Townsville University Hospital
Part 9 Health Service Investigation
Audiology Services

Submitted to the THHS HSCE by the Lead Investigator
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Contents

Abbreviations

ABR = Auditory Brainstem Response

AH = Allied Health

AudA –=Audiology Australia

CHQ= Children's Health Qld

CI = cochlear implant

C-level= comfort level

CL = current level

dB = Decibel

DHH = deaf or hard of hearing

DR = dynamic range

EI = Early Intervention

ENT = Ear, Nose, and Throat

HA= hearing aid

HH = Healthy Hearing

HHD = Healthy Hearing Director

HSI = Health Service Investigators

kHz = Kilohertz

MDT = Multidisciplinary team

NDIS = National Disability Insurance Scheme

PCHI = permanent childhood hearing impairment

QChild = Qld Health data base (see Terminology below)

QI – Quality Improvement

SGD = Service Group Director

SNHL = sensorineural hearing loss

THHS =Townsville Hospital and Health Service

TUH = Townsville University Hospital

T-level =threshold level

UNHS =Universal Newborn Hearing Screening

VROA = visual response orientation audiometry

Terminology

Audiology Terms	Definition
ACHIP	A prognostic tool that helps identify factors that may affect outcomes post cochlear implantation.
Aided thresholds	Aided thresholds are minimal hearing response levels measured in the sound field (presentation via a loudspeaker) obtained while a person is using their hearing device (cochlear implant or hearing aid). They are a guide to the softest sound that is perceptible with their technology.
ABR	Auditory Brainstem Response (ABR) testing is an objective measure of the auditory system's ability to transmit sound from the ears to the level of the brainstem. Hearing sensitivity is measured using electrodes placed on the head, which pick up neural activity in response to the presentation of sound via earphones. It allows estimation of hearing levels in individuals who are not able to provide responses to behavioural hearing tests, such as infants.
Categories of Auditory Performance (CAP) (revised 1998)	The categories of auditory performance is an eight-point scale that measures the ability to understand speech. The scale ranges from detection (1) to comprehending speech in noise (8). The scale enables comparison across cohorts that may be assessed with different test materials measuring speech understanding.
Collaborative Care	An integrated approach to clinical care, where a multidisciplinary team work with patients and families to achieve individual clinical goals. This model enables shared and informed decision making and interprofessional cooperation.
Cochlear Implant	A cochlear implant is a prosthetic device that stimulates the auditory nerve through electrodes placed in the cochlea of the inner ear, allowing some severely deaf people to perceive sounds. It is comprised of two parts, the internal component (receiver/ stimulator) that is surgically placed under the skin and an external sound processor which is worn on the head behind the ear. The sound processor requires programming in order to provide stimulation to the internal implant.
CI Programming (Mapping)	The process of establishing the parameters by which the sound processor operates. The aim of 'mapping' is to set a current level that relates to the minimal perception of sound or threshold of stimulation (T level) and a maximum allowable stimulation that is perceived as comfortably loud (C level). The aim of

	cochlear implant mapping is to provide audibility of a range of sound (often the range of speech) that is comfortable to a user.
Functional listening assessment	An assessment of how an individual uses their technology to perceive and use sound meaningfully. The assessment can entail the use of recorded or live voice speech materials (words and sentences), questionnaires (parental or individual), aided thresholds, and picture pointing activities.
Ling Sounds	Functional assessment of listening using 6 speech sounds /ah/oo/ee/sh/s/m/ that represent sounds across the speech frequency range. Usually presented live voice at one meter and at a distance. This assessment verifies access to sound that hearing aids and cochlear implants provide. Comparison of results overtime enable a clinician to monitor changes in performance, either improvements or regression.
Map	Settings stored in the sound processor that are defined by the electrical stimulation levels (T and C levels or M levels), speech coding strategy, stimulus rate, pulse width and maxima. These settings enable the 'mapping' of the acoustic environment onto the electrical range.
MDT	Multidisciplinary team: A team of professionals from different disciplines within health. Multidisciplinary teams are often used when providing care to patients with complex care. In this case, a multidisciplinary team formed part of the cochlear implant program and was comprised of an ENT specialist, audiologist, speech pathologist, social worker and psychologist.
NDIS	The National Disability Insurance Scheme (NDIS) is a scheme of the Australian government that enables individuals with an identified disability to access funding for costs relating to their disability. The aim of the NDIS is to assist participants to achieve their goals by funding therapeutic services, equipment, and assistance in daily activities. The aim of the NDIS is to ensure participants have choice and control of their supports. The scheme has a strong emphasis on early intervention.
Person/Patient and Family Centred Care	This is a collaborative approach to planning, delivery, and evaluation of clinical support and services. It promotes a mutually beneficial partnership among patients, families, and service providers. Each person is equally important in the relationship and respects the knowledge, skills, and experiences that each person brings.
QChild	A secure online system that provides access to clinical information for children and young people who are receiving care from Children's Health Queensland. This database is used by audiologists working in the state-wide Healthy Hearing

	program to store patient demographics, diagnostic audiology results, hearing diagnoses, management plans, and onward referrals for family support and early intervention. Children diagnosed with hearing loss can be tracked using the system. It is an expectation that all audiologists seeing infants and children under the Healthy Hearing program will input data in a timely manner into the database within 7 days of clinical care.
Speech in noise testing	Speech-in-noise testing is a speech perception assessment looking at one's ability to hear speech (usually sentences) in the presence of competing background noise. The level of the background noise can be increased or decreased to change the difficulty of the task.
TEOAE	Transient Evoked Otoacoustic Emission (TEOAE) testing is used to find out how well the cochlea works by measuring sounds (called otoacoustic emissions) that come from the inner ear (hair cells) in response to sound stimulation. In this case the stimulation used is a transient sound such as a click.
T Level	Threshold Level The lowest amount of current required to provide a perception of sound.
UNHS	CHQ HH program administer the Universal Newborn Hearing Screening Program in Queensland. All babies born in Qld have access to this hearing screen and it is performed in hospital setting soon after birth. Recognising that there is a time locked critical period for the development of listening and spoken language. Follow up for any baby who receives a double refer result is urgent and time frames have been set against international standards. CHQ HH have developed statewide policies and procedures for post screen diagnostic testing and targeted surveillance guidelines for 'at risk children' who require ongoing monitoring.
WBA Tympanometry	Wideband absorbance (WBA) tympanometry is a test used to assess the function of the middle ear system. Unlike standard tympanometry, WBA tympanometry measures the ability of the middle ear system to absorb sound across a broad range of frequencies. This emerging test procedure has the potential to help differentiate middle ear diseases.

Executive Summary

In December 2022 concerns were raised about potential issues with babies/children seen in the Townsville Hospital and Health Service (THHS) diagnostic service. These concerns related to 'unexpected outcomes' for some babies/children who had been seen in the clinic following referral from their newborn hearing screen and had been identified as having either normal hearing or a non-permanent hearing issue at this time. These children were subsequently found to have a permanent hearing loss at a later testing time point, constituting a 'unexpected outcome'.

Further investigation and follow up with Children's Health Qld Healthy Hearing (CHQ HH) confirmed a problem which suggested compromised audiological testing and management of some in this cohort. Five children were initially identified with adverse findings. Other concerns were also raised in relation to the audiology department's response to the findings of an external clinical review performed in 2020 by the CHQ HH of this service, which suggested non-compliance with some testing and governance protocols. A broader external review by CHQ was recommended and approved by the THHS Executive.

Around this time, THHS became aware of a report of adverse outcomes at the Women's and Children's Health Network in South Australia, related to the audiological care for children in their cochlear implant (CI) program. In view of this, the external audit was extended and included two groups. These groups were- babies who required follow-up after their newborn hearing screen (Group 1) and children who received CI programming (mapping) services (Group 2).

Group 1:

- 341 children were reviewed (birth years 2020-2023).
- 79 were referred for full review from risk matrix assessments (Appendix 1) and 59 required recall (20 urgent and 39 non-urgent).

Primary concerns were harm due to delayed diagnosis and access to early intervention, and poor clinical practice.

Group 2:

- 54 children with cochlear implants reviewed.
- 14 required urgent recall.

Primary concerns were harm due to reduced or minimal access to sound for some paediatric CI recipients due to programming anomalies and poor clinical management of this cohort.

Following the findings of the CHQ external investigation, the identification of resulting harm THHS commissioned an independent external Part 9 review. A team of Health Service Investigators (HSI) with

clinical audiology, cochlear implant, and clinical governance expertise, as well as a consumer representative were appointed by the Health Service Chief Executive to investigate and report on matters relating to Audiology and Cochlear Implant Mapping Services at THHS beyond those reviewed by CHQ and to consider and report on management, administration and the model of care specifically outlined in the Scope of the investigation (see section 4 of this report). This report addresses the matters requested in the Terms of Reference (TOR).

Throughout the interview process the HSI were impressed by the level of openness and willingness to participate in the investigation process from the THHS team and parents and patients. This transparency was essential for an effective review, our ability to make appropriate recommendations, to enable continuous improvement and ensure patient safety moving forward. The HSI team notes and thanks the support provided by the allocated Patient Safety Officer.

In conducting this investigation and compiling this report, the HSI team:

- were provided access to extensive documentation and information (detailed in the methodology section),
- reviewed 5 case types randomly selected from each of the test type domains across all audiology services (including some adults),
- interviewed 24 THHS staff, including staff from (departments) Audiology, Research, Human Resources (HR), Ear Nose and Throat (ENT), Patient Safety, Speech Pathology, and the THHS Executive Team,
- interviewed a sample of patients/families, some affected by the initial findings as well as consumers who had experience in the hearing loss process but with no issues identified in the CHQ review, and
- performed an Audiology department site visit.

Access to this wide array of information was critical in the review. The HSI team acknowledges that the causes of clinical incidents are often complex with many contributing factors rather than individual causes and effects. The HSI team incorporated elements of complexity theory[1] to facilitate this process and incorporate categories or themes of contributing factors. Throughout the investigation, a number of contributing factors/themes emerged:

- Evidence of non-compliance with usual standards of practice for some services.
- Organisational structure and line of reporting.
- Governance, conflict of interest, and supervision.
- Quality management and risk assessment processes.
- Responsibilities and accountabilities.
- Policies and procedures.
- Outcomes measurement and reporting.
- Team isolation and limited evidence of collaborative practice in some areas.
- Work environment.

- Consumer engagement.
- Prioritisation of research.

While contributing factors/themes emerged, in general terms the level of clinical care delivered by the audiology team was of an appropriate standard and the Audiology team should be recognised for their advocacy and hard work in bringing a diverse audiology practice to North Qld including highly specialised services for public patients that would otherwise be restricted to South East Qld.

However, some clinical care and oversight, in some specialist areas, were not aligned with the minimum standards expected (when viewed against the Audiology Australia National Competency Standards for Audiologists[2]), and inconsistent with some individuals' experience. These findings will be referred to the THHS in a confidential report in line with the principles of natural justice.

The work environment or clinical setup for some demographics is also of concern and impacting on quality and outcomes. The HSI found that this is especially for those children less than or equal to three years of age, for both CI and diagnostic services.

In addition, there were governance concerns that extended beyond the immediate audiology service impacting support for the clinicians and the safety nets and/or scaffolding, that may have identified the patient risk. Also contributing to this was the failure to fully enable and encourage collaborative care, both internally and externally, and team isolation. The investigation report will outline the findings of the review in response to the scope and emergent themes and will make recommendations.

The HSI team makes the following 25 recommendations with the context relating to each recommendation provided through the body of the report:

1. THHS review of the scope of services and model of care for the Audiology department and skills matrix of the audiology team with recognition of advanced practice for specialised areas and reducing the single practitioner point of accountability.

2. THHS to define roles and responsibilities within the multidisciplinary cochlear implant team, extending to external providers, ensuring parents have a platform for raising concerns or providing feedback.

3. THHS to explore collaborative models of care with other QLD services providing CI care to promote sustainability and shared learning.

4. THHS to explore partnership agreements or Memorandums of Understanding (MOUs) with external early intervention or speech pathology providers with clearly defined expectations around outcomes reporting and escalation of concerns aligned with the Queensland Minimum Standards of Practice for early intervention.

5. THHS to review workloads and clinical care ratios within the Audiology department.

6. THHS to ensure the Audiology team is adequately resourced and supported to manage the case reviews that are currently taking place.

7. THHS to review of department protocols, policies, work instructions, and report templates, including, Healthy Hearing and cochlear implant services and outcomes, to ensure alignment with current standards of clinical practice and statewide guidelines.

8. THHS to review the knowledge and understanding of risk management processes within the department.

9. THHS to ensure compliance with the Healthy Hearing Diagnostic Audiology Protocol and minimum requirements of peer review through the co-signing process.

10. THHS to review the individual practices that led to sub-optimal care provided, ensuring the principles of natural justice occur, and are in line with HRE processes.

11. THHS to review departmental opportunities for quality improvement/ efficiencies, including equipment maintenance, suitability and set up of test facilities (especially for those children 3 years and under), and clinic scheduling and waitlist management.

12. THHS to define and embed outcomes measures as a tool to guide the need for additional reviews and to perform risk assessments across the various clinical caseloads to enable focus on those areas most at risk.

13. THHS to review departmental and organisational structure to ensure a clear understanding of roles and accountabilities, including line management, professional supervision, and operational performance with consideration of alignment with the Allied Health division of THHS.

14. THHS to Review work level statements of the HP levels to ensure knowledge, skills, and expertise are aligned, met, and understood.

15. THHS to ensure a culture of collaborative practice and openness to shared learning for the audiology department with clear communication, peer-to-peer review, and regular support and supervision from a range of internal and external audiology providers. TUH audiologists are encouraged to participate widely in professional advisory and working groups, to reduce isolation and to ensure feedback from the working groups is clearly disseminated throughout the team with opportunity for participation at all levels, commensurate with the staff member's roles and responsibilities.

16. THHS to continue to provide an avenue for patients/parents with concerns to contact the hospital and request a review and be supported through the open disclosure process.

17. THHS to establish a culture that fosters continual quality improvement and safety through review of clinical incidents, consumer feedback, and audit and outcomes data to ensure patient and family-centered practice, resulting in an agile service that can meet changing needs.

18. THHS to review and define expectations for entry points and escalation of any department-related audits (internal or external) to ensure transparency and enable appropriate incident reporting and management.

19. This investigation has identified an opportunity for CHQ HH to revisit their review process, to identify and define expectations, responsibilities, and accountabilities for this process with diagnostic service providers. Also, to embed Quality Improvement (QI) processes, and to complete the QI cycle with these service providers. The HSI believe that this should include follow up with service providers to better ensure compliance and a high quality of care.

