Routine Hearing Assessment of Children Referred to Paediatric Audiology - Full Clinical Guideline

Reference no.: CH CLIN AUDIOLOGY/4049

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Introduction

About 1 per 1000 babies are born each year in England with a permanent childhood hearing impairment (PCHI), and in 40% of these cases, the hearing loss will be severe to profound. Of children born with normal hearing, about 1 per 1000 acquire a PCHI by the age of ten, which may result from congenital or genetic factors that manifest after a period. 30-40% of children with hearing difficulties have additional needs or developmental problems. (Fortnum et.al. 2001, Holland Brown, 2019)

Otitis media with effusion (OME), or glue ear, is the most common childhood illness and a common cause of temporary hearing loss. However, OME can be a prolonged condition that may cause hearing to fluctuate, leading to educational, language and behavioural problems. Children with Down's syndrome and those with cleft palate are particularly susceptible to OME and require persistent monitoring of their hearing levels. (NICE, 2008)

Numerous issues associated with deafness in children are well documented, including delayed acquisition of speech and language, poor physical and mental wellbeing, and poorer educational and job opportunities. (Archbold, 2015, Fortnum et.al., 2001, Holland Brown, 2019) Therefore, it is imperative to provide early intervention as part of a multidisciplinary network of paediatric professionals, including Paediatricians, ENT (Ear, Nose and Throat), Educational Psychologists, and Speech and Language Therapists.

1. Aim and purpose

The aims and purpose of this guideline are to:

- Provide evidence-based pathways and minimum standards expected of a paediatric hearing assessment
- Inform clinical decision making when assessing the hearing of children with a developmental age of 8 months and over
- Support early identification and management of childhood hearing impairment
- Ensure safe discharge or onward referral of children with or without hearing and related issues, including those with risk factors for permanent hearing impairment

2. Definitions and keywords

ABR	Auditory Brainstem Response
AN	Auditory Neuropathy
BAA	British Academy of Audiology
BAHA	Bone Anchored Hearing Aid
BSA	British Society of Audiology
BTE	Behind the Ear
cCMV	Congenital Cytomegalovirus
CHL	Conductive Hearing Loss
CI	Cochlear Implant
CM	Cochlear Microphonic
CPAC	Combined Paediatric Audiology Clinic (QHB)
CR	Clear Response
CROS	Contralateral Routing of Signal
ED	Emergency Department
ENT	Ear Nose and Throat
EVA	Enlarged Vestibular Aqueducts
GA	General Anaesthetic
MDT	Multidisciplinary Team
NCR	No Clear Response
NICE	National Institute for Health and Care Excellence
NICU	Neonatal Intensive Care Unit
OAE	Otoacoustic Emission
OME	Otitis Media with Effusion
PCHI	Permanent Childhood Hearing Impairment
PHE	Public Health England
PIFU/OU	Patient/Parent Initiated Follow Up/Open Appointment
PTA	Pure Tone Audiometry
PVP	Programmable Ventriculo-Peritoneal shunt

QHB	Queens Hospital Burton
RDH	Royal Derby Hospital
SCBU	Special Care Baby Unit
SEND	Special Educational Needs and Disabilities
SLM	Sound Level Meter
SNR	Signal to Noise Ratio
SOP	Standard Operating Procedure
SPL	Sound Pressure Level
TEOAE	Transient Evoked Otoacoustic Emission
VP	Ventriculo-Peritoneal shunt
VRA	Visual Reinforcement Audiometry

3. Referral criteria for routine hearing assessment

The following section details the referral criteria for hearing assessment in Paediatric Audiology.

3.1. Contraindications

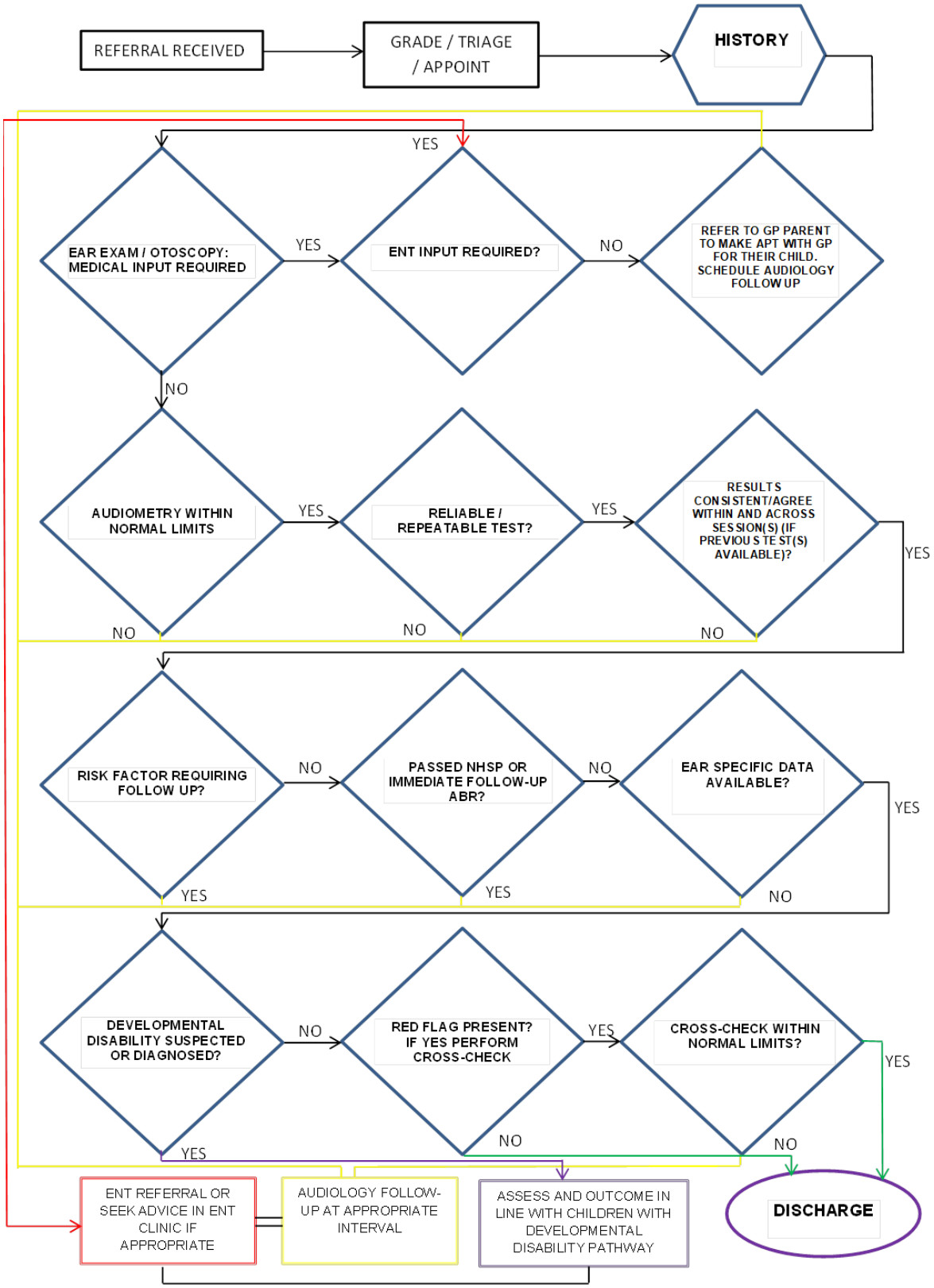
Also, see **Section 8** Onward referral criteria:

