

Acoustic Reflexes					
Probe	Stimulus	500	1000	2000	4000
RIGHT	Ipsi				
RIGHT	Contra				
LEFT	Ipsi				
LEFT	Contra				

Barriers for upscaling

- Accommodation
- Staffing (training & availability)
- Equipment
  - Cost
  - Maintenance – particularly in regional areas
- Onward referral pathways (diagnostic audiology & ENT)
- Qld: Geography & population spread
- Governance