20. THHS to encourage Audiology to build a culture of QI as a foundation upon which to identify future research topics.

21. THHS to support Audiology to develop a research strategy or align research activity to enhance research capability throughout all levels of staffing.

22. THHS to enable Audiology to work with the Allied Health research team to explore research topics that support translation into practice relevant to the discipline of audiology

23. THHS to align audiology research activity and expectations with broader organisational strategies and recommendations.

24. THHS to understand current research audiology commitments and review staffing and equipment resources to ensure strategies are in place to complete existing obligations.

25. THHS to clearly define research versus clinical work allocations, aligning with departmental expectations and with consideration of capacity.

1. Introduction

The THHS covers a large and diverse geographical catchment, and the Townsville Universty Hospital (TUH) is the only tertiary hospital in North Qld. There is a high demand and need for audiology services and the Audiology team should be recognised for their advocacy and hard work in bringing a diverse audiology practice to Nth Qld including highly specialised services for public patients that would otherwise be restricted to South East Qld.

In doing so, they have also embraced telehealth and community screening models to improve access to hearing testing for all patients across the health service, including residents in rural and remote regions. The staff's creativity in resourcing the department through avenues other than public funding and the commitment to furthering the profession by leading research and education should be acknowledged.

While the intent of this range of service offering is commendable, the scope of services was diverse for a small team (including the introduction of some specialised or advanced practice paediatric and adult services). As the service offering grew and became more complex, planning and implementation did not fully address risk, specialised clinical skills required or available resources, which ultimately affected quality, safety and outcomes.

In June 2023, a Part 9 investigation was commissioned following a Children's Health Qld (CHQ) audit of audiological care delivered to two groups of children by the TUH audiology department. These groups were- babies who required diagnostic follow-up after a refer result on their newborn hearing screen and children who received CI programming (mapping) services.

Summary of Events/ Concern

In early December 2022, concerns related to the audiology department were raised with the THHS Surgical Services Service Group Director (SGD). These pertained to the 'unexpected outcomes' for some babies/children seen in the clinic who had initially been diagnosed in infancy as having normal hearing or a transient (conductive) hearing loss who were subsequently found to have permanent hearing loss at a later date.

At this time, the SGD became aware of a 2021 HH clinical review report (for a review conducted in 2020 assessing cases from 2018) which highlighted some concerns. The HH UNHS program is administered by CHQ and performs periodic clinical reviews (initially described as audits but changed to clinical review in 2020) of audiological services that provide the follow up diagnostic assessment for newborns who do not pass the hearing screen. Also, surveillance assessments for those children with risk factors that may lead to a hearing loss. A random sample of 10 cases were reviewed.

The findings of the clinical review were sent to the Director of Audiology (DOA) and the consultant paediatric audiologist (CPA) with a request to develop and submit an action plan including timelines to the statewide HH program. The 2020 clinical review raised areas of concern and indicated a need to improve audiology practice across several domains. Through the course of the current review, it was found that this report had not been escalated in full to the direct line manager or to the SGD/ TUH

executive by the DOA. The action plan sent to the Healthy Hearing Director (HHD) was not adequately implemented and there was no evidence of additional follow up from HH in relation to progress against this action plan.

The SGD requested to meet with the HHD and Clinical Auditor, and this occurred on the December 15th, 2022, to discuss the concerns. We understand that initial advice from the HHD to the SGD was that the pattern was not unusual, matched other cases across the program, and as there were no immediate safety concerns, and the program could continue without any immediate actions.

In February the SGD received further information about additional concerns regarding 'unexpected outcomes' and quality of service. Five clinical cases had now been identified by the 'unexpected outcomes' process of the CHQ HH program.

A follow up meeting was arranged between the SGD with the HH auditor and resulted in immediate action and recommendations that:

- a review of all infants who underwent diagnostic testing over the past 3 years commence to better understand the extent of the problem and that the CHQ HHD would develop a proposal for the audit.
- external third-party co-signing of Auditory Brainstem Response (ABR) traces for all audiologists providing the service was implemented.

Expert audiologists from CHQ conducted an external review with the aim to identify cases which are at risk of hearing loss and require audiology retesting due to compromised initial testing and management. 341 children were reviewed (birth years 2020-2023) using a risk matrix. Of these, 79 were referred for full review from risk matrix assessments and 59 required recall (20 urgent and 39 non-urgent). This process highlighted several children with adverse findings which could result in harm due to delayed diagnosis and access to early intervention.

On March 31st, 2023, in view of the issues and concerns arising from the CHQ external review, and those that had recently been raised about the cochlear implant program in South Australia, the SGD requested approval from the Chief Operating Officer (COO) and Health Services Chief Executive (HSCE) for an external review of paediatric CI cases by CHQ. This was approved and commenced on April 4th, 2023.

The primary concerns arising from the review of the CI program related to reduced or minimal access to sound for some paediatric CI recipients due to inadequate dynamic range or under setting/ mapping of the CI. This non-optimal access to sound over significant periods of time would provide insufficient hearing for the development of listening, speech, and language in those affected, resulting in developmental delays and may have led to poor device use, which was evident in a number of cases. In addition, some other programming or mapping parameters were not appropriate and were out of scope with usual practice. Also, verification of functional listening was inconsistent, not always age or stage appropriate with very few formal progress reports evident, nor follow up where poor device usage was indicated. These findings are out of compliance with the THHS post CI protocols[3] and usual standards of care.

At this time there were 54 children with cochlear implants reviewed and 14 required urgent recall.

In April 2023 a steering group was set up for daily meetings and led by the Executive Director Clinical Governance (EDCG). Patient notification and recall for review appointments and the open disclosure process commenced.

A Part 9 investigation was commissioned due to these findings. A panel with clinical, CI, and clinical governance expertise, and including a consumer advocate was assembled to review, consider and report on public sector audiology services delivered by the THHS. The review formally commenced on June 5th, 2023, and the final report was delivered on October 23rd, 2023.

This report is based on the information obtained by the HSI team during:

- Interviews involving staff at the TUH.
- Documents/ information provided by individual staff members to support interview discussion.
- Meetings with consumers (parents and adults).
- The outcomes of the CHQ external review and five case types were randomly selected from each of the test type domains across all audiology services (including some adults) and reviewed by the HSI team.
- Documents requested from TUH by the HSI team and outline in the methodology section.

Overall, themes emerged under the categories of governance/safety, clinical care, and collaboration/culture as provided in the below table.

Governance/ Safety
• THHS to continue to provide an avenue for patients/parents with concerns to contact the hospital and request a review and be supported through the open disclosure process. • THHS to define and embed outcomes measures as a tool to guide the need for additional reviews and to perform risk assessments across the various clinical caseloads to enable focus on those areas most at risk. • THHS to review departmental and organisational structure to ensure a clear understanding of roles and accountabilities, including line management, professional supervision, financial delegation, and operational performance with consideration of alignment with the Allied Health division of THHS. • THHS to review departmental opportunities for quality improvement/ efficiencies, including equipment maintenance, suitability and set up of test facilities (especially for those children 3 years and under) , and clinic scheduling and waitlist management. • This investigation has identified an opportunity for CHQ HH to revisit their review process, to identify and define expectations, responsibilities, and accountabilities for this process with diagnostic service providers. Also, to embed Quality Improvement (QI) processes, and to complete the QI cycle with these service providers. The HSI believe that this should include follow up with service providers to better ensure compliance and a high quality of care. • THHS to review departmental and organisational structure to ensure a clear understanding of roles and accountabilities, including line management, professional supervision, financial delegation, and operational performance with consideration of alignment with the Allied Health division of THHS.

- THHS to establish a culture that fosters continual quality improvement and safety through review of clinical incidents, consumer feedback, and audit and outcomes data to ensure patient and family-centered practice, resulting in an agile service that can meet changing needs.

- THHS to review the knowledge and understanding of risk management processes within the department.

- THHS to review the individual practices that led to sub-optimal care provided, ensuring the principles of natural justice occur, and are in line with HRE processes.

Clinical Care

- THHS to ensure the audiology team is adequately resourced and supported to manage the case reviews that are currently taking place.

- THHS to review the scope of services and models of care for the department including the skills matrix of the audiology team with recognition of advanced practice for specialised areas and reducing the opportunity for a single point of sensitivity.

- THHS to review workloads and clinical care ratios within the audiology department.

- THHS to define roles and responsibilities within the multidisciplinary cochlear implant team, extending to external providers, ensuring parents have a platform for raising concerns or providing feedback.

- THHS to review department protocols, policies, work instructions, and report templates, including, Healthy Hearing and cochlear implant services and outcomes, to ensure alignment with current standards of clinical practice and statewide guidelines.

Collaboration/ Culture

- THHS to explore collaborative models of care with other QLD services providing CI care to promote sustainability and shared learning.

- THHS to explore partnership agreements or Memorandums of Understanding (MOUs) with external early intervention or speech pathology providers with clearly defined expectations around outcomes reporting and escalation of concerns aligned with the Queensland Minimum Standards of Practice for early intervention.

- THHS to ensure a culture of collaborative practice and openness to shared learning for the audiology department with clear communication, peer-to-peer review, and regular support and supervision from a range of internal and external audiology providers. TUH audiologists are encouraged to participate widely in professional advisory and working groups, to reduce isolation and to ensure feedback from the working groups is clearly disseminated throughout the team with opportunity for participation at all levels, commensurate with the staff member's roles and responsibilies.

2. Terms of Reference and Scope

The purpose of this health service investigation is to investigate and report on matters relating to Audiology and Cochlear Implant Mapping Services at Townsville Hospital and Health Service (THHS).

The Health Service Investigators (HSIs) were provided with a review scope and asked to investigate, consider and report on the management, administration and delivery of public sector audiology services provided by the THHS, and in particular to review and assess:

(i) the model of care delivered by the health service against the standards expected of a public sector audiology service, including but not limited to audiology practice standards and other applicable and accepted standards of practice;

(ii) the standard of care provided to patients of the audiology department, including acceptance of referrals, wait-list management, clinical assessment and decision-making, diagnosis, treatment and follow-up, risk assessment, care delivered, and compliance with clinical practice protocols, work instructions, policies and procedures.

(iii) the audiology department's service model, clinical and corporate governance systems, including team composition and staff skill mix, the recruitment process for audiologists including position descriptions and skills/experience requirements, management and decision-making processes, and leadership and oversight of the department;

(iv) the clinical supervision framework within the audiology department and connections to the broader audiology profession, including training, supervision and competence of the audiologists, the professional learning culture within the unit, and participation in professional advisory and advocacy working groups, such as Queensland Health's Audiology Governance Group;

(v) the audiology department's quality management processes (including practice audits and reporting process), consumer engagement processes and patient safety culture, its ability to actively manage and escalate patient safety and quality risks and to respond in a timely and appropriate manner;

(vi) the state-wide audiology quality assurance program and engagement process with Townsville University Hospital relating to audit reports and findings.

(vii) the management of conflicts of interest within the audiology department, including the management of personal relationships and employment relationships outside Queensland Health / THHS; and

(viii) the degree to which research is undertaken within the audiology department, and whether a focus on research overrides the focus on service delivery.

3. Composition of Review/Investigation Team

The HSI team consisted of:

- Emma Rushbrooke, Audiologist Consultant, (Lead Investigator, Clinical Governance).
- Jacqueline Moon, Audiologist Consultant, (Chair Queensland Audiology Governance Group).
- Julie Decker, Audiologist Consultant, (Clinical Expert).
- Jennifer Eakin, Audiologist Consultant, (Clinical Expert).
- Amy Hawkes, Consumer Representative.

4. Methodology

Audits conducted against audiology best practice standards and risk assessment matrixes using the following methodology:

- Review of CHQ HH and Cochlear Implant audit findings noting this pertained to children only.
- Review of 5 case types randomly selected from each of the 12 test type domains across all audiology services over 5 years, 2018-2023, children and adults.

Test Type Domains	Description
ABR	Auditory Brainstem Response
BAL	Balance (vestibular testing)
CHC	Childhood Hearing Clinic
CI	Cochlear Implant
ENT	Ear Nose and Throat clinic
GEN	General diagnostics
HH/VROA	Healthy Hearing/ Visual Reinforced Orientation Audiometry
KIR	Kirwin Clinic
MAP	Mapping of CI
Ototoxicity	Assessment/ monitoring of those having ototoxic drug treatment
T/H	Telehealth diagnostics
T/H MAP	Mapping of CI - telehealth

- Review of THHS Patient Safety Reports and other THHS audiology audits/ clinical reviews
- Access to the Queensland Health iEMR system to review:
    - clinical notes.
    - correspondence.
    - audiology reports.
    - assessment data.

- allied health reports and correspondence e.g., speech pathologist, social worker, psychologist.
- medical notes.

Interviews

The HSI team undertook an extensive consultation process to gain insight into how and why these errors occurred. As the scope of this review was to investigate audiology services at THHS, the interviews involved THHS staff and consumers only and no external stakeholders. Interviews were either in-person or via Teams and participants were also encouraged to provide follow-up information or documentation.

Staff

Total number of THHS staff = 24.

Including staff from Audiology, Research, Human Resources (HR), Ear Nose and Throat (ENT), Patient Safety, Speech Pathology, and the THHS Executive Team.

Consumers

Number of families and adults interviewed = 13.

Category	Number of children/adults
Cochlear Implant	4 (5 scheduled but 1 did not respond)
ABR	5
General experience	2 children ABR 2 adults, 1 testing and 1 CI

The group included:

- Consumers CI mapping issues.
- Consumers with early hearing screen issues.
- Consumers with reasonable amount of experience in the hearing loss process but with no issues identified in the review.

Additional Documents Requested and Reviewed

In addition to those documents reviewed in the iEMR system, the HSI team were provided access to extensive documentation and information to address the scope of the investigation. This included:

- The external review process and findings from the CHQ external review of HH diagnostics and cochlear implant services.
- THHS Patient Safety Reports and other THHS audiology audits.
- Five case types randomly selected from each of the test type domains across all audiology services (including some adults).
- Information related to service delivery (such as testing protocols), operations, and staff within the program, governance frameworks.

- Documents pertaining to research within the audiology department.
- List of audiology staff and role descriptions.
- Audiology reporting lines.
- Recruitment documents.
- Training and competence records.
- PADs (Performance Appraisal and Development) reports.
- Allied Health Clinical Governance framework.
- Organisation chart that includes audiology and its reporting structure.
- SSG Governance meeting structure and relevant agendas and minutes.
- Audiology department meetings/agendas and minutes.
- Riskman reports related to audiology.
- Copies of patient experience/ QI reports.
- THHS Clinical Incident Management procedure.
- THHS Committee structure.
- Executive Clinical Governance Committee TORs and agenda.
- Email correspondence across many areas (e.g. related to incident, review process, HH clinical review report).
- Current department site development plans.