- Sudden loss or sudden hearing deterioration (Sudden = within 72 hours) - Send to ED or Urgent Care ENT. Alongside this referral, arrange for an URGENT hearing assessment to confirm deterioration and identify the nature of any hearing loss
- Altered sensation or numbness in the face or facial droop - Send to ED or Urgent Care ENT. Alongside this referral, arrange an URGENT hearing assessment as detailed above
- Persistent pain affecting either ear
- History of persistent ear discharge (other than wax) from either ear within the last 90 days, where attempts by primary care to manage have been unsuccessful
- Vertigo or balance concerns that are not fully resolved or which are recurrent
- Complete or partial obstruction of the external auditory canal preventing full examination of the eardrum or proper taking of an aural impression
- Foreign body in the ear canal
- Abnormal appearance of the outer ear or the eardrum (including mastoid area).

3.2. Appointment triaging

When coding referrals, the referral reason needs to be triaged. Urgent referrals include patients with bacterial meningitis or meningococcal septicaemia and routine referrals will include patients referred for speech development concerns. After a patient has had their first assessment, they should be triaged to ensure they are on the correct waiting list and seen in a timely manner. Refer to the Prioritisation guidance for children awaiting new and review appointment within Paediatric Audiology SOP which has been linked below, for the full guidance.

4. Routine hearing assessment pathway



5. Paediatric hearing assessment

All children shall be assessed by audiologists trained to work with children. Audiologists shall follow national guidelines and local protocols and care pathways. Children will receive audiological assessments commensurate with their age and stage of development. Parents are recognised as key members of an MDT. The MDT also includes ENT, Paediatricians, SALT, and ToDs.

Verbal informed consent shall be obtained from the parent or child before a hearing assessment, and this shall be recorded in the patient notes. Refer to the Trust *Consent* guideline.

Testing shall be conducted in sound-treated paediatric test rooms. Where this is impossible, ambient sound levels shall be measured and recorded, and appropriate mitigating techniques such as suprathreshold screening or insert earphones will be employed. Threshold estimation, especially required for hearing aid fittings, shall be carried out in a sound-treated room. All audiological procedures shall use calibrated equipment that meets national and international standards (see *Calibration of Audiometric Equipment* Trust SOP.)

Accurate and complete audiological information shall be gathered to inform decisions about aetiology and prognosis and discussions about further management.

The outcome of the assessment should inform a clearly defined care management plan. Parents shall be given a suitable verbal explanation of the audiological assessment results on the day. After the assessment, parents shall be given appropriate written information.

The audiological assessment results shall be documented and reported to the parents, referrer, GP, child health department, and any other relevant professionals within seven days.

5.1. Cross checking and triangulation using a 'test battery' approach

A test battery approach, specifically, cross-checking or triangulation of behavioural and electrophysiological tests, shall be used. In short, triangulation combines testing methods to increase the credibility and validity of the clinical findings. A test battery approach provides detailed information, avoids concluding from a single diagnostic test, allows the identification of multiple pathologies, and provides a comprehensive foundation for observing a child's auditory behaviours (Madell et al.,2019, pp 65). As a minimum, audiologists shall attempt to obtain an otoscopic examination, behavioural binaural behavioural thresholds, and tympanometry. Where time permits, extra testing is encouraged, for example, OAEs and speech testing. Audiologists should carefully consider contradictory findings, for example, raised AC thresholds with normal tympanometry and whether to run more tests or review patients more urgently.

5.2. Steps before beginning paediatric assessment

Audiologists shall read referral letters and the results of any previous hearing assessments. In addition, it may be helpful for audiologists to refer to medical records on eCasenotes,

Lorenzo or Meditech to gain an overall picture of health and development when working with children with additional or complex needs.

Determine the child's developmental age	Case History Clinical Reports Observation of the child
Determine the child's physical abilities	Upper body control Head and neck control Vision Ability to manipulate toys and objects (such as response button)
Choose test room set up	Furniture placement Number of Audiologists Placement of parents/ interpreters/ siblings

Table 1: Before beginning paediatric hearing assessment.

Adapted from Madell et.al. 2019

5.3. Patient history

A full patient history shall be taken as detailed in the proforma appointment template within Auditbase. The table below explains the critical points within the history taking process.

Ask about Hearing:	**Why:**
Parents thoughts What does child respond to? Does the child turn up TV, tablet etc.? Any fluctuations in hearing Any adverse reaction to loud sounds Any use of hearing aids/implants etc. How well is any hearing device worn? Any professional concerns regarding the child's hearing	Looking for any red flags, parental concerns etc. Looking for information about child's hearing status

Any concerns regarding child's academic progress	
Ask about Speech and Language: Babbling, first word, phrases, sentences Is speech clear? Does child follow verbal requests? How does child communicate their needs? Any speech regression Are they under the care of SALT?	**Why:** Speech issues may be caused by hearing loss and speech delay may alert audiologist that a hearing issue may be present Unclear speech could be a consequence of high frequency loss To establish child's level of understanding to inform test selection
Health History: Any coughs, colds or ear infections Meningitis and other viral infections Medication Feeding or swallowing issues Seizures Surgeries Head injuries Hospital admissions	**Why:** Looking for risk factors that may increase their risk of having a hearing loss Making sure no PVP shunt fitted for safety reasons. A VP shunt is not a contraindication Looking for any issues indicating the need to monitor hearing thresholds
Developmental and Social History: Meeting motor milestones Any clumsiness, imbalance Interactions with others Behavioural issues Eye contact	**Why:** Help to decide which test is appropriate Alert to other reasons why speech may be delayed or parents might be concerned Alert to any balance/vestibular issues
Education setting: Current school/nursery Any educational problems or concerns	**Why:** Teachers/ nursery workers may have hearing concerns Poor attainment in school/nursery could be linked to hearing loss