5. Background and Context

This section will provide an overview of hearing loss and interventions in addition to information about the THHS audiology program and services to give context.

Hearing and Hearing Loss

Hearing can be defined as the transduction of sound (mechanical energy) into neural impulses and the interpretation of those impulses by auditory brain centres[4], and hearing loss can be defined as a reduced ability to hear, ranging from a mild to profound hearing loss.

Studies of the worldwide prevalence of significant bilateral permanent childhood hearing impairment (PCHI) show that the rate of PCHI varies greatly from 1-6 per 1000 births. Significant PCHI is usually defined as moderate to profound (>40dB in both ears)[5,6]. One to two in every thousand children born in Australia have a significant and permanent hearing loss. This number includes both bilateral PCHI and moderate to profound unilateral PCHI, which occurs at a rate of 0.6 per 1000 births [7,8]. The prevalence of PCHI increases during childhood and by the age of school entry, this number has almost doubled[7,8,9].

Hearing loss is more prevalent in adults because of aging, exposure to loud noise, untreated ear disease, some medications, and progressive hearing loss due to genetics. Fifty percent of 60-year-olds have some degree of hearing loss and this increases to 80% for those aged 80 years and over[10].

Impact of Hearing Loss

Our hearing sense allows us to listen, understand speech, communicate and interpret sounds in the environment. It is essential for the development of spoken language, cognitive skills, social and emotional development. Hearing loss can impact all of these areas of development as well as literacy, academic and educational outcomes, work opportunities, and self esteem[12].

However, with early diagnosis, fitting of best possible hearing technology, and specialist early intervention, most children who are deaf or hard of hearing (DHH) have the potential to develop listening, speech and language at the same level as their typically hearing peers.

Adults with untreated hearing loss are at risk of communication difficulties, social and emotional wellbeing concerns, reduced self-esteem and confidence, and it can lead to social isolation and depression[11]. Diagnosis and fitting of appropriate hearing technology and support from adult hearing professionals can reduce the impacts of hearing loss and improve quality of life.

Early Intervention

Early intervention describes the services and supports that are available for babies and young children who are deaf or hard of hearing or have other developmental delays and disabilities. Children who are deaf and hard of hearing and their families need access to appropriate early intervention programs or services and these need to be delivered by professionals who are well trained, and experienced in working with children with hearing loss and in using their chosen communication approach [12.] This

needs to occur in parallel with the application of hearing technology and optimised access to sound. A multidisciplinary , case manager approach is considered best practice for early intervention.
Early intervention can start as soon as a baby is diagnosed with hearing loss. The primary goal of early intervention is to help parents and carers communicate with their child and to support childhood development [13].

In Australia, early intervention is funded by the National Disability Insurance Scheme (NDIS). Hearing technology for children (birth through to 26 years) is also government funded through Hearing Australia.

Person and Family-Centred Care
This is a collaborative approach to planning, delivery, and evaluation of clinical support and services. It promotes a mutually beneficial partnership among patients, families, and service providers. Each person is equally important in the relationship and respects the knowledge, skills, and experiences that each person brings.

TUH Audiology Service
The TUH Audiology service was established over two decades ago to provide routine hearing assessment for children and adults across community health and hospital settings. Over time, the service has expanded to include several areas of specialisation, including infant diagnostic assessment, cochlear implantation, and vestibular function testing. The Audiology service is co-located with ENT at the TUH and supports a variety of medical professions including ENT, oncology, and paediatrics through traditional models of care as well as telehealth services. TUH Audiology leads two multidisciplinary teams; the North QLD Childhood Hearing Clinic for the onward assessment and management of children diagnosed with permanent hearing loss in infancy and the North QLD Cochlear Implant Program for assessment, surgical management and rehabilitation of children and adults with severe or profound hearing loss. TUH Audiology also provides professional support to the child health nurses providing community hearing screening.

Summary of outcomes of the HSI review of randomly selected case types over the last 5 years

The case review required the HSI team to report as either compliant or non-compliant (with usual audiological practice and protocols) in the following areas:

- Test procedure/ test battery.
- Interpretation of results.
- Reporting of results.
- Overall outcome.

Any additional issues, comments or concerns were noted and if any action or risk assessment required (using the CHQ risk matrix).

On the whole the review showed compliance with usual audiology practice and protocols for the review sample. However, there were 10 cases that showed some areas of non-compliance:

- 6 test battery/ test procedure.
- 1 interpretation of test results.
- 2 test battery/ test procedure and interpretation of test results.
- 1 interpretation of test results and reporting.

Seven of the cases were cochlear implant recipients or those being assessed for CI and included adults and children, the areas of concern:

- Speech perception (SP) testing – non-compliance with the pre implantation protocol and post operatively SP test materials not appropriate for age or stage of development. Also, in one case, no CI alone condition for SP testing but instead performed in the bimodal (hearing aid on one side and CI on the other), thus not assessing the true CI function or benefit.
- Device usage- one case where a child had low device usage, no recommendations on resuming the device use were made or early follow up (i.e. 6 months recommended).
- No programming cables at a remote site for one case and thus unable to check CI map – review organised for 2 months and this was a technical non-compliance.

Two cases were adults, who received a diagnostic hearing test due to exposure to ototoxic drugs as part of their treatment regime. Acoustic reflexes were measured which is not compliant with current ototoxic testing protocols.

One case diagnostic hearing assessment , where interpretation of unmasked bone conduction testing was incorrect. However, a full chart review was requested and after ENT review and intervention, hearing is now within normal limits. As such, no action required.

None of the cases where SP was the issue required urgent follow up or immediate action, but the results of the review support the pattern seen in the CHQ review in relation to inconsistent compliance with the CI protocols The case where there was poor usage would have been reviewed as part of the CHQ paediatric CI case reviews.

6. Summary of Findings and Recommendations

To report these findings the HSI team relied upon a combination of information provided from staff interviews, feedback from consumer interviews and documents and reports requested from THHS. Referenced throughout are the practice standards, related literature, policies and procedures, and governance frameworks used to benchmark these findings. Reporting of findings is aligned to the relevant areas outlined in the investigation scope and will address the emergent themes.

6.1 Model of Care

Having a clearly defined and articulated model of care helps to ensure that all team members are working toward a common set of goals and have a standard process to evaluate performance and outcomes. Implicit to this is:

- The development of and compliance with agreed policies and procedures.
- Delivering services in alignment with expected practice standards.
- Evidence-based practice.
- Monitoring of service delivery and outcomes.
- Promoting collaborative and multidisciplinary care.
- Screening and planning for risk, developing mitigation strategies, and promoting a positive culture around risk management.

The services delivered by the program are within the traditional scope of practice for public audiology programs and those outlined in The Australian Audiology Scope of Practice for Audiologists and Audiometrists[14]. However, there was no documentation that clearly articulated the model of care, core business, goals, or key performance indicators (KPIs) for the department.

Throughout the interview process of this investigation, the commitment of the team to support and provide a high level of care to their patients was evident. However, there is quite a diverse range of services (some highly specialised) provided by a relatively small team. These include adult and paediatric cochlear implant (CI) services, teleaudiology, vestibular (balance) assessments, infant hearing diagnostics, Ear Nose and Throat (ENT) clinics, general and ototoxic diagnostics, Childhood Hearing Clinic (CHC) coordination, community health hearing clinics (Kirwan clinic) that included professional oversight of the health nurses. In addition, some senior staff members had research and university commitments.

This diversity led to high levels of demand for the team and large caseloads for some staff members. While there was some delegation to the clinical assistant, there is no evidence that alternative models of care were explored to help address this and little or no specific non-direct clinical time was allocated for report writing or other administration.

In addition, staff were encouraged to do additional testing for research purposes (e.g., wideband absorbance (WBA) tympanometry). This was in addition to the standard test battery. The incorporation of additional tests for research purposes, created additional pressures impacting on the time available for the delivery of the standard test battery as no additional time was allocated to accommodate this. While the WBA tympanometry testing time is usually minimal, there was additional time required for the provision of the information sheet/ explanation of the test and obtaining consent, this perceived extra pressure was perhaps exacerbated by the demands of a busy caseload.

The limited non-direct clinical time with the added additional research expectation is not consistent with good workforce planning to ensure an appropriate balance of direct vs non-direct clinical tasks to enable the allied health professional to meet the requirements of their role. The Clinical Care Ratios Australian Health Review 2017[15], defined and benchmarked current clinical care ratios for Allied Health staff in Qld Health. As a general guide:

- Tier 1 which would equal HP3 is around 80:20.
- Tier 2 which would be HP4 is around 75:25.
- Tier 3 which would be HP5) is about 60:40.
- Higher levels are around 50:50.

Full table from review in Appendix 3.

The Health Practitioners and Dental Officers (Queensland Health) certified agreement (No 4) 2022[16] details the importance of workload management including role allocations. An HP5 and above in a clinical position will have at least 20% allocated to non-clinical duties. This is to support the scope of practice and participation in education and research activities.

At the time of the incident, it was observed that the delineation of the caseload was unusual. ENT clinics, general and ototoxic diagnostics (adult and paediatric), community health clinics, and adult CIs were performed by various members of the team. All paediatric CI cases and the majority of HH diagnostic Auditory Brainstem Response (ABR) testing were performed by one audiologist, who was also usually the co-signer of the HH diagnostics when they were performed by another clinician. Vestibular assessment was also primarily performed by one audiologist. These caseloads are highly specialised and require additional training, education, mentoring, and experience. While another audiologist had received some training and was taking on some HH ABR assessments, this was not the case for the paediatric CI case load where there was little evidence of commitment to upskill other audiologists or where the skillset was already present, to incorporate other audiologists into the caseload.

The primary delegation to a sole clinician removed opportunities for cross-team skill development, peer-to-peer case discussions, and the scaffolding that ensures quality of care that is consistent with best practice and risk mitigation. Both the CHQ and HSI case reviews confirmed some irregularities in service delivery and management of the paediatric CI caseloads and HH diagnostics, which are not consistent with usual practice or in compliance with clinical protocols. These were not isolated and occurred over many years. This delegation of service delivery enabled a single practitioner point of accountability and lack of transparency around these services, and contributed to the delay in the identification of these concerns.

The outcome of the HSI team case review, whilst limited to a small random sample demonstrated a high standard of care for most of the services delivered by the audiology team. However, most areas where there was some non-compliance related to the paediatric CI service delivery and findings were similar to those observed in the CHQ review.

The Paediatric Cochlear Implant Program

The CI program consists of a multi-disciplinary team (MDT)

- Ear Nose and Throat (ENT) specialist.
- Audiologist (Cochlear Implant Coordinator).
- Speech Pathologist (pre-implant assessment only).
- Social worker.
- Psychologist (previous position).

There is also liaison with Hearing Australia audiologists, early intervention (EI) providers, Paediatrician/s, and other allied health professionals involved in the patient's care.

Comprehensive pre and post-CI assessment protocols are present. However, there was no documented or consistent process to report or discuss child outcomes or concerns post-CI, compliance with the post-implant protocols was inconsistent, and responsibilities and accountabilities with regard to child progress were unclear. The CI meetings appeared to have been more focused on pre-implant candidacy, medical and surgical needs, and surgical outcomes. Post-implant audiological management was provided at THHS; however, post-implant re/habilitation is provided by external EI programs or Speech Pathologists.

When the CI program was established in 2014, THHS speech pathology played a more integral role post-implantation. However, with the implementation of NDIS funding for therapeutic services, such as, speech pathology, the speech pathology services have been outsourced to the community, with no guidelines developed to define the roles and responsibilities of all parties nor to promote collaborative care.

The relationship between the audiologist and speech pathologist/EI therapy provider is very important. Close collaboration and communication allow for better continuity of care, the opportunity to establish shared goals, and to work together to ensure that the CI program (MAP) is optimised (e.g., co-treatment). Thus, enabling the best possible access to sound through consistent feedback and communication about functional listening, child progress, and outcomes, and highlighting any concerns in a timely fashion. Instead, outsourcing of care post-implant, without planning or consideration of the possible impacts, has led to a fractured service with little evidence of regular communication, outcomes reporting, or collaborative care evident. This does not align with best practice person and family-centred care[17].

Parents and carers are integral partners in the model of care, they are the natural language teachers for their child, responsible for the application and management of the hearing technology, and providing a language rich environment to promote optimal communication outcomes. Person and family-centred collaborative care should be promoted as part of the service model. Consumer feedback suggested that parents were not always listened to when they raised concerns and were often made to feel like they were not doing enough when there were device compliance concerns.

Children diagnosed with a hearing loss and who receive a cochlear implant require a collaborative multidisciplinary approach to care using a case manager model. This model recognises that many patients and families face barriers to services that can be complex and challenging. The case manager model provides greater continuity of care and positions the clinical care provider to better identify needs and recognises the value of cross agency and parent/carer and family partnerships[18].

Targeted and often intensive EI is required, and this support is very specialised. While there is no standard model of care for EI in Australia, in Queensland Minimum Standards Practice for EI have been developed and endorsed by CHQ and EI stakeholders in the sector (Appendix 1) to promote consistency in the delivery of EI.

The HH Diagnostic Program

CHQ HH program administer the Universal Newborn Screening Program in Queensland. All babies born in Qld have access to this screen and it is performed by trained nurses-soon after birth. Recognising that there is a time locked critical period for the development of listening and spoken language, follow up for any baby who receives a refer result is urgent and time frames have been set against Australasian standards[19]. CHQ HH have developed statewide policies and procedures for post hearing screen diagnostic testing and targeted surveillance guidelines for at risk children who require ongoing monitoring. TUH is one of the sites where follow-up diagnostic testing and surveillance management occurs and the expectation is that all sites performing these assessments will adhere to the testing protocol.

Allocation of testing procedure within the TUH audiology team:

- Auditory Brainstem Response (ABR) Testing – primarily one clinician, with one other audiologist more recently receiving training and servicing some of the caseload.
- ABRs under sedation – all currently allocated to one clinician.
- Surveillance hearing monitoring- across the team.

The HH program has an external clinical review process (originally described as an audit but changed to clinical review in the last cycle) and all data related to this service is entered into the CHQ statewide database, QChild, and clinical reviews are performed approximately every 3 years. The aim of this process is to enable the opportunity for critical review and the implementation of quality improvement where applicable or required. THHS Audiology has participated in routine clinical reviews/audits on three occasions.

Through the course of the current investigation, it was found that the review reports had not been escalated in full to the direct line manager or to the SSG/ THHS executive by the DOA. Also, the HH protocol states that a copy of the report will be sent to the Executive Director of Allied Health (EDAH), this did not occur in this instance and the report was sent to the DOA and the CPA only. The action plan and response to the Director of HH for the 2020 review, did not appear to adequately address the concerns. There was no evidence of additional follow-up from HH in relation to progress against this action plan.