Birth and Family History: Illness during pregnancy Medications/drug alcohol intake during pregnancy Any complications during pregnancy Gestation and birth weight Any complications at birth in particular admission to NICU Result of newborn hearing screen Any family history of PCHI Consanguinity	**Why:** Risk factors for hearing loss Risk factors for other health/development issues Risk factors for progressive hearing loss where surveillance is required
Other Professionals involved: Is the child under any other health care professionals and why e.g., speech therapy, paediatrician, neurology, physiotherapy, ENT etc.?	**Why:** To gain an impression of child's overall status and if there are any additional needs/syndromes that may be associated with hearing loss
Any experience of tinnitus: Does the child experience any noises in their ears, how long for, which ear or both, what type of sound, is it troublesome?	**Why:** To identify red flags and to offer advice if needed For onward referral to ENT or Tinnitus clinic

Table 2: Patient History for paediatric assessment.

Adapted from: Madell et.al. 2019

5.4. Ear examination

See *Recommended Procedure: Ear examination* (BSA, 2022).

5.5. Tympanometry

See *Recommended: Procedure Tympanometry* (BSA, 2024).

5.6. Acoustic Reflexes

See *Recommended: Procedure Tympanometry* (BSA, 2024).

5.7. Otoacoustic emissions (OAE's)

OAE's should be carried out as per recommended procedure (BSA 2022).

OAE testing should be considered in the following cases:

- Limited or no behavioural results obtained
- Suspicion of functional hearing loss
- Asymmetrical or unilateral hearing loss
- To confirm or deny behavioural results
- If child is asleep when they attend for the assessment
- Where there are contradictory behavioural and electrophysiological results.

6.8 Minimum discharge criteria

The BAA and BSA joint Minimum Discharge Criteria (2024) recommends the minimum acceptable hearing assessments and the criteria for discharge. A local criterion has been created based on it. Audiologists should seek to collect the maximum amount of audiological information possible for each child. Testing should be prioritised in a way that meets the clinical need of each case.

A patient is considered high risk if they have:

- Family history of a permanent hearing loss
- Concerns regarding sound localisation
- Vertigo
- Bacterial meningitis/meningococcal septicaemia
- No NHSP (born in another country or missed)
- Ototoxic medications
- NHSP referral with risk factors (conductive hearing loss).

Test	**Minimum discharge criteria**	
	Patient without risk factors	**Patient with high risks will need ear specific testing**
VRA Please note, these are minimum response levels, not thresholds, as per BSA 2024.	Sound-field - using static speaker: ≤25 dBHL at a minimum of 3 frequencies including 500Hz and 4kHz.	Where 500Hz has been tested using sound-field speaker: ≤20 dBHL bilaterally at a minimum of 2 frequencies including 4kHz Where sound-field has not been performed at 500Hz:

		≤20 dBHL bilaterally for at least 3 frequencies including both 4kHz and 500Hz.
Performance	Stimuli presented via sound-field speakers: ≤25 dBHL at a minimum of 3 frequencies including 500Hz and 4kHz Stimuli presented via handheld warbler: 20 dBHL at a minimum of 3 frequencies including 500Hz and 4kHz.	Where 500Hz has been tested using sound-field speaker: ≤20 dBHL bilaterally at a minimum of 2 frequencies including 4kHz Where sound-field has not been performed at 500Hz: ≤20 dBHL bilaterally for at least 3 frequencies including both 4kHz and 500Hz.
Play Audiometry	Headphones or inserts: ≤20 dBHL at a minimum of 3 frequencies bilaterally which must include 4kHz and 500Hz. Where 500Hz has been tested using sound-field: ≤20 dBHL bilaterally at a minimum of 2 frequencies including 4kHz.	
Pure Tone Audiometry	Headphones or inserts: ≤20 dBHL at a minimum of 3 frequencies bilaterally which must include 4kHz and 500Hz. Where the child is older and capable of undertaking full PTA, all frequencies should be undertaken as per BSA PTA guidance. ≤20dBHL at 500Hz-8kHz.	

Table 3: Minimum discharge criteria.

A patient cannot be discharged solely on TEOAE's, however TEOAE's can be used in conjunction with other behavioural assessments to gain ear specific testing. Preferably, ear specific behavioural thresholds meeting the above criteria should be obtained prior to discharge. Sound-field behavioural responses (VRA/Performance testing) which meet the discharge criteria, together with Clear Response TEOAEs in both ears can be used to conclude that the child has satisfactory hearing in both ears. A patient who has been referred due to bacterial meningitis / meningococcal septicaemia cannot be discharged with TEOAE. A Clear Response for TEOAE's is ≥6dB SNR for 3 bands including 4kHz, and any 2 frequencies from 1.5 kHz, 2 kHz, 3 kHz.

6.9 Parent/Patient debrief

The audiologist shall carry out a full debrief detailing all test results and their implications. Following this, a management plan should be agreed upon with the parent. Where the child

is developmentally able to understand hearing assessment results, they should be included in any discussions.

As a minimum, the debrief should include the child's hearing levels, nature of hearing loss if present, prognosis, and all treatment options available. The next steps and timing of future follow-ups should also be discussed.

Where limited results are obtained, the next steps for assessment shall be discussed with parents.

Written patient information supporting the verbal debrief should be provided.

Any advice/management plans should be evidence-based. Discussions should be documented in the patient notes.

6.10 What do to do if the child will not cooperate?

Madell et al (2019, pp 88) state;

> *"A child is a child. Especially with a very young child, the audiologist, not the child, should be in control. If testing cannot be accomplished, the audiologist needs to accept responsibility and say "I was not able to test this child" rather than "This child is not testable". Owning responsibility for a test failure encourages the audiologist to try many procedures before giving up. There are some children for whom it is not possible to obtain good cooperation. However, there should be very few children for whom little or no information is available at the end of a test session."*

For the very few children for whom little or no information is available at the end of the test session please see *Referring Children to Auditory Evoked Potential Testing under Sedation and General Anaesthetic* Trust guideline which covers special behavioural test procedures and guidance on when to consider ABR under sedation or GA.