During our investigation, it was indicated that there was a verbal discussion with the line manager on the clinical review only, and mostly related to challenges in bringing remote patients back for follow-up. In the course of the review it was understood inadequate action planning and response to the findings resulted in concerns /issues not being addressed and enabling errors and non-compliance with protocols to continue. As the report was not forwarded to the EDAH, this removed the opportunity for additional oversight, which may have contributed to the lack of escalation, but it does not explain the clinical errors or the response to the review findings.

The primary delegation of key components of this program to a sole clinician, removed opportunities for across team skill development, peer to peer case discussions, and the scaffolding that ensures quality of care that is consistent with best practice and risk mitigation.

Achieving the right balance to address service needs and community expectations in a dynamic clinical environment is complex. The HSI did not review any documentation that clearly articulated the model of care, core business and role delineation of the department. The planning and prioritisation when new services and/or projects are commenced is unclear.

We understand that when a new service is identified by the audiology department, it would be discussed at the Audiology Unit Meeting and escalated up via the SSG Executive Meeting. The NSW Agency for Clinical Innovation Framework[20] is used for review, consideration and implementation of new services or models of care. In some areas full consideration of risk, to ensure the minimum requirements for services to be delivered safely, may not have been clearly articulated at the time of implementation or was not fully understood (e.g., appropriate room set up for paediatic testing) and these concerns will be highlighted later in the report.

Recommendations

1. THHS review of the scope of services and model of care for the department and skills matrix of the audiology team with recognition of advanced practice for specialised areas and reducing the single practitioner point of accountability:

    - Re-define scope, the model of care and core business, with consideration of infrastructure, equipment and workforece needs.
    - Promote across-team skill development and remove single practitioner point of accountability
    - Consider a reduced range of clinical services and consider outsourcing some of the current areas of service provision. The HSI team was made aware during our site visit that this has already occurred for the vestibular testing.
    - Services should align with staffing mix and skills and will require a detailed review to identify the high value-based models.

2. THHS to define roles and responsibilities within the multidisciplinary cochlear implant team, extending to external providers, ensuring parents have a platform for raising concerns or providing feedback:

- Encourage and improve team collaboration amongst all stakeholders.
- Promote person and family-centered practice.
- Promote a case manager model.

3. THHS to explore collaborative models of care with other QLD services providing CI care to promote sustainability and shared learning.

4. THHS to explore partnership agreements or Memorandums of Understanding (MOUs) with external early intervention or speech pathology providers with clearly defined expectations around outcomes reporting and escalation of concerns aligned with the Queensland Minimum Standards of Practice for early intervention.

    - Work with external service providers to establish guidelines to promote collaborative person and family-centred care.
    - Alignment with statewide EI minimum standards of care.

5. THHS to review workloads and clinical care ratios within the audiology department.
    - Align evidence-based review e.g., Clinical Care Ratios Australian Health Review, 2017[15].

6. THHS to ensure the audiology team is adequately resourced and supported to manage the case reviews that are currently taking place.

6.2 Standard of Care

A high standard of care is reliant on good clinical governance and leadership but also the development of policies, procedures, processes, and work instructions to safeguard quality, guide decision making and promote continuous quality improvement.

Policies and Procedures/Protocols

The HSI did not find evidence of consistent planning, process, or development in relation to policies and procedures or work instructions. While the HSI team were able to source and review some policies and procedures, there were some areas of concern that could impact the standard of care.
Policies and procedures did not appear to be consistently followed or utilised. Factors that may have contributed to this are:

- Protocols were not regularly reviewed and there was poor version control. For example, initial CI protocols were set up in 2015/16[22] and do not appear to have been reviewed to ensure that they are reflective of current CI candidacy or practice.

- Some diagnostic test protocols were developed in 2020[23]. These are extremely detailed, beyond the level typically expected for a test protocol. As such, they were not user friendly, which reduced their clinical application, and staff feedback suggests that they were not routinely used. In addition, many on the team had limited knowledge or awareness of these protocols or where to find them. It is unclear whether these went through a team review process and what level of oversight occurred at the line management level.

Some other areas of concern from the review:

- The HSI team was not able to find a policy, guideline, or memorandum of understanding for dual service provision /or relationships with external providers delivering EI/SLP support for children with CIs. Given the importance of collaborative care this is a missed opportunity and contributed to a reduced continuity in service provision for the paediatric CI cohort.
- Roles and accountabilities within the multidisciplinary CI team were not well defined, leading to poor outcomes monitoring and reporting.
- Lack of documentation describing the clinical criteria for outcomes reporting, essential for consistent reporting and to provide a benchmark.
- The HH diagnostic program adopted the statewide policies and procedures, but the review showed that these were not consistently followed. Areas of non- compliance were evidenced in the external HH clinical review but not adequately actioned. This impacted the standard of care for this cohort.
- The post-CI assessment protocol did not appear to be followed, leading to poor outcomes, monitoring, measurement, and reporting.

Work Environment

The audiology program moved into its current location in 2018, affording more space and the opportunity for additional staff. This move, advocated for over a number of years by the DOA, enabled growth in both the number of people that could be serviced, but also expansion of services offered, including some that would be considered advanced scope audiology. The department was also successful in obtaining a number of grants, that supported the purchase of audiology equipment, some staff positions and research projects.

Three members of the HSI team performed a site visit to the audiology department to assess the work environment to ascertain if there were any issues or concerns that could contribute to the standard of care provided to patients.

The AudA professional practice guide[23] states that:
T*he external work environment should be maintained in a safe and professional manner. The physical environment of the facility affects the delivery of safe, effective, and professional services.....*

The HSI observed that there was a lot of equipment in the department and that some of it was not being used but taking up space that in some cases affected the testing/assessment environment. While the audiology team had made some changes before our visit, the team member who hosted our visit was able to describe the previous work environment and what changes had been made.

There were a number of concerns rasied and observed during the course of our interviews and the site visit. These included,

- **Visual Reinforced Observation Audiometry (VROA) testing:**
    - Set up in the testing booth, there had been long term faults with the automated puppet boxes used for reinforcement of conditioned responses and the headphones used for the clinician performing distraction.
    - The VROA booth configuration is set up with the audiometer outside the booth. This configuration requires an audiologist to drive the appointment from the audiometer and another audiologist or clinical assistant (CA) to work with the child inside the test booth for distraction. It was noted that the CA was not always available due to administration duties, thus requiring the test to be performed by one clinician creating a situation which reduced the ability to complete the test reliably. Also, organisation of equipment and furniture within the space was not always conducive to best outcomes.
    - It became evident throughout the review that multiple repeat/return assessments were required for many in this cohort, and that high numbers were referred for auditory brainstem testing (ABR) testing under general anaesthetic (GA) because of the inability to obtain reliable test results.
    - The number of repeat tests and those referred for GA ABR appeared to be higher than would be expected for this cohort. Whilst individual patients factors will affect the ability to obtain reliable results, the test environment is also a contributing factor, leading to inability to obtain or confirm a hearing loss thus leading to the need for a GA ABR, inefficiencies and scheduling difficulties due to a reduced number of VROA appointments available for new clients.

- **Paediatric CI Mapping room**:

    - The room used for paediatric CI mapping had multiple purposes including, adult and paediatric mapping, balance testing, counselling and office. Prior to the move in 2018, CI mapping was performed in various meeting rooms around the hospital.
    - The lack of a dedicated space resulted in inability to optimise the environment for paediatric support and especially impacted those children under 3 years of age.
    - While reliable information can be obtained from this age group using a combination of behavioural responses and automated neural response telemetry (NRT) or eSRT, visual reinforcement activities are also desirable but were only available in the sound booths.
    - While some verification of the child's map could be performed in the sound booth, they were not set up to cater for CI programming equipment, and as such children needed to move

between both spaces. The window of time where a child will be on task and provide reliable responses is short and it was reported that due to the facility constraints and challenges bilateral CI maps could take up to 1.5 to 2 hours.

- The HSI reviewed the CI Riskman entries that have been made since the incident occurred and the review of all paediatric CI cases. The age at implant ranges from 10 months to 3.3 years, thus supporting the concern that inappropriate clinical setup is adversely affecting the ability to reliably map young children.

- **Vestibular/ balance testing:**

  - No dedicated balance testing room with dedicated equipment.
  - The examination bed was unstable, not adjustable, and not well positioned- i.e., it needed to be moved into position for each assessment and pushed to the side of the room when other services were being provided in the room.
  - Patients were asked to use a child's chair as a step onto the bed rather than a more stable step. This cohort of clients is often dizzy or off balance at the time of testing, and this caused patient safety concerns for some staff members.

- A**uditory Brainstem Response Testing (ABR):**

  - The room used for ABR testing was not electrically shielded and the position means that it is often affected by noise in the waiting room and is apparently close to a room with plant equipment.
  - This type of testing is highly sensitive to electrical and noise interference which impacts the quality of the test results and interpretation and may have added to the test time and/or repeat appointments, as well inability to accurately identify ABR waveforms.
  - It was noted in the equipment register that the department had four ABR machines from three different manufacturers. It appears that two Vivosonic ABR machines had been sent for repair and are no longer operational. One was replaced by the Interacoustics Eclipse in January 2023 and a second machine was acquired in June 2023. It is unclear if the functionality of the Vivosonic ABR machine had any impact on the quality of results obtained and the ease of interpretation.

Information obtained during the site visit and from interviews indicated that multiple requests were made to the DOA about the testing environment and equipment concerns, and this was also documented in the audiology meeting minutes. This situation continued over a long period of time and is not consistent with good practice or professional service delivery, placing additional pressure on families and the staff involved.There was a general feeling that follow up often took a long time and the perception was that this was not always prioritised.

The DOA noted that he reported equipment concerns with the SSG Business Service Manager (BSM) and BTS department during meetings, via email and/or phone. Room/ environment issues have been discussed and raised over many years with the line manager and SSG BSM, and ENT Director in person and through some written submissions (these were not cited by the HSI team), including the impact that these factors would have on service delivery and patient outcomes, but he felt that the department's needs were not prioritised or supported.

The HSI were made aware that dedicated space for paediatric CI mapping was requested during planning for the current department location, but that the room allocated was converted to a meeting room. Review of some email correspondence at that time indicates that some compromises had to be made, whilst also aiming to accommodate the department's needs. A room was allocated for mapping, but not a dedicated paediatric space. In addition, electrical shielding was requested for the ABR room at the time the current space was being planned and this was not included due to funding constraints.

Also, the issues raised regarding the risk/impact on child outcomes would constitute a patient safety concern, however, no reports were lodged in Riskman. The HSI do not have sufficient information to ascertain how these concerns were articulated via other means, and how well the risk was understood at management and executive level. However, formal lodgement of the concern would likely have escalated this patient safety issue and initiated steps to help mitigate the risks e.g., reviewing the capacity of the department to provide paediatric mapping for younger children.

A clear process to lodge incident reports related to equipment faults or arrange repairs was not evident and accountabilities for equipment management were unclear. This created sub-optimal testing environments for some patients, reducing the efficiency, quality, and effectiveness of assessments performed under these conditions. Despite the availability of formal education sessions and the provision of ad-hoc sessions in clinical areas, it appears that the DOA did not schedule/encourage staff to attend training in reporting via Riskman. The DOA did not encourage staff to raise safety concerns or report them, this was not conducive to a healthy culture to raise concerns nor the implementation of risk mitigation strategies.

Of note, at the time of the site visit some changes had already been made to test spaces and the team is working together to find solutions and facilitate the best testing environment, which is a positive first step. Also, vestibular testing is now being referred to an external testing centre.

Clinical assessment and decision making

While the random sample reviewed by the HSI group was small, it showed that the level of care delivered by the audiology team was generally of an appropriate standard (when viewed against the Audiology Australia National Competency Standards for Audiologists[2]). However, areas where there was non-compliance related mostly to the CI cohort and protocol compliance, and this supports the pattern seen in the CHQ audit. As noted in the previous section, review of recent paediatric CI Riskman entries indicates

concerns for those children three years and below, with regard to the ability to reliably map them due to a non-optimal clinical environment.

Cochlear Implant Services

Case audit and document review showed:

- Mapping report format was not always consistent.
- Regular and formal post-operative speech perception assessments (functional listening assessments) were part of the post-implant protocol[20], however, the case review indicated that these were often missing, incomplete, or were not compliant with the post-implant protocol. There were some notes indicating that speech perception assessments were performed, however, the test material selected was not always appropriate for the CI recipient's age and or stage post-implant. This lack of formal functional outcomes and feedback reporting process meant that other invested parties (ENT, SLP, EI, or school providers and parents) were not aware of the child's abilities or limitations with the device.
- There was no evidence of consistent or formalised feedback procedure, either outward or inward. This is not consistent with the knowledge and skills expected and indicated in the AudA Scope of Practice and does not align with the THHS post-implantation protocol.
- There was no formal feedback process regarding progress or concerns for the cochlear implant (CI) program multidisciplinary team (MDT). The CI program MDT seemed to have more focus on candidacy assessment and surgical outcomes.
- From our review it does not appear that any formal speech and language reports or progress reports were requested from external providers for reporting on the overall progress of the child. The process for inward and outward communications between invested parties (ENT, SLP, EI/school providers, Hearing Australia, and parents) is essential for holistic and collaborative care, best practice, and optimal outcomes. This was exacerbated by the lack of clarity around roles and responsibilities within the CI MDT.

Specific failings within the CI programming sessions and management (information collated from CHQ and HSI review):

- Inconsistent reporting on the measurement methodology of thresholds or comfort levels.
- Irregular programming parameters and evidence of very narrow dynamic ranges limiting access to speech.
- Overreliance on aided audiograms for map verification (this form of assessment does not provide information on threshold (T) levels if set too high).
- Poor patient management practices overall with no urgency related to reduction or low hours of device use. It would appear that about half of the clients had appropriate device use hours and half did not meet expectations.
- Speech perception assessments used for verification weren't always appropriate for the child or delivered under the correct test conditions for age or stage of development (e.g., live voice vs recorded material, bimodal vs individual ear). This resulted in a missed opportunity to properly

assess functional listening which may have alerted the clinician to sub-optimal access to sound and mapping concerns.