6.11 Documentation and reporting

The appropriate hearing assessment template (appendix 1) should be completed in Auditbase.

Care should be taken to ensure all sections are completed.

Any management discussion needs to be recorded in the template to ensure continuity of care.

The appropriate standard assessment report document should be completed in Auditbase (appendix 2) ensuring copies are sent to all relevant professionals involved in child's care.

Clinical preparation sheets need to be completed to alert admin team that reports are ready for processing.

6. Management options

Please see referral pathway and refer to relevant clinical guidelines when making decisions about ongoing management of a child. If there are any doubts about the management of a particular case, this should be discussed with senior clinicians.

Outcome	**When to consider**
Discharge	'Normal hearing' as determined by test criteria and no significant risk factors
PIFU/OU	'Normal hearing' as determined by test criteria and no significant risk factors Useful when child is developmentally old enough to self-report * and there are concerns about fluctuating hearing levels due to mild hearing loss caused OME (see Section 9.8 and NICE guidelines (2023). Provide condition specific information and details for contacting the department. Open Follow Up is for a period of up to 12 months.
Review (waiting list) + Glue Ear clinic	Watchful wait period for children with a significant hearing loss or a hearing loss which is affecting their speech and educational development caused by OME. Using the Prioritisation guidance for children awaiting new and review appointment within Paediatric Audiology SOP, triage patients. After 2 appointments where a patient has a significant hearing bilateral loss or a hearing loss affecting the patient's speech and educational development, the Audiologist should consider a referral to the ENT. Amplification options should be revisited at each appointment wherever clinically relevant. See Section 9.8 and the NICE OME guidelines (2023). At RDH, if the patient can successfully complete a performance/play/PTA testing, they can be referred to the Joint ENT/Paediatric Glue Ear Clinic, otherwise, refer the patient to the patient to the ENT clinic. At QHB, refer the patient to ENT. For full guidance, refer to the Joint ENT/Paediatric Glue Ear Clinic SOP (RDH). Risk factors for hearing loss as detailed in **Section 9** hearing surveillance. Confirmed PCHI not currently using amplification. Amplification options should be revisited at each appointment wherever clinically relevant.

	Refer to the Prioritisation guidance for children awaiting new and review appointment within Paediatric Audiology SOP to determine the priority and urgency of the next appointment.
Review (booked during appointment)	Where limited or no test results are obtained and there is concern about hearing and or speech. Strong suspicion of PCHI not previously identified ** Strong suspicion of deteriorating hearing thresholds.
Onward referral	See **Section 8** for Onward referral criteria

Table 4: Management options following a paediatric hearing assessment. .

*Research suggests that children can self-report health issues from the developmental age of 6 years and improves significantly until the age of 10 years (Conijn, 2020).

**Newly diagnosed impairment shall be confirmed after two consecutive hearing tests showing reliable and consistent behavioural responses. Ear impressions shall be taken after the first test if family agree, and retest conducted as part of a hearing aid fitting appointment (see *Hearing Aid Fitting and Review* Trust SOP).

7. Onward referral criteria

Notwithstanding contraindications, where aidable hearing impairment is detected, referral for another opinion or management should not delay impression taking or provision of amplification. Impression taking should follow BSA recommended guidelines (2013 and 2022). The exception is mild OME, which must be confirmed over three months. At the first appointment, cases of OME presenting with moderate hearing loss and a history of significant speech or educational delay, amplification can be considered.

History	
Sudden loss or sudden deterioration of hearing (Sudden = within 72 hours)	Send to ED or Urgent Care ENT
Rapid loss or rapid deterioration of hearing not associated with a pre-diagnosed condition that causes rapid loss e.g., EVA (Rapid = 90 days or less)	Refer for aetiological investigations (RDH – Community Paediatrician, QHB – CPAC) Refer for amplification (if within criteria also refer for CI)
Fluctuating hearing loss, other than that associated with OME	Refer for aetiological investigations (RDH – Community Paediatrician, QHB – CPAC) Refer for frequent hearing surveillance and offer amplification
Persistent pain affecting either ear	Refer to ENT
History of persistent ear discharge (other than wax) from either ear within the last 90 days, where attempts by primary care to manage have been unsuccessful	Refer to ENT
Altered sensation or numbness in the face, or facial droop	Send to ED or Urgent Care ENT
Hyperacusis	Refer to Audiology Hearing Therapy Service
Tinnitus which is: unilateral, pulsatile, has significantly changed in nature, leading to sleep disturbance or associated with symptoms of anxiety or depression.	Refer to ENT Refer to Audiology Hearing Therapy Service
Vertigo/ balance concerns which are not fully resolved, or which are recurrent.	Refer to ENT
Ear examination	

Complete or partial obstruction of the external auditory canal preventing full examination of the eardrum and/or proper taking of an aural impression.	For wax, refer to nurse led wax removal service and consider issuing olive oil. Refer to ENT if nurse led wax removal fails.
Foreign body	Send to ED or Urgent Care ENT **Button batteries require IMMEDIATE REMOVAL.** Consider using video otoscope to aid ENT
Abnormal appearance of the outer ear, perforation and/or abnormal appearance of the eardrum (including mastoid area)	Refer to ENT If active infection is suspected advise to seek GP opinion for immediate treatment.
Audiometry and Tympanometry	
Permanent conductive hearing impairment	Refer to ENT Refer for amplification Refer to SEND for Specialist Teacher for Hearing Impairment
OME confirmed after 3 months	Refer to the Joint ENT/Paediatric Glue Ear Clinic (RDH) if the patient: • Is developmentally over the age of 3 years and can successfully complete a performance/play/PTA test. • Has a significant bilateral hearing loss or if their hearing loss is affecting their speech or educational development. Refer to the ENT (RDH) if the patient: • Is developmentally under the age of 3 years and requires two testers for testing. • Has any risk factors such as Down's syndrome. Refer to the ENT (QHB) if the patient: • Has a significant bilateral hearing loss or if their hearing loss is

	affecting their speech or educational development. For full guidance, refer to the Joint ENT/Paediatric Glue Ear Clinic SOP (RDH) and see Section 9.8. Refer for amplification and refer to SEND for Specialist Teacher for Hearing Impairment, once patient has had hearing aid intervention.
Unilateral or asymmetrical sensorineural hearing loss	Refer for aetiological investigations (RDH – Community Paediatrician, QHB – CPAC) Discuss amplification (BTE, CROS, or BAHA) and its pros and cons to allow family to make an informed decision Refer to SEND for Specialist Teacher for Hearing Impairment
Other presenting feature such as difficulty hearing speech in noise, significant parental concern of test battery with incongruous results.	Discuss with senior members of the team.

Table 5: Onward referral criteria for children assessed in Paediatric Audiology.

Adapted version of the criteria documented in the *Guidance for Onward Referral Guidance for Adult Audiology Service Users*. (BAA, 2023)

7.1. Referral criteria for amplification

Where hearing loss is identified appropriate amplification should be considered in the form of hearing aids, bone conduction aids and/or cochlear implantation.

8. Hearing surveillance

The Guidelines for surveillance and audiological referral of infants and children following the newborn hearing screen (PHE, 2024) summarise key evidence for the titled cohort's referral and surveillance. However, focusing on risk factors identified as part of the Newborn Hearing Screening Process, the document does not capture the full age range and extent of conditions managed by Paediatric Audiologists. In addition, there are many syndromes associated with hearing loss not included within the guidelines because they are not recognised at birth or until after a hearing loss has been identified.

The following table outlines some of the common syndromes and conditions affecting hearing.

Syndrome or condition	Signs	Associated hearing concerns
22q11.2 deletion (DiGeorge Syndrome)	Heart defects, poor immune system function, cleft palate, complications related to low levels of calcium in the blood, and delayed development with behavioural and emotional problems	38% were found to have hearing impairment: 68% with CHL, 14% with SNHL, and 18% with mixed hearing loss. (Jiramongkolchai et al 2016)
Achondroplasia	Short limbs, dwarfism	CHL
Alport's syndrome	Progressive kidney disease and abnormalities of the inner ear and the eye	Progressive SNHL
Beckwith-Wiedemann	Increased height and weight at birth or in childhood. Asymmetry of growth, large tongue size. Low blood sugar in the first few days or weeks of life. Umbilical hernia or other abdominal wall defect	Progressive CHL, caused by stapedial footplate fixation, may develop after birth
Branchio-Oto-Renal syndromes	A condition that disrupts the development of tissues in the neck and causes malformations of the ears and kidneys	CHL OME, permanent CHL, SNHL, or mixed hearing loss Most children will have varying degrees of hearing loss ranging

		from mild to profound and affecting one or both ears. It may be stable or progressive
Branchial Arch Syndrome	Tissue deficiencies and hypoplasia of the face, external ear, middle ear and maxillary and mandibular arches.	CHL, permanent CHL, SNHL, mixed hearing loss
Charcot Marie Tooth (CMT)	Damage to the peripheral nerves, muscle weakness in their feet, ankles, legs and hands, an awkward gait, highly arched or very flat feet, numbness in the feet, arms and hands. The symptoms of CMT usually start to appear between the ages of 5 and 15	Progressive SNHL
CHARGE syndrome	CHARGE is an abbreviation for several of the features common in the disorder: Coloboma, heart defects, choanal atresia, growth retardation, genital abnormalities, and ear abnormalities	CHL, SNHL, mixed hearing loss
cCMV	Developmental and motor delay, vision loss, microcephaly (small head), Seizures	SNHL, progressive SNHL See below for surveillance guidance
Downs syndrome	Developmental delay, eyes that slant upward, skin folds on the inner corner of the upper eyelid, low muscle tone, a flat nasal bridge	CHL, SNHL, progressive SNHL, mixed hearing loss See below for surveillance guidance

Ectodermal dysplasia	Abnormal development of the skin, hair, nails, teeth, or sweat glands	SNHL 22% had a known history of hearing loss, and over half reported some level of difficulty processing verbal information
Friedreich's Ataxia	Neurological, ataxia, loss of ankle reflexes, peripheral neuropathy, balance problems	AN
Goldenhar syndrome	Craniofacial dysmorphology, preauricular skin tag, cleft palate	CHL
Hemifacial microsomia	Underdeveloped unilateral facial tissues, primarily affects the ear, mouth and jaw areas	CHL
Hereditary Motor Sensory Neuropathies	Neurological, ataxia, loss of ankle reflexes, peripheral neuropathy, balance problems	AN
Heterochromia	Very pale blue eyes, 20% of those with Type I have a hearing loss compared to 50% of those with Type II	SNHL
Hydrocephalus	Intracranial pressure, may have a PVP shunt	SNHL
Kabuki syndrome	A rare, multisystem disorder characterized by multiple abnormalities including distinctive facial features, growth delays, varying degrees of intellectual disability, skeletal abnormalities, and short stature	CHL Hearing loss, mainly due to recurrent otitis media, has been reported in approximately 40% of individuals (Tekin, 2006)

Kallman syndrome	Undescended, or partially descended, testicles. Small penile size. Facial defects, such as cleft lip or palate. Short fingers or toes, especially the fourth finger. Development of only one kidney. Colour blindness. Abnormal eye movements.	SNHL Hearing impairment has been reported in a very limited number of males.
Klippel-Feil syndrome	Abnormal fusion of two or more bones in the neck, short webbed neck, decreased range of motion in the head and neck area, and/or a low hairline at the back of the head.	CHL, SNHL, mixed hearing loss
LAMM (Labyrinthine Aplasia, Microtia, Microdontia)	Development of the ears and teeth, absent structures of the inner ear	SNHL
Leber's Optic Neuropathy	An inherited form of vision loss. Although this condition usually begins in a person's teens or twenties, rare cases may appear in early childhood	Progressive AN
Long QT syndrome	Cardiac murmurs or arrhythmias	SNHL
Macrocephaly	A head circumference (the measurement around the widest part of the head) that is greater than the 98th percentile on the growth chart	AN
Microcephaly	A head size significantly smaller than that of other	SNHL, Progressive SNHL