- Limited documented evidence of feedback from parents regarding child progress and level of confidence with the hearing technology. Parents are with their children every day, their feedback and observations provide the clinician with functional information which can assist with session planning and priorities. Promotion of parent engagement and recognising parents as partners in their child's care is an essential component of person and family-centered practice.
- Reported limited CI data entry into QChild by the CHQ review, inconsistent with the CHQ protocol and negated the opportunity for quality assurance that the statewide database was established to afford.
- Little evidence of goal setting or progress targets for children with CI. The absence of established goals and targets reduced the opportunity to effectively monitor outcomes and to intervene when milestones were not being met.
- Outsourcing of post-CI speech pathology/EI supports, led to a fractured service with little communication or collaborative care evident. Interaction between all service providers involved in the care of a child or adult with a cochlear implant enables shared goals and expectations and a better continuity of care.
- CHQ review recommended:
    - Review of the use of aided thresholds
    - Use of the Categories of Auditory Performance (CAP) in regard to speech perception testing
    - Use of speech in noise testing
    - Formal post-implant progress reports
    - Use of the ACHIP pre-implant to highlight concerns
    - Use of QChild to record outcomes

Healthy Hearing Infant Diagnostics

The standard of care for infant diagnostics was inconsistent, both the HH 2020 clinical review, the CHQ review, and the HSI case review also raised concerns in relation to clinical assessment skills and clinical decision-making for some individuals. Some of these include:

- ABR traces not co-signed prior to the report being finalised. Review of ABR traces by an experienced clinician and co-signing is a key quality assurance strategy and statewide expectation for all infants assessed under the HH program.
- Test choices e.g., TB and BC ABR before click ABR which may lead to an incomplete audiological profile or inefficiencies in testing.
- Test parameters not in line with protocol such as incorrect filter settings and time windows.
- Cochlear Microphonic (CM)testing is not in line with protocols.
- Stimulus presented at intensities above what would be a safe testing level for an infant.
- Raw data missing and therefore not available for review (i.e., not saved to file).

- Cortical testing was performed on a baby who was asleep. The test is not valid under these conditions.
- Inaccurate interpretation of some tympanometry.
- Inaccurate TEOAE interpretation was related to inadequate test sweeps.
- Incorrect marking of ABR waveforms leading to the incorrect site of lesion (relating to the hearing loss) being identified. Babies were identified as having conductive hearing loss when results suggest the hearing loss is sensorineural (permanent) in nature.

Also, of concern is that these errors were not picked up by the co-signer. The co-signer is required to have 3 years of current paediatric ABR experience to ensure errors are detected prior to the final diagnosis. This was not always the case with co-signing.

Risk assessment and management

Prior to this event, no incidents were reported in the department. However, the risk assessment process was not utilised or well understood across the team, and the audiology leadership culture did not encourage assessment and reporting of incidents or near misses through this system. While "risks" were a standing agenda item for team meetings, no risks were documented.

Patient Safety education sessions including the use of Riskman was offered to all staff through formal training and ad-hoc sessions in clinical areas. The DOA had access to RiskMan and was in the organisational structure that sits in the background of RiskMan. However, the lack of engagement in this process likley influenced the team culture and activity in this regard and also highlights a disconnect with lines of report but also the understanding that these processes and responsibilities need to be embedded across the team.

The safety and quality concerns noted under *work environment,* were not documented or reported because of the evident poor culture and practices around risk assessment and management. In addition, it would be reasonable to suggest that the absence of any incident reports, should have perhaps raised a red flag with leadership in Surgical Service Group and the direct line manager.

There was limited evidence of effective risk assessment processes for the audiology clinical programs resulting in poor understanding at all levels of the reporting chain with regards to:

- what are the risks of audiological care,
- the factors that influence this, and
- the systems, process and resourcing needed to reduce risks.

One example of this is in documentation in related to the application to start the CI program at THHS, it was indicated that while there would be some additional training involved, there was confidence that the program had staff with the clinical skills to deliver the program. There did not appear to be

consideration of the advanced scope of this new service or all of the infrastructure needs. This may have impacted on assessment of risk, in relation to the cochlear implant program.

Referrals, work allocations, and waitlist

It has been previously noted that work allocations were unusual and siloed for some test procedures. Some members of the team had full caseloads (7 to 8 appointments per day) and also had to support some urgent walk-in patients. There was very little or no non-contact time allocated. It is recognised that some non-contact time is necessary for all levels of clinical staff to complete administration and operational tasks necessary for delivering service[15]. This caseload is outside the recommended work ratio.

The Clinical Assistant was primarily responsible for referral and waitlist management and data entry as there was no formal administration support for the program and this had the flow on effect of reducing the CAs opportunity to focus on and support clinical tasks. At the time of the HSI visit to THHS, 38% of patients in the audiology department were waiting longer than clinically recommended timeframes for care (Source: Systemview). It was reported that a particular concern was scheduling hearing tests for younger children (VROA) with the audiology department not currently seeing any new VROAs due to ongoing review appointments. There were no strategies to resolve this issue.

The appointment schedule was templated, but there was little flexibility to make changes to accommodate clients from alternate caseloads, urgent cases, or walk-ins.

Discussion with the direct line manager indicated that reporting at the executive level related more to activity (occasions of service) within the department and that there was little visibility of the audiology wait lists outside the team and that, unlike specialist outpatient waitlist, audiology wait lists were not a reportable KPI within THHS. When audiology was requested to provide reports, the focus was typically on CI surgery targets.

Recommendations:

7. THHS to review of department protocols, policies, work instructions, and report templates, including, Healthy Hearing and cochlear implant services and outcomes, to ensure alignment with current standards of clinical practice and statewide guidelines.

- Urgently review all policies and procedures relating to the CI program.
- Ensure alignment and compliance with CHQ HH Policies and Procedures.
- Review sedation and GA ABR cases to ascertain if referrals were appropriate. If findings suggest inappropriate referrals, review the referral process and establish new policies and procedures.
- Ensure that policies and procedures are updated and become controlled documents that have defined review dates. Ensure that these are accessible to staff with evidence that they have been viewed by them.

8. THHS to review the knowledge and understanding of risk management processes within the department.

9. THHS to ensure compliance with the Healthy Hearing Diagnostic Audiology Protocol and minimum requirements of peer review through the co-signing process.

10. THHS to review the individual practices that led to sub-optimal care provided, ensuring the principles of natural justice occur, and are in line with HRE processes.

11. THHS to review departmental opportunities for quality improvement/efficiencies, including equipment maintenance, suitability and set up of test facilities (especially for those children 3 years and under), and clinic scheduling and waitlist management.

- THHS to review of the audiology department's ability to effectively support CI services for children 3 years and under.
- Maintenance of a safe and effective work environment by establishing clear feedback and reporting mechanisms, consistent follow-up, and prioritisation.
- Review test environment and suitability to efficiently and effectively perform testing is required.
- Review scheduling and waitlist reporting.

12. THHS to define and embed outcomes measures as a tool to guide the need for additional reviews and to perform risk assessments across the various clinical caseloads to enable focus on those areas most at risk.

6.3 Audiology Workforce Model

To become an Audiologist in Australia completion of a Bachelor's degree is required, followed by a two-year Master level course accredited by Audiology Australia (AudA) or overseas equivalent. This is followed by a one-year internship to be eligible for AudA accreditation. While QH does not require Audiologists to be members of AudA, they have to be able to demonstrate eligibility. Although Audiology is not a registered health profession with the Australian Health Professionals Registration Authority (Ahpra), being clinically certified by AudA requires compliance with a number of standards that in addition to the academic requirements include:

- Code of Conduct which is in line with the National Code of Conduct for Health Care Workers.
- Continuing Professional Development program.
- Recency of Practice requirements[24].

Currently, all of the Audiologists at THHS are accredited members of AudA.

Audiology is recognised as an allied health profession, however, the THHS program is not part of the Allied Health division within the hospital but instead part of the Surgical Service Group (see Appendix 3). While audiology may differ from other in-hospital allied health services, in that much of the scope of practice is outpatient care, the scientific principles and evidence-based practice between the different allied health professions are aligned.

The HSI believes that the current organisational structure has resulted in the isolation of this small team and through the interview process it was evident that there is a lack of understanding of the scope of practice in the audiology profession at the executive level, and it is reasonable to suggest that this has resulted in a failure to recognise the potential patient/client risks and impacts inherent in audiological care.

Team Composition

The operational structure of the team had an unusual hierarchy with two HP6 positions when compared with other audiology departments or services. During the HP evaluation process, the potential impact on line management and clinical oversight of this structure does not appear to have been well considered, introducing confusion and removing clarity in the roles and responsibilities. This operational structure was mentioned often throughout the interview process, and it was evident that the direct line manager and Surgical Service Group leadership team felt reassured that the department had this unique level of experience and expertise and this likely contributed to more relaxed oversight from the management level. This team composition also led to some confusion with regard to lines of report within the department.

The other audiology roles within the team were comprised of team members split across HP 3 and 4 levels and a clinical assistant (CA) role. Work level statements for both clinical and managerial HP positions are described in detail in the certified Health practitioner and dental officers agreement. At the time of the incident, there were:

Role	HP level	Description
Director of Audiology	HP6	Clinical stream expert level of knowledge, skills and experience Clinical leadership at a state/national level Management stream provides high level operational and strategic managerial knowledge
Consultant Paediatric Audiologist	HP6	Clinical stream expert level of knowledge, skills and experience Recognised at a state/national level Performs in consultant capacity providing clinical advice within discipline and a point of reference for the discipline

Senior Audiologist	HP4	Demonstrate high level knowledge and skills High degree of independence Complex and varied nature Provides clinical practice supervision
Senior Audiologist	HP4	
Senior Audiologist	HP4	
Audiologist	HP3	Competent level of knowledge and skills Routine independent practice Developing clinicians
Clinical Assistant		Assisting with clinical and non-clinical tasks within the training, qualifications and competence of the assistant Undertake delegated tasks

Recruitment Processes and Skills Assessment

As the composition of the team (with two HP6 level audiologists) is unusual for a team of this size, the HSI team sought more information about how this came about. Historically this has been the structure of the program since 2010 and while we were able to obtain information about the qualifications of the staff at this level, historical documentation in relation to these appointments was fragmented, and neither the Line Manager nor the HR business partner were able to confirm (in the interviews) the process or competency evaluation that led to these appointments. The HSI was provided with some additional documentation, however, even though both audiologists met the competency requirements it is still not clear why two clinicians were advanced to this level and what workforce planning led to this departmental structure.

The chronology that we were able to obtain in relation to the advancement of these two roles is as follows:

- 2002- Director of Audiology (DOA) commenced as a senior audiologist at THHS in 2002.
- 2004- Consultant Paediatric Audiologist (CPA) moved from a speech pathology role to audiology as a PO3 audiologist.
- 2006 Current Consultant Audiologist PO3 to PO4 appointment after JEMS evaluation. Noted at this time that the line of report operationally was to the Director of ENT and professionally to the senior audiologist (current DOA).
- 2006 evidence of COC training.
- 2007 current DOA advancement from PO4 to PO5.
- 2008 CPA continues at HP4 level – Paediatric Audiologist.
- 2009 current DOA now Consultant Audiologist- no documentation as to change.
- 2011 CPA and DOA advanced to HP 6 following an evaluation for all QH practitioners however as noted, the evaluation process for this advancement is unclear.
- 2012-2013 PAD CPA is also a Consultant Audiologist.

- 2014 change in reporting lines from Surgical Service Group Director to Radiography Director. Operational and professional reporting lines to Radiographer Director (subsequently title changed to Director of Medical Imaging).

A Performance and Development (PAD) report prior to the CI program starting, showed evidence of training with device manufacturers, other services, and some self-directed learning for the clinician leading the CI services. However, there are no requirements with regards to credentialling or external competency assessment but instead reliance on self-assessment of skills in conjunction with the head of department/managers/ direct line of support. It should also be noted that a comprehensive training and support plan was offered by the CHQ CI program, and while some of this was accessed, the majority was not. It is unclear why this occurred and appears a lost opportunity for collaborative and peer-to-peer learning.

Recruitment processes at other levels of the program seemed appropriate, and a good mix of skill levels for both adult and paediatric services. However, the allocation of the caseloads across the team underutilised staff with existing expertise limited the ability of staff to build advanced and facilitated the single point of sensitivity for specialised services.

The reason for the caseload allocations is unclear and while there were role descriptions, there was no evidence of skills assessment or scope of practice for each role provided to the HSI. There are also clinical competencies that have been developed for Allied Health, however, these did not appear to be incorporated into the team.

Leadership and Oversight

The multiple layers of the organisational structure creates the potential for disconnect, slower decision making, and reduced cross departmental collaboration, and can result in some siloing or team isolation.

Clinical leadership is the foundation for the development of a workplace culture that promotes both clinical quality and safety and continuous improvement. The audiology department clinical leadership has been long standing and stable over many years, and significant departmental growth and development has occurred since the program started.

With this growth and change came new challenges and needs from a clinical leadership perspective It is important for those in clinical leadership positions to have support to grow and develop leadership and advocacy skills and the knowledge to be effective and adapt to the changing needs and service evolution. Clinical leaders need support to develop skills through both formal and informal mechanisms and through the course of the review the HSI believes that these needs were not well identified within the department or acknowledged as the service changed. The DOA has indicated that he did not feel well supported in this area.

The HSI has observed that the current leadership structure has enabled governance failings at clinical, management, and executive levels, impacting the quality of service, transparency, communication, appropriate risk assessment and management, and oversight. At times the governance structure has left the clinical leadership feeling that they have not been included in decision making.

The organisational structure also appears to have contributed to the team becoming isolated within the hospital environment and this has reduced opportunities for interdisciplinary collaboration both internally and externally. Throughout the interviews, team isolation was mentioned a number of times. Professional silos and hierarchies can increase the chance of communication failures, inability to understand each other roles and responsibilities, reduce the effectiveness of a team and increase the potential for patient harm[26]. The audiology department's service model, clinical governance systems, and current organisational structure/ lines of report would benefit from review, while also ensuring professional development opportunties in leadership and management for the clinical leadership roles.

There are a range of Audiology Department line management structures across the state with only a small number led at an HP6 level. Models include an HP5 who may report to the Director of Allied Health or an HP5 team leader who may report to a Director of Speech Pathology and Audiology. Levels and reporting lines are often based on the size of the department and the caseloads offered by the service recognising some specialist areas require clinicians at an HP4 level.

In many hospitals, audiology is part of the allied health services. It is proposed that THHS consider moving audiology into the Allied Health Services division. The lead audiology role would report to the Director of Allied Health with representation at ENT meetings under the Surgical Services Group.

Recommendations:

13. THHS to review departmental and organisational structure to ensure a clear understanding of roles and accountabilities, including line management, professional supervision, and operational performance with consideration of alignment with the Allied Health division of THHS.

14. THHS to review work level statements of the HP levels to ensure knowledge, skills and expertise are aligned, met, and understood.

- When gaps in leadership e.g., advocacy or changing needs of an evolving service are identified, plans incorporating managerial and leadership skills should be developed and embedded in performance appraisal and development plans.

6.4 Supervision Framework

Supervision and training

The HSI found limited evidence of a formal supervision framework within the audiology department. The team indicated that they felt it was sometimes unclear who they reported to for different tasks, due to the department structure.