	children of the same age and sex.	
Mucopolysaccharidoses	Group of inherited lysosomal storage disorders. Lysosomes function as the primary digestive units within cells.	Progressive SNHL
Neurofibromatosis type I	Birthmarks known as café au lait spots, which are light or dark brown patches that can be anywhere on the body, soft non-cancerous tumours on or under the skin (neurofibromas), clusters of freckles in unusual places – such as the armpits, groin and under the breast, problems with the bones, eyes and nervous system	SNHL
Neurofibromatosis type II	Neurofibromatosis type 2 (NF2) is a genetic condition that causes tumours to grow along the nerves.	SNHL Almost everyone with NF2 develops tumours along the nerves responsible for hearing and balance.
Optic Atrophy type 1	Vision loss and hearing loss	SNHL, AN, Progressive SNHL, Progressive AN
Otodental dysplasia syndromes	Conical, small or widely spaced teeth	Progressive high frequency SNHL, developing from childhood to middle age
Pendred syndrome	Signs of goitre forming in late childhood or adulthood, neurological, ataxia, loss of ankle reflexes, peripheral	Progressive SNHL

	neuropathy, balance problems	
Pierre Robin sequence	Underdeveloped jaw, backward displacement of the tongue and upper airway obstruction. Cleft palate	CHL
Rubinstein-Taybi syndrome	Short stature, moderate to severe intellectual disability, distinctive facial features, and broad thumbs and first toes Pre-auricular tag	CHL, SNHL
Skeletal dysplasia	An umbrella term for conditions affecting child's bone and growth	CHL, SNHL
Smith-Lemli-Opitz	Distinctive facial features, microcephaly, learning disability, and behavioural problems.	SNHL
Stickler's syndrome	Cleft palate, myopia	CHL
Treacher Collins	Craniofacial dysmorphology, pre-auricular tag, cleft palate	CHL
Turners syndrome (TS)	Condition affecting females only. Variety of medical and developmental problems, including short height, failure of the ovaries to develop and heart defects	CHL in 80%. SNHL in older children
Trisomy 13 and 18	Trisomy 18 experience a slow growth rate as well as heart defects and other organ abnormalities, a low birth weight, small, abnormally-shaped head, small jaw and mouth.	CHL, SNHL

	Trisomy 13 are born with life-threatening medical conditions, including severe intellectual disabilities and physical abnormalities. Babies with trisomy 13 often die within their first few days or weeks of life.	
Ushers syndrome	Visual field loss retinitis pigmentosa, balance problems	SNHL, progressive SNHL People with Usher type 1 are usually born with profound hearing loss in both ears. Usher type 2 are usually born with a mild to severe hearing loss in both ears. This is typically within the higher frequency ranges. Usher type 3 is characterised by gradual sight and hearing loss, which occurs later in life.
Van Der Woude	Lower lip pits combined with a cleft lip (with or without cleft palate), or cleft palate alone	CHL
Waardenburg syndrome	White forelock, other hair, skin and eye pigmentation changes, hyper or hypopigmentation, balance problems	SNHL, progressive SNHL (type II)

Table 6: Conditions requiring hearing surveillance in children.

Table adapted from Holland Brown (2019)

This is not an exclusive list of syndromes/conditions associated with hearing loss. It is the Audiologists responsibility to ensure that review is put in place for any child presenting with

condition likely to be associated with hearing loss. If in doubt bring the case to senior clinicians for further discussion.

General surveillance for syndromes or conditions causing CHL

Children presenting with craniofacial abnormalities should be reviewed in line with the cleft palate pathway.

Children presenting with other conditions associated with conductive hearing loss should be reviewed in line with the Down's syndrome pathway.

If in doubt cases should be discussed with senior clinicians.

General surveillance guidance for children identified with PCHI

The majority of PCHI's are identified through NHSP pathways. For children identified with late onset PCHI before the age of five years, refer to the *Later Identified Permanent Childhood Hearing Impairment* Trust SOP.

Assessment/ Surveillance:

- Babies, toddlers and children with complex needs may be assessed as frequent as every 3 months
- Assessments gradually decrease until school age when children and young people should be assessed at least once a year
- Provide amplification as appropriate within 4 weeks of confirmation of PCHI
- For babies, aiding is paramount for bilateral PCHI of 40dBHL and greater, averaged over 0.5, 1, 2 & 4kHz
- For babies with mild or unilateral PCHI early intervention or aiding should always be discussed with and offered to the family.

Onward referral:

- Offer referral for aetiological investigations
- Offer referral for active early intervention through ATH
- Discuss the option of referral for CI with families of children with severe/ profound hearing loss. A severe/ profound hearing loss is defined as hearing only sounds that are louder than 80 dB HL (pure-tone audiometric threshold equal to or greater than 80 dB HL) at 2 or more frequencies (500 Hz, 1,000 Hz, 2,000 Hz, 3,000 Hz and 4,000 Hz) bilaterally without acoustic hearing aids
- Onward referral for consideration of CI should only be made after a valid trial of acoustic hearing aids for at least 3 months. (Unless contraindicated or inappropriate)
- Refer to Ophthalmology if PCHI has been identified under the age of 5 years of age.

Discharge:

- In the case of bilateral implantation (CI or BAHA), local Audiology centre is however responsible for battery provision
- In the case of bimodal stimulation, local Audiology centre is responsible for child's hearing aid needs

- Refer to the Adult Audiology Department at 18 years of age.

Auditory Neuropathy Spectrum Disorder (ANSD)
Please see BSA guidelines on Assessment and Management of Auditory Neuropathy Spectrum Disorder (ANSD) in Young Infants , 2019.

Assessment/ Surveillance:

- In babies, possible ANSD is determined by the presence of a CM at 85dBnHL and/or recordable OAE and the absence of or grossly abnormal ABR
- It is important to distinguish between long term ANSD and delayed maturation. Whenever possible, ABR should be repeated at 8-10 weeks corrected age before a definitive diagnosis is made
- A retest at 12-18 months may be helpful for the management of individual cases.

Onward referral:

- It is recommended to offer hearing aids to all newly diagnosed cases of ANSD, fitting conservatively and increasing gain over a matter of weeks until responses from the child are observed in subsequent appointments
- If behavioural thresholds are not yet available, and there is significant parental or professional concern, then hearing aids should be fitted
- When reliable behavioural thresholds have been determined, then hearing aids should be fitted according to prescription targets based on these thresholds.

8.1. Bacterial meningitis and/or meningococcal septicaemia

Assessment/ Surveillance:

Surveillance and testing should be carried out in line with the Meningitis and mengiococcal septicaemia guidelines NICE (2010)

- Audiological assessment should ascertain ear and frequency specific information.
- For babies less than 12 weeks corrected age: ABR conducted under natural sleep. If not possible a diagnostic OAE test would be helpful and if result is satisfactory then review at 8 months
- Between 12 weeks and 7 months corrected age: As above. If there is parental / professional concern about hearing loss, then proceed with ABR under sedation
- Over 8 months corrected age: Ear specific Visual Reinforcement audiometry.

Onward referral:

- If hearing impairment identified, refer for hearing aids
- Urgent referral to CI centre required upon diagnosis of severe/profound hearing loss before ossification takes place.

Discharge criteria:

- Under 8 months - AC ABR thresholds of <=20dBeHL at 1 and 4kHz in each ear
- 8 months and over - Behavioural AC thresholds of <=20 dB HL at 1 and 4 kHz in each ear
- Paediatricians will review in OPD with the results of their hearing test 4-6 weeks after discharge from hospital.

8.2. Cleft Palate (including cranio-facial abnormalities)

Assessment/ Surveillance:

- After newborn screening, children are assessed at 8 months, and then at 3 monthly intervals until the age of 3 years, then at 4 years, 5 years and 10 years of age. Audiological assessment at 5 and 10 years of age are subject to national audit, and it is important that every effort is made to ensure attendance at these ages. These assessments need to be carried out AFTER the child's 5th or 10th birthday to fit in with national key performance indicators (KPI's) in line with Trent Regional Cleft Lip and Palate Audiological Review guidance. (2020)
- If hearing is within normal limits, no review required until the next recommended age
- Results at every recommended assessment age to be copied to Regional Cleft Coordinator.

Onward referral:

- If a hearing loss is detected through the NHSP or subsequent audiological assessment, arrange ENT/audiological follow up and treatment as appropriate.
- In the case of temporary conductive hearing loss caused by OME, ventilation tubes should be offered as an alternative to hearing aids. (For full guidance, refer to the NICE Guideline Otitis media with effusion in under 12s (2023) and the Joint ENT/Paediatric Glue Ear Clinic SOP (RDH).
- Due to likelihood of recurrence of OME in this population, amplification should be the 'go to' option for intervention in these children.

Discharge criteria:

- Age 10 if hearing within normal limits

8.3. Congenital Cytomegalovirus (cCMV) (including other congenital infections such as toxoplasmosis and rubella)

Assessment/ Surveillance:

- cCMV is a contraindication for newborn hearing screening
- Cases of cCMV should be referred directly for ABR assessment and have AC ABR thresholds tested down to <=20dBeHL at 1 and 4kHz in each ear
- It is recommended that all children with cCMV should have hearing tests regularly in early childhood to detect deafness.
- NDCS recommend testing every 3-6 months in the first year, every 6-9 months until age 3 and then yearly until 6 years of age.

Onward referral:

- If hearing impairment detected, then refer for amplification.

Discharge criteria:

- Age 6, when bilateral AC hearing levels are better than 25-30dBHL averaged over 0.5,1,2 and 4 KHz

- If the child is not likely to report a change in hearing themselves or parents or professionals are concerned, tests should take place up to secondary school age
- The family and child should be informed of the small possibility of the onset of deafness in teenage years, so they can get help quickly if there are any concerns about their child's hearing.

8.4. Downs Syndrome

Assessment/ Surveillance:

Surveillance to be carried out in line with Nice Otitis Media with effusion guidance (2008)

- Children with Down's Syndrome should be referred for target follow at 8 months up via NHSP unless already identified with hearing loss
- From 8 months audiological assessment should be carried out every 3 months until age of 2 years.
- Assessment should then be conducted annually until age 5 and then 2 yearly thereafter for life
- Because of the increased incidence of SNHL, test at 8KHz should be performed whenever possible.

Onward referral:

- Hearing aids (BTE or Bone conduction) should normally be offered as an alternative to ventilation tubes in cases of OME (see *Management of Otitis Media with Effusion (Glue Ear) in Children*)
- Consider referral for BAHA appropriate.

Discharge criteria:

- At 18 refer to the Adult Special Hearing Needs services.

8.5. Enlarged Vestibular Aqueducts (EVA)

Assessment/ Surveillance:

- Children with EVA are prone to sudden drops in hearing levels. Hearing may fluctuate. Overall hearing levels may gradually deteriorate over time. It is therefore important for audiology service to be highly responsive to assessing these children, and if need be, assess their hearing and hearing aid provision more regularly.

Onward referral:

- Refer for amplification as appropriate.

8.6. Microtia and Atresia

Microtia in isolation is rare and does not require ongoing surveillance, however clinicians need to be aware that microtia is almost always accompanied by atresia because the outer ear and the middle ear form at around the same time during foetal development. Some microtia patients have what appears at first look to be a normal canal, but many of them end

with no connection into middle ear. If there is any doubt about the status of the ear canal monitoring should take place as per atresia guideline.

Assessment/ Surveillance:

- **Unilateral atresia +/- microtia ABR assessment:** the unaffected ear should be tested using AC ABR at 1 and 4 KHz down to ≤20dB eHL or threshold. The affected ear should be tested using BC ABR at 4KHz down to ≤15dB eHL or threshold. Mask as required.
- **Bilateral atresia +/- microtia ABR assessment:** both ears should be tested using BC ABR at 4KHz down to ≤15dB eHL followed by AC ABR at 4KHz down to threshold. Mask as required. Amplification in the form of bone conduction hearing aid should be discussed immediately.
- **For microtia associated with syndrome** see table 8.
- **It is good practice** to advise families of active voluntary sector support groups. In the UK there are two groups; Changing Faces (accessed via such as www.changingfaces.org.uk) and Microtia Mingle (accessed via www.microtiamingle.co.uk and a FaceBook page).

Behavioural assessment should commence around 8 months corrected age.

- **Unilateral atresia +/- microtia:** monitor hearing in unaffected ear until 5 years of age with reviews every 3-4 months in the first 2 years of life and every 6-9 months until 5 years of age. Offer BC softband hearing aids for unilateral atresia. BC softband can be safely used from 3 months of age. Referral for BAHA should be considered to access surgical intervention and/or better device(s)
- **Bilateral atresia+/- microtia:** manage according to PCHI guideline.

Further information on microtia and atresia can be found in *UK Care Standards for the Management of Patients with Microtia and Atresia (2015)*

Onward referral:

- Refer to ENT for advice on ear reconstruction/ future implantable device(s)
- Refer for aetiological investigations upon finding a hearing impairment
- Refer for active early intervention through ATH upon finding a hearing impairment.