The Performance Appraisal and Development (PAD) process should occur at regular intervals. That is, an annual review with regular check-ins throughout the year. Performance and Development reviews are an integral part of the quality improvement process. Effective feedback and discussion will foster and reinforce good practice and highlight future opportunities. The HSI observed that this process was often inconsistent for all staff across the audiology team and regular follow up or check-ins did not occur leaving staff feeling that their development goals were not always prioritised.

As previously mentioned, staff allocations reduced opportunities for upskilling and training in some of the areas that would be considered as advanced scope in the profession e.g., paediatric CI. However, where there were some opportunities, it was indicated that in-house training was usually through observation and some supervised work, but this was sometimes impacted by other commitments such as university teaching or other priorities. Staff suggested that they did not always feel there was an openness to feedback or opportunity to challenge clinical decisions or discuss cases with the audiology leaders in the team. Also, where a staff member may take on a different role, handover was not always optimal.

Staff working in delegation models of care (i.e., utilising a clinical assistant to provide audiological services such as VROA distraction and hearing screening), require a high level of training, competency assessment, and ongoing supervision as outlined in the QHealth Delegation Framework – Allied Health 2022[25]. The HSI found training for the clinical assistant in the tasks to be performed was inadequate, and there was no ongoing monitoring of clinical outcomes of the delegation model.

Professional learning culture

The HSI found a disparity in the perspectives of staff to the learning culture within the team. Whilst professional development and education were valued at all levels, the majority of staff felt unsupported in their learning needs and restricted in their ability to actively seek support/advice from professionals outside the clinic. In some cases, staff felt they were actively discouraged from doing so.

There was evidence of some training and education and journal article review attached to clinical meetings. The HSI was told that the intent was for this to be a shared responsibility amongst the team, however as there was no time allocated for preparation, the CPA usually led these sessions typically in the latest research field. While the intent of this activity was seen as valuable, it was suggested that more collaboration to ascertain what topics were most needed by the team would have been beneficial and planning to enable other team members time to contribute advantageous.

Case discussion is a recognised tool for supervision and was incorporated into the team's supervision and learning framework, however, there was a general feeling amongst the team that they should not question the clinical practice of more senior clinicians and that it was sometimes hard to raise concerns or have open case discussions.

Research was valued and encouraged by the department leadership, however, the information provided to the HSI was that research was promoted in a particular focus area (i.e., Wide Band Absorbance tympanometry). This had been a research focus of the department for many years, with many peer-reviewed papers published and conference presentations. The narrow focus did not allow for research and development in other areas and may have prevented innovation opportunities.

Participation in professional advisory and advocacy working groups.

There was a commitment to participation in a number of advisory and working groups. These included:

- The early Intervention working group (EIWG).
- Healthy Hearing Audiology Working group (HH AWG).
- Audiology Governance Group.
- Statewide Clinical Review Team (for the HH program.)
- QLD Vestibular Network.
- Audiology Clinical Education and Training Working Group.
- Healthy Hearing Clinical Advisory Group.

The DOA also attended the Townsville Allied Health Governance and Leadership Committee.

Participation from across the state is an important factor for the success of these groups as it offers the opportunity for a range of perspectives, shared learning, development of statewide protocols and standards, and shared understanding of some of the challenges and barriers that different locations or demographics may bring. The HSI determined that the majority of these were attended by the CPA or the DOA as would be expected of the lead audiologists (an HP6 is recognised for their expert knowledge and for leadership at a state or national level) as these groups inform and promote change in the sector.

However, communication and feedback from these statewide groups were not well filtered down to the remaining clinical team thus eliminating the opportunity for team collaboration and shared understanding of current sector concerns and activities. The HSI found that the HP3/HP4 audiologists were at times unaware of the existence of the advisory and working groups and were not asked for feedback or items to raise at these meetings and as such did not feel represented.

The allocation of time to attend and participate in these groups was positive and demonstrated a commitment to contribute to the sector leadership. However, the collaborative opportunities and continuous improvement that could have been afforded were not always realised.

Recommendations:

15. THHS to ensure a culture of collaborative practice and openness to shared learning for the audiology department with clear communication, peer-to-peer review, and regular support and supervision from a range of internal and external audiology providers. TUH audiologists are encouraged to participate widely in professional advisory and working groups, to reduce isolation and to ensure feedback from the working groups is clearly disseminated throughout the team with opportunity for participation at all levels, commensurate with the staff member's roles and responsibilies.

6.5 Quality Management Processes

Quality management processes rely on good clinical governance, which should operate at all levels of the organisation. These processes should ensure that accountability and reporting processes are in place to support continuous improvement to support a safe and high level of service and care.

During the investigation, the HSI team became aware of some workplace culture concerns in the program in relation to quality management processes. Throughout the course of the interviews, it became apparent that there was limited awareness of the QH incident reporting system (Riskman) and how to use it, with some team members expressing reluctance to report concerns due to a fear of receiving a negative response from audiology leadership. Feedback and incident reporting were not embedded practices within the team, thus impacting the feeling of safety and trust and removing opportunities for the team to grow, improve, and ensure a quality service.

Staff noted that with two HP6 positions in the department, there was sometimes confusion about the line of report and how to effectively escalate issues or concerns within the department. It was also acknowledged by some staff that there was little connection or communication between the HP3/HP4 audiologists and the department's direct line of report at management level, limiting avenues for escalation of issues outside the immediate team. In addition, the scope of practice of audiology was not well understood at both management and executive levels.

The team was part of the surgical service group rather than allied health. A review of documents and staff interviews highlighted limited systems and processes related to quality management and improvement. There were no consistent outcomes reporting mechanisms thus removing the opportunity to benchmark best practice and develop both expectations of outcomes and red flags for early identification of concerns so that they can be addressed and mitigated.

However, three Audit and Quality Improvement projects were identified during the investigation:

1. Evaluation of Childhood Hearing Clinic- Parent/consumer survey
2. CI Clinic patient satisfaction.
3. Clinical audit of diagnostic caseload - Audiology Department.

These projects were developed by the CPA and demonstrated the intent to develop some QI mechanisms. Audits 1 and 2 were developed in 2021 and Audits 3 in 2022, and at the time of the review surveys for projects 1 and 2 had been administered.

Audit 3 was likely in response to the HH clinical review and part of the action plan. However, during the staff interviews, it was noted that the spreadsheet developed for the review was very detailed and time-consuming, and some on the team did not appear to be aware of this project. Effective leadership is an important feature for the implementation of new initiatives and staff motivation is enhanced when they perceive themselves as part of the innovation or initiative[27]. As this project does not appear to have been well communicated, and no time allocation was provided for chart reviews, team participation appears to be low, and no outcomes have been reported.

The DOA also noted some additional QI projects that were planned for this year:

- Evaluating the performance of children with CI with speech and language measures at 12 months post-surgery. Including a detailed report from the speech and language pathologist as part of this performance to compare with their pre-implant performance as well as measure their outcomes at 12 months post-implant.
- Predicting the performance of children at 12 months post-implant with CHIP (children's implant profile).
- Evaluation of improvement in performance with adult CI recipients (comparison of pre-implant questionnaires with post-implant questionnaires at 3- and 12-months post-implant).
- Monitoring of T and C levels in the short and long term for both paediatric and adult CI recipients.

It is unclear if these projects have been discussed with the audiology team as they were not mentioned during the interview process. While the intent and acknowledgment of these needs are positive, the projects also highlight and confirm a current gap in outcomes assessment for those in the cochlear implant program.

Integrated corporate and clinical governance systems should be implemented to improve the safety and quality of health care for patients. In Australia, there are National Safety and Quality Health Service (NSQHS) Standards that have been developed by the Australian Commission on Safety and Quality in Health Care [28]. There are eight NSQHS Standards, and the first one is Clinical Governance. The Clinical Governance Standard (Standard 1) requires health service organisations to implement a clinical governance framework that ensures patients and consumers receive safe and high-quality care and describes systems required to maintain and improve the safety and quality of health care.

The HSI team was also provided access to the Allied Health (AH) Clinical Governance framework[29] which is available for all allied health workers in Qld Health, including audiology. The HSI team could not find evidence of a clinical governance framework for audiology or that the AH framework or components of it were being used within the audiology team. Also, the Director of Audiology was an invited member of the Allied Health Governance and Leadership Committee. However, it was noted that the DOA's attendance

was irregular, thus reducing the collaborative opportunity that could have been afforded by this group and across teams' collaboration and opportunities to develop consistent governance and quality management processes within the department.

Ability to actively manage and escalate patient safety

The response and action of the THHS has been outlined in the introduction of this review paper and it is evident that THHS was committed to acting to identify those children and families impacted, to support them, and to mitigate any future harm. The HSI team initially had some concerns about the speed of the initial response to the unexpected outcomes report. As it has been noted throughout this report, there seemed to be some misunderstanding of the complexity of the service and the potential impact and harm and this likely influenced the response. More information was also being gathered to gain a better understanding and some key executive staff were on leave. Upon their return, the steering committee was set up as a matter of urgency, and case reviews, recalls and the open disclosure process commenced.

However, there are some factors that should be highlighted that may have affected the initial response to the incident and subsequent escalation in order to facilitate some mitigation strategies for the future:

The impact of the reporting line to the surgical group rather than allied health.

- Knowledge of the scope of audiology and the possible impacts and harm that could result from this incident.
- Poor risk assessment policies and procedures within the team.
- No concerns had previously been raised in Riskman prior to this incident, and as a consequence resulted in a low profile with regard to risk.
- Knowledge of the incidence response process.

The HSI also noted the significant impact that this had on the audiology team both emotionally and from a workload perspective and equally on those assisting in the open disclosure process.

Feedback from Consumers

As part of this review, we asked consumers to give their feedback about the impact of the incident and the support that they have received. A mix of consumers were invited to participate, of various ages, hearing loss diagnoses, and severity of impact from no impact through to incorrect maps for many years. This information was gathered to foster and support continuous improvement.

Impact and Experiences

Overall, a mixed set of experiences were shared. As expected, the severity of the impact on the child appeared to be related to the child's age, the diagnosis/degree of hearing loss, and the length of time that the incorrect map was in use/length of time since diagnosis (with older cochlear implant children having

a more severe impact). A summary of feedback provided during the consumer interviews is provided below.

Those consumers interviewed who were not part of the group identified as requiring immediate follow-up, indicated that they had no concerns with the service or care they received. Consumers who were part of the group that was recalled, indicated that they found the program/service very welcoming, that they were treated with care and in a professional manner, they trusted the clinicians providing the service, and the majority felt that everything was ok. However, as highlighted in the feedback comments below some had frustration that their questions or concerns were not always responded to in a way that offered solutions or additional information. Some stopped asking questions and/or felt that nothing further could be done after receiving no further support or direction.

Consumer reflections/recollections about service from before concerns were raised:

- All agreed they had trusted the audiologist as the expert to do the right thing.
- Most reported that they could ask questions and get answers.
- Most said that they had never received any reporting from the audiology department at THHS, only from other services outside of the hospital.
- A few families (mostly with older children) had trouble having their concerns listened to while others didn't have concerns to raise (mostly younger children). A few felt that their concerns were not listened to, or solutions were not provided and as such they stopped raising them.
- Parents of children with cochlear implants did not understand what 'next steps' looked like or what to expect.
- Parents reported feeling pressure to 'do more' from the audiologist, including more speech therapy appointments and more wearing of devices, but there weren't any reports of support to achieve this considering the needs of the family or child.
- Many families worked with external early intervention providers but there didn't seem to be any communication between these external providers and the hospital that parents were aware of.
- A few of the parents of older children were struggling with the emphasis on time spent wearing Cis without support with strategies for both behavioural and technological concerns to slowly build up time wearing devices. This was especially relevant as we are now aware that many had not had good access to sound due to the mapping errors.
- Many did not feel supported in their travel needs and did not always feel that the impact that this had was considered.

Consumer feedback once concerns were raised:

- Parents with children impacted by incorrect ABR results reported it was upsetting to be told that their child could hear and later be told that they have a profound hearing loss.
- Parents of cochlear implant children who were severely impacted were upset with the lack of clarity and felt that the response from THHS was slow.
- New mapping sessions to address the issues didn't always provide the clarity they needed for parents to understand the problem or the impact.

- For those with mapping (cochlear) issues there didn't seem to be any clarity around how the sound would change or the best way to support the child to adjust to new maps.
- For those older children, who had not been hearing for some time, parents did not feel supported in how to encourage their child to wear the device. Some parents were still made to feel like it was their fault that the child would not wear the device, after years of not hearing well and not wanting to wear the processor.
- One felt the follow-up appointment was too far away (time).
- One parent was very unhappy with treatment at the review appointment.
- Many did not feel supported in their travel needs and felt trapped as they had no choice but to attend a review.

While the open disclosure process and review appointments offered an opportunity to gain information and better understand the issues, some of the feedback suggests that parents may not have known what questions to ask. The review appointments would have been stressful for all involved including the clinicians. Reflection in relation to this process, consideration of the way information was provided, and the guidance initially given to the audiology team would be beneficial.

Collaborative care

We asked about some of their experiences before the incident:

- Many families worked with an external EI provider but noted very little communication between these organisations and THHS.
- Most don't remember doing a functional listening check called the Ling Sounds.
- There was no reporting on progress or listening/spoken language development and another parent stated that they never got told how much their child was hearing.
- One parent said that she felt like she was failing.
- Most agreed that, at the time, they had trusted the audiologist.
- One parent noted a positive experience with the CI team but acknowledged that "as a parent, you didn't know any different".
- They had to trust the audiologist as the expert, "the mapping process was over my head".

A collaborative care approach where parents and carers are viewed as partners in their child's care is needed to get the best outcomes. Patient notes from files viewed did not indicate that information on child progress was routinely sought from them and/or documented at appointments. Some comments suggest a poor understanding of what they should expect and/or of the mapping process. The reviewers understand that all families are different, and many have challenges in addition to hearing loss. However, enabling parents/ carers through education, information sharing, seeking information, and listening to parents/carers, helps them to build confidence, feel like a trusted partner in their child's care, and to become their child's best advocate. Thus, enhancing the child and family experience and promoting person and family-centred practice.

Recommendations:

16. THHS to continue to provide an avenue for patients/parents with concerns to contact the hospital and request a review and be supported through the open disclosure process.

17. THHS to establish a culture that fosters continual quality improvement and safety through review of clinical incidents, consumer feedback, and audit and outcomes data to ensure patient and family-centered practice, resulting in an agile service that can meet changing needs.

- Review and develop consumer feedback mechanisms
- Staff training for incident reporting and management

6.6 Engagement Process- statewide audiology assurance program

The clinical review/ audit process

CHQ HH performs periodic clinical reviews/audits of all audiological services across Queensland as part of the program's commitment to providing quality audiological services. The clinical reviews assess the follow up diagnostic assessment for newborns who do not pass the hearing screen and surveillance assessments for those children with risk factors that may lead to hearing loss and provides feedback to the audiological service on performance against several key areas including accuracy of diagnosis and compliance with protocols. For THHS, audits were conducted in 2011, 2014, and 2020. During 2020 a clinical review was conducted reviewing the 2018 caseload encompassing a random sample of 10 cases.

In 2021 a CHQ HH clinical review report, for the clinical review conducted in 2020 was forwarded to the DOA and the CPA. The earlier audits were also forwarded to the DOA although the HSI team noted that a different staff member was named as the DOA at this time, this was an error but perhaps further highlights that the dual HP6 roles may have caused confusion in relation to lines of report and accountabilities within the department. The HH protocol also states that,

"For Queensland Health sites, the Executive Director of Allied Health will also be provided with a copy of the audit report, as they are required to sign off the report."

This did not occur for the 2021 report and while there are still responsibilities at the clinical leadership level, this is an omission that removed the opportunity for escalation, and for concerns to be discussed and addressed using the agreed formal process. Further investigation of this was not part of the HSI scope but warrants review.

The report noted some concerns, and as requested, an action plan was returned to the CHQ HH Director. To ensure that a program learns from the review, the outcome needs to be shared and discussed across the organisation and through the appropriate governance pathways. There should be transparency and scrutiny of the data and findings to ensure the whole program can learn from the process and can enable the necessary changes to support best practice. The escalation process or expectation for these reports from a THHS organisational governance perspective was unclear and the fact that the report was not forwarded to the executive level for sign off as stated in the HH protocol, further exacerbated this.

Clinical audits are an important quality assurance measure in a healthcare organisation. Clear application of a quality improvement (QI) process would have ensured that the external HH clinical review reports were flagged through the direct line manager chain to the service group and facilitated an appropriate response and action plan (with clear performance indicators) to the CHQ HHD. However, the report was not escalated to the direct line manager (Director of Medical Imaging) in full and the action plan created did not adequately address all concerns and implement changes that would ensure a better quality of care. While the HSI did find that a QI project to perform a clinical audit of the diagnostic caseload had been proposed in 2021, this did not appear to have been well implemented. Staff awareness of the intent of this project was impacted by the lack of transparency in relation to the clinical review findings, as the report was not discussed or circulated to the whole team.

The direct line manager acknowledged awareness of the 2021 clinical review report but had only received some information verbally, and this related mostly to patient travel and regional concerns relating to appointment timelines or attendance rather than the clinical practice compliance concerns and testing errors, thus minimising the importance of this report. The full clinical review report was not requested by or provided to the line manager resulting in a missed safety and quality improvement opportunity and appropriate oversight of this process did not occur.

Engagement with the statewide quality assurance program

The audit process should enable the service area to implement a QI process that is, identify areas of concern and in need of improvement through evaluation, develop an action plan, rectify and improve service provision, and then perform a re-audit/ review to ensure that these changes have been implemented and had an effect.

Engagement with the HH clinical review process, requires a response to findings, an action plan, and timelines. However, while the intent is to work collaboratively to address concerns, there does not appear to be immediate follow-up to ensure that the changes have been implemented or to ascertain the effect of these changes. This appears to be a gap in the process and accountabilities are unclear, which reduces the impact and effectiveness of the clinical review process and the opportunity for collaborative engagement. Also, the 2020 clinical review was a review of 2018 activity and the outcomes were not provided until 2021, thus leaving a considerable time period for the issues highlighted to continue.

The clinical review covers a number of domains, relating to documentation, appointment timelines, and clinical practice. When the first group of unexpected outcomes appeared, the SGD requested to meet with

the HHD and Clinical Auditor to discuss concerns. The initial advice from the HHD was that the pattern was not unusual, matched other cases across the program and that there were no immediate safety concerns. However, further review has shown that many of these clinical practice concerns were not isolated and continued. The HSI team suggests that reviewing the scoring of the clinical review outcomes may be warranted and different domains may need to include weighting and a risk rating.

Recommendations

18. THHS to review and define expectations for entry points and escalation of any department-related audits (internal or external) to ensure transparency and enable appropriate incident reporting and management.

19. CHQ HH to identify and define expectations, responsibilities, and accountabilities for the HH clinical review process, embed QI processes, and to complete the QI cycle with HH diagnostic service providers. This should include follow up with service providers to better ensure compliance and a high quality of care.

- Ensure that a copy of the report is sent to the EDAH for review and sign off.
- Ensure engagement and understanding of the process at all levels of the organisation.
- Provide staff education and training in the implementation of QI processes.

THHS to work collaboratively with CHQ HH to define expectations, responsibilities, and accountabilities for the HH clinical review process, and to embed QI processes and to complete the QI cycle including ongoing folow up with THHS to better ensure compliance with review findings and a high quality of care.

The HSI understands that changes have already been made to the process for receiving external audit reports. The report now goes to the MD25 – a high-level email is opened by the correspondence officer and then forwarded to key members of the executive.

6.7 Conflict of Interest

As part of the scope of this Part 9 review, the HSI team was asked to review the management of conflicts of interest in the audiology department.

Those employed by Qld Health must adhere to the Qld Health Conflict of Interest Guideline and Code of Conduct. Additionally, audiologists are also guided by the Code of Conduct of their relevant professional /peak bodies.

The HSI found a number of concerns in relation to the management of conflict of interest within the audiology department, resulting in a failure to properly identify risks and possible impacts, and to

ensure ongoing monitoring and review. This resulted in compromised trust, influenced decision making and professional judgment, and caused some disharmony within the team.

These findings and recommendations will be referred to the THHS in a confidential report in line with the principles of natural justice for those people involved.

6.8 Research

As part of this investigation, the HSI was asked to look at the degree to which research is undertaken within the audiology department, and whether a focus on research may have overridden the focus on clinical service delivery.

In the course of this investigation, it was clear that research is highly valued at TUH and that this aligns with the THHS strategic plan[30.] The audiology department has shown a strong commitment to research to inform and support clinical practice, over many years. The department has delivered a number of projects, peer-reviewed articles, and conference and training presentations that are a source of great pride. The department was the recipient of the "Research Team of the Year" prize in 2022 and is considered a clinical leader in the area of wideband absorbance (WBA) tympanometry.

The department has also been successful in achieving significant research grant funding. In addition to supporting the research projects, this funding has been used to purchase audiological equipment and recruit research assistants, who were also utilised to backfill clinical caseload commitments and clear waitlists. We understand that during 2010 and 2019 this funding enabled the employment of 7 temporary research assistants (HP3) and 0.5 administrative assistant. The equipment purchased was able to be used beyond the research project and has supported the growth and development of the audiology program.

The HSI requested a list of all research projects that the audiology department has been and is currently involved in. Information provided by the Research Manager and Director of Clinical Research showed that since 2007, the department has participated in 5 HREC-approved research projects (see table below). There is currently 1 active project *Clinical evaluation of wideband absorbance (WBA) technology,* and this has approval until 2025.

Title	Start date	Finish date
Development of clinical norms for behavioural and neurophysiological assessment in children with history of long-lasting conductive hearing loss due to otitis media	4/5/2007	17/11/2016
Clinical Audit of Identification of conductive hearing loss in children	27/10/2011	10/02/2017
Identification of middle ear pathology in infants	6/7/2009	18/7/2018

Understanding the benefits of surgery for the treatment of otitis media for Aboriginal and Torres Strait Islander children in remote communities in Queensland	2015	31/12/2020
Clinical evaluation of wideband absorbance (WBA) technology. New Technology Funding and Evaluation Program (NTFEP) funding – Clinical application of Wideband Absorbance Tympanometry to improve the diagnostic accuracy of wideband tympanometry.	2015	6/1/2025

Other projects and activity include:

- A teleaudiology project, as this was a pilot project when the program commenced, it would not have gone through HREC approval, and there was also a small funding grant for equipment attached to the grant.
- Participation in the National Acoustics Laboratory CUSP -Cochlear implant processor upgrade study.
- In 2021, the department was successful in achieving a significant funding grant from the William Demant Foundation to study otitis media in young children using WBA tympanometry, this funding included a 1FTE HP4 position for 2 years and an application for HREC approval is in process. This was a collaborative application with researchers from the University of Qld and QCH.
- During the interviews staff also indicated involvement in an MRI (Magnetic Resonance Imaging) study but there seemed to be some team communication issues regarding the project. Some staff did not appear to have clarity with regards to the development and introduction of the study and they were unsure how consent was being obtained. Further investigation indicated that the department is doing pre and post-hearing testing for a project that commenced in 2022, investigating Hearing Outcomes with LINAC radiation therapy. The audiology department is part of the project team but the Department of Nuclear Physics, Radiation Oncology is leading the project. Consent is being obtained by the Radiation Oncology team prior to referral to the audiology department and,
- The department recently achieved funding from a Study, Education, and Research Trust Account (SERTA) CHQ application for the evaluation of the efficacy and accuracy of next-generation ASSR technology. The project plan has been written, but this does not yet have HREC approval.

In addition, there are three audit and quality improvement (QI)projects, started in 2021 and 2022

- Evaluation of Childhood Hearing Clinic- Parent/consumer survey,
- CI Clinic patient satisfaction,
- Clinical audit of diagnostic caseload - Audiology Department.

In response the the HSI interview questions, the DOA indicated that there were additional QI projects planned for 2023 as highlighted and discussed in section 7.5.

THHS has a research governance process that is required prior to a project being undertaken[31].

The Research Governance Office (RGO) must undertake an assessment of the research project and there are a number of criteria to consider. Of relevance to this investigation:

- Head of Department (HoD) / Executive Director approval.
- Appropriateness of the research project in terms of the research goals of the department
- Alignment with the department/HHS research strategy.
- Sign off by the relevant Business/Finance manager to indicate the resource (financial, human, equipment, infrastructure).
- Implications of the research project for the department/HHS are appropriate, accountable, and available.
- That due consideration be given to the relevant laws, policies, and codes of conduct relating to matters such as privacy, confidentiality, consent, professional standards, contracts, and intellectual property.

Throughout the course of the interviews, we learned that:

- Research was strongly embedded in the department, with staff indicating that there was a strong expectation for all audiology team members to support the research by recruiting participants (at the time of appointment), explaining the research and providing an information sheet, gaining consent, performing additional research testing and data management (data collection and data entry). Staff stated that they sometimes felt under pressure to recruit participants and obtain consent and that information sheets were not always readily available.
- It was the perception of some staff members that research was sometimes prioritised over usual clinical work and that this may have resulted in delayed follow-up for some cases.
- Staff were encouraged to pursue research activities as this was seen as a professional development opportunity and promoted as a way to enhance career progression. Some staff indicated that they felt that the only opportunity for career progression within the department was linked to research activities, in specific areas, and that this was more highly valued than clinical work.
- There was a low level of understanding of clinical versus research allocations across the team and at higher levels outside of the department.
- There has been organisational support for research activities. As per the RGO assessment guidelines, SSG directors, BSM, and ENT directors have supported the audiology department submissions and collaborations to conduct clinical research.
- The DOA noted that at the consultant audiologist HP6 level role, participation in research was required.
- At times, there was insufficient time for the DOA and CPA to complete research administration, data analysis, and research write-up, due to clinical activity, operational and management demands, and that this was often done out of hours.

- Research monitoring within the hospital is reliant on self-report and while the governance team can monitor, if necessary, the lead researcher generally takes full accountability.
- Requested research progress reports were not always sent to the RGO within expected timeframes, however, the HSI team was advised that this was not unusual due to competing priorities and not inconsistent with other clinical services in the hospital.
- During the interview process, one comment was that *Audiology was unusually strong in research for a small team*. This is supported when benchmarking TUH Audiology research activity against other similar-sized or even larger audiology services within QLD Health.
- To increase the participation of all staff in research, the DOA noted a plan to allocate a half day per week to each audiologist for research and to make use of a desk space that had been provided to the audiology department in the TUH unit.

The HSI understands that individual departments are not expected to have a research strategy, but that there would be an overarching strategy for the service group and that this would be considered as part of the project approval process.

In terms of whether the research met the goals of the department:

- The projects undertaken align with the THHS strategic research priorities[30], however, the goals for the department were not well articulated or understood by the audiology team.
- The clinical versus research allocation and prioritisations were not well understood by the audiology team, direct line report, or at the executive level. Without a clear target or goal, it is unclear how the impact on clinical utilisation and service need was monitored and managed.
- Projects have been translated into clinical practice:
    - The teleaudiology reports that the HSI team reviewed were of a high standard and has helped to reduce barriers to access.
    - The current WBA research is relevant to the department as it relates to middle ear pathology. Middle ear effusion is more prevalent in children and particularly in ATSI children. While this has been incorporated into the test battery at TUH, it is not currently a routine part of audiology test batteries.
    - The CUSP project resulted in upgraded cochlear implant processor technology.

- The QI CI satisfaction survey provided overall qualitative information about the service which is important for continuous quality improvement. However, there was no regular review of post implant outcomes, which is essential to measure the effectiveness of the intervention and to monitor the progress of the CI recipient. Best practice would dictate that this quantitative measure should be a fundamental goal for the program but this was not prioritised.

Impact on clinical activity

Department scheduling indicated that the DOA had an allocation of approximately 0.5 Full Time Equivalent for operational, administration, and research activities and that the CPA had a similar allocation for

operational, administration, research, and university lecturing, which does align with clinical care ratios and expectations for a role at HP 6 level identified in Australian Health Review 2017 and the Health Practitioners and Dental Officers (Queensland Health) certified agreement (No 4)[17].

The DOA and CPA showed great ambition and a desire for all of the audiology team to contribute to and participate in research. The incorporation of research to support evidence-based practice, quality improvement, and that is translational is an important component of any clinical program. However, the workforce planning in relation to the time allocation for staff and the potential impact on the clinical capacity was not clear or well communicated.

With evidence and information reviewed during the investigation, the HSI is unable to definitively conclude that the level of research activity overrode clinical activity and affected clinical outcomes. However, there was a high level of ongoing research activity within a small team with high clinical demands.

As the lead researchers (DOA and CPA) were also responsible for operational management and administration of the audiology service and supervision of staff, in addition to some clinical caseload, there was a high risk that research and education commitments could impact on clinical focus and priorities. Information provided in this report suggests that operational management was not optimal and governance of activities such as policies and procedures and outcomes measures for clinical programs (e.g. CI program) were not prioritised, thus supporting this concern and some audiology team members stated that research was prioritised over clinical service and need.

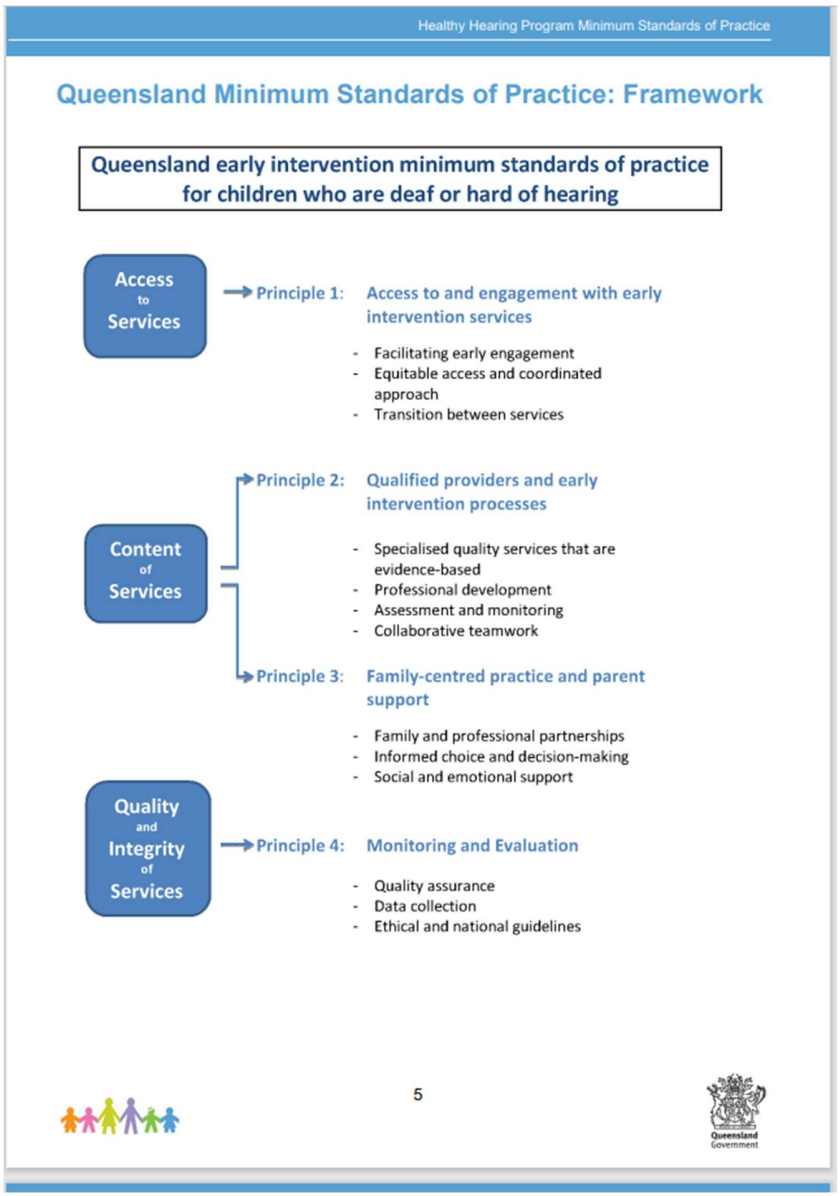
Recommendations

20. THHS to encourage Audiology to build a culture of QI as a foundation upon which to identify future research topics.
21. THHS to support Audiology to develop a research strategy or align research activity to enhance research capability throughout all levels of staffing.
22. THHS to enable Audiology to work with Allied Health research team to explore research topics that support translation into practice relevent to the discpline of audiology.
23. THHS to align audiology research activity and expectations with broader organisational strategies and recommendations.
24. THHS to understand current research audiology commitments and review staffing and equipment resources to ensure strategies in place to complete existing obligations.
25. THHS to clearly define research versus clinical work allocations,aligning with departmental expectations and with consideration of capacity.

Appendices

Appendix 1

Reference Healthy Hearing Program Standards of Practice



Queensland Minimum Standards of Practice: Early Intervention- full document at

https://www.childrens.health.qld.gov.au/wp-content/uploads/PDF/healthy-hearing/hh-min-stds-prac-qld.pdf

Appendix 2

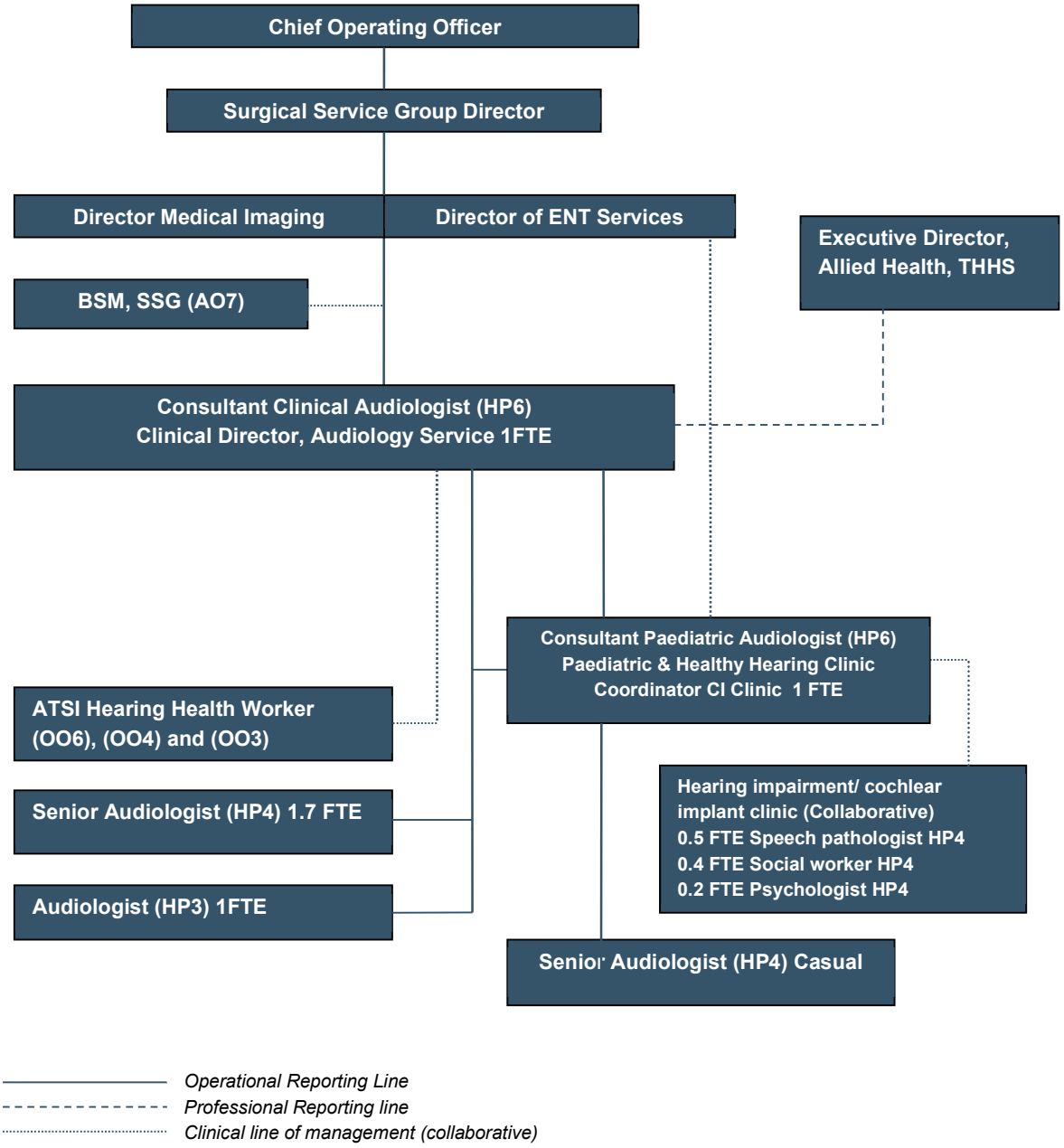
Reference Clinical Care Ratios Australian Health Review 2017

Table 3. Mean (%) clinical care ratios and 95% confidence interval (CI)

Profession	Tier 1 mean (95% CI)	Tier 2 mean (95% CI)	Tier 3 advanced clinician mean (95% CI)	Tier 1, 2 and 3 advanced clinician mean (95% CI)	Tier 3 clinical team leader mean (95% CI)	Tier 3 clinical educator mean (95% CI)	Tier 2 clinical educator mean (95% CI)
Occupational therapy	80.05 (77.78–82.32)	74.46 (71.66–77.26)	64.83 (50.35–79.32)	75.46 (72.60–78.31)[C,D]	58.33 (52.28–64.38)	65.40 (51.50–79.30)	64.33 (56.66–72.00)
Speech pathology	76.39 (73.56–79.21)	72.79 (68.19–77.38)	71.17 (61.73–80.60)	74.22 (71.61–76.82)[C,D]	58.90 (49.42–68.38)	33.29 (16.23–50.34)	64.00 (55.52–72.48)
Physiotherapy	83.54 (81.69–85.39)	73.98 (70.32–77.74)	76.29 (69.49–83.08)	78.58 (76.20–80.96)[A,B,D,E]	58.30 (52.23–64.37)	59.83 (38.08–81.58)	53.50 (37.25–69.75)
Nutrition and dietetics	73.57 (69.39–77.75)	68.45 (63.70–73.21)	60.33 (40.82–79.85)	70.06 (66.69–73.43)[A,B,C,E]	50.67 (33.13–68.20)	55.00 (42.73–67.27)	49.00 (28.57–69.43)
Social work	75.63 (73.19–78.07)	73.17 (69.54–76.81)	69.25 (55.00–83.50)	73.89 (71.50–76.27)[C,D]	62.78 (53.59–71.96)	35.80 (16.66–54.94)	73.00 (N/A)[F]
All professions	77.93 (76.51–79.35)	72.52 (70.74–74.31)	69.54 (64.22–74.86)	74.54 (73.27–75.80)	58.33 (54.13–62.51)	48.83 (39.30–58.33)	58.65 (51.30–66.01)

Appendix 3

Reference: Surgical Service Group Audiology Reporting Structure


Chief Operating Officer
Surgical Service Group Director
Director Medical Imaging
Director of ENT Services
Executive Director, Allied Health, THHS
BSM, SSG (AO7)
Consultant Clinical Audiologist (HP6)
Clinical Director, Audiology Service 1FTE
Consultant Paediatric Audiologist (HP6)
Paediatric & Healthy Hearing Clinic
Coordinator CI Clinic 1 FTE
ATSI Hearing Health Worker (OO6), (OO4) and (OO3)
Hearing impairment/ cochlear implant clinic (Collaborative)
0.5 FTE Speech pathologist HP4
0.4 FTE Social worker HP4
0.2 FTE Psychologist HP4
Senior Audiologist (HP4) 1.7 FTE
Audiologist (HP3) 1FTE
Senior Audiologist (HP4) Casual
Operational Reporting Line
Professional Reporting line
Clinical line of management (collaborative)

Appendix 4

Recommendations

1. THHS review of the scope of services and model of care for the Audiology department and skills matrix of the audiology team with recognition of advanced practice for specialised areas and reducing the single practitioner point of accountability.

2. THHS to define roles and responsibilities within the multidisciplinary cochlear implant team, extending to external providers, ensuring parents have a platform for raising concerns or providing feedback.

3. THHS to explore collaborative models of care with other QLD services providing CI care to promote sustainability and shared learning.

4. THHS to explore partnership agreements or Memorandums of Understanding (MOUs) with external early intervention or speech pathology providers with clearly defined expectations around outcomes reporting and escalation of concerns aligned with the Queensland Minimum Standards of Practice for early intervention.

5. THHS to review workloads and clinical care ratios within the Audiology department.

6. THHS to ensure the Audiology team is adequately resourced and supported to manage the case reviews that are currently taking place.

7. THHS to review of department protocols, policies, work instructions, and report templates, including, Healthy Hearing and cochlear implant services and outcomes, to ensure alignment with current standards of clinical practice and statewide guidelines.

8. THHS to review the knowledge and understanding of risk management processes within the department.

9. THHS to ensure compliance with the Healthy Hearing Diagnostic Audiology Protocol and minimum requirements of peer review through the co-signing process.

10. THHS to review the individual practices that led to sub-optimal care provided, ensuring the principles of natural justice occur, and are in line with HRE processes.

11. THHS to review departmental opportunities for quality improvement/ efficiencies, including equipment maintenance, suitability and set up of test facilities (especially for those children 3 years and under), and clinic scheduling and waitlist management.

12. THHS to define and embed outcomes measures as a tool to guide the need for additional reviews and to perform risk assessments across the various clinical caseloads to enable focus on those areas most at risk.

13. THHS to review departmental and organisational structure to ensure a clear understanding of roles and accountabilities, including line management, professional supervision, and operational performance with consideration of alignment with the Allied Health division of THHS.

14. THHS to review work level statements of the HP levels to ensure knowledge, skills, and expertise are aligned, met, and understood.

15. THHS to ensure a culture of collaborative practice and openness to shared learning for the audiology department with clear communication, peer-to-peer review, and regular support and supervision from a range of internal and external audiology providers. TUH audiologists are encouraged to participate widely in professional advisory and working groups, to reduce isolation and to ensure feedback from the working groups is clearly disseminated throughout the team with opportunity for participation at all levels, commensurate with the staff member's roles and responsibilities.

16. THHS to continue to provide an avenue for patients/parents with concerns to contact the hospital and request a review and be supported through the open disclosure process.

17. THHS to establish a culture that fosters continual quality improvement and safety through review of clinical incidents, consumer feedback, and audit and outcomes data to ensure patient and family-centered practice, resulting in an agile service that can meet changing needs.

18. THHS to review and define expectations for entry points and escalation of any department-related audits (internal or external) to ensure transparency and enable appropriate incident reporting and management.

19. This investigation has identified an opportunity for CHQ HH to revisit their review process, to identify and define expectations, responsibilities, and accountabilities for this process with diagnostic service providers. Also, to embed Quality Improvement (QI) processes, and to complete the QI cycle with these service providers. The HSI believe that this should include follow up with service providers to better ensure compliance and a high quality of care.

20. THHS to encourage Audiology to build a culture of QI as a foundation upon which to identify future research topics.

21. THHS to support Audiology to develop a research strategy or align research activity to enhance research capability throughout all levels of staffing.

22. THHS to enable Audiology to work with the Allied Health research team to explore research topics that support translation into practice relevant to the discipline of audiology.

23. THHS to align audiology research activity and expectations with broader organisational strategies and recommendations.

24. THHS to understand current research audiology commitments and review staffing and equipment resources to ensure strategies are in place to complete existing obligations.

25. THHS to clearly define research versus clinical work allocations, aligning with departmental expectations and with consideration of capacity.

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