Discharge:

- See PCHI guideline for patients under continual management
- For unilateral atresia, tests should take place for as long as required for the following reasons and with clinical judgement; if the child is not likely to report a change in hearing themselves, child is using amplification, parental/professional concerns, based on clinical judgement.

8.7. Otitis Media with Effusion (OME)

For full guidance, refer to the NICE Guideline Otitis media with effusion in under 12s (2023) and the Joint ENT/Paediatric Glue Ear Clinic SOP (RDH).

Assessment/ Surveillance:

- To confirm that intervention is needed OME needs to be present over a period of 3 months or longer.
- Consider recommendation of Autoinflation during active observation period. (NICE, 2023 and Bidarian-Moniri, A., 2016)
- Verbal and written information to be provided about the nature and effect of OME, including its natural resolution during active monitoring period.

Onward referral:

Refer to the Joint ENT/Paediatric Glue Ear Clinic (RDH) if the patient:

- Is developmentally over the age of 3 years and can successfully complete a performance/play/PTA test.
- Has a significant bilateral hearing loss or if their hearing loss is affecting their speech or educational development.

Refer to the ENT (RDH) if the patient:

- Is developmentally under the age of 3 years and requires two testers for testing.
- Has any risk factors such as Down's syndrome.

Refer to the ENT (QHB) if the patient:

- Has a significant bilateral hearing loss or if their hearing loss is affecting their speech or educational development.

Discharge:

- Refer to the NICE guidelines (2023), as the discharge criteria is no longer solely dependent on the audiometric parameters.

8.8. Ototoxic Drugs

Referral for audiological assessment and monitoring is at the discretion of the Paediatrician and medical team.

Some long-term conditions such as Cystic Fibrosis require frequent use of aminoglycosides. It is the responsibility of the paediatrician or medical team to state whether continued monitoring is required and at which intervals. Children with sickle cell anaemia are also sometimes exposed to ototoxic medication.

The main group of ototoxic drugs are aminoglycoside antibiotics which are very commonly used prophylactically in babies. Aminoglycosides include Gentamycin, Neomycin, Streptomycin and Tobramycin

However, babies suspected or known to have the A1555G mitochondrial mutation and have received aminoglycosides (irrespective of whether blood levels are within therapeutic range) should be referred by a Paediatrician for immediate follow-up and audiological monitoring irrespective of screen outcome.

Assessment/ Surveillance:

- Hearing loss caused by ototoxicity is likely to predominantly affect higher frequencies
- Audiological assessment should ascertain ear and frequency specific information
- Less than 12 weeks corrected age: ABR conducted under natural sleep. If this is not possible, a diagnostic OAE test would be helpful and if result is satisfactory then review at 7 months or as requested by the clinician overseeing the child's treatment
- Between 12 weeks and 7 months corrected age: As above. If there are parental / professional concerns about hearing loss, then proceed with ABR under sedation
- Over 7 months corrected age: Ear specific audiometry.

Onward referral:

- Refer for amplification as appropriate
- Consider aetiological investigation unless it is certain that ototoxicity is the cause of hearing loss.

Discharge:

- Bilateral AC ABR thresholds of ≤20dBeHL at 1 and 4kHz
- When bilateral AC hearing levels are better than 25-30dBHL averaged over 0.5,1,2 and 4 KHz. When developmentally appropriate, 8kHz should be tested.

Chemotherapy:

Children who have undergone chemotherapy in particular using Cisplatin and to a lesser extent Carboplatin often develop high frequency hearing loss. Hearing will initially be monitored at the hospital where cancer treatment is being undertaken. These platinum-based drugs remain in the cochlear and some children can develop hearing loss months or even years after completing treatment. Annual review is recommended for any child who has received ototoxic chemotherapy until they reach 18 years of age.

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Documentation Controls

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Appendices

Appendix 1 Example Appointment proforma

HEARING ASSESSMENT CLINIC PROFORMA

UPDATE S4H

Audiologist Tester 1	
Audiologist Tester 2	
Room seen in	
Summary	1. 2. 3.
Syndromes and risk factors	**(Please update Paediatric Module in AuditBase)**
Summary of last appt	
Referral reason	Targeted follow-up /Professional concerns / Parental concerns / Speech delay / Routine assessments due to ___ / Failed school screen
Attended with	Mum / Dad / Parents / Sibling / Grandmother / Grandfather/ Foster carer/ Interpreter
Other Health Professionals	
Education	

HISTORY

Hearing	Parental concerns: **Yes / No** Responds to name and speech at normal volume: **Yes / No- Needs repetition and a raised voice** Responds to environmental sounds: **Yes / No** Locates sounds: **Yes / No** Hears TV/music at a normal volume: **Yes / No- Needs volume raised**

Speech & Language	**Verbal communication / BSL / Makaton signing / Non-verbal** Parental concerns: **Yes / No** Vocabulary: **Has a good vocabulary / Delayed vocabulary- uses _____ words / Babbling and vocalising** Vocabulary: **Used in context / Not used in context** Vocabulary: **Uses single words / Can join up to __ words together** Pronunciation: **Clear / Unclear / Missing sounds** Communication: **Verbal / Pulls and points carer to what they want / Doesn't ask for what they want** Language: **Understands key words and phrases / Struggles to understand key words and phrases**
Tinnitus	

GENERAL HEALTH

Cough/Colds	No / Yes
Ear Infections	No / Yes
Scarlett fever	No / Yes
General Health	
General Development	
Surgery on ear, nose, throat, or head	(Contraindication PVP shunt – See BSA Procedure)
Significant head injury	
Hospital admissions for significant illness	

BIRTH HISTORY

Family History	No / Yes			
Pregnancy	Normal			
Gestation Age				
Neonatal Period/ Risk factors	Normal / Risk			
NICU/ NNU admissions details				
NHSP Update s4H	Yes / No	**NHSP Results**	**RIGHT**	**LEFT**
			CR / NCR	CR / NCR

RESULTS

Verbal consent	Yes / No					
	RIGHT			**LEFT**		
Otoscopy	Normal Retracted Perforation/Grommet Abnormal dull/red TM Non occluding wax Blocked wax Foreign Body Infection (detail)			Normal Retracted Perforation/Grommet Abnormal dull/red TM Non occluding wax Blocked wax Foreign Body Infection (detail)		
Comments	N/A					
Tympanometry	Peaked Negative Middle Ear Pressure Flat Flat high canal volume Attempted Not done			Peaked Negative Middle Ear Pressure Flat Flat high canal volume Attempted Not done		
Tympanometry values	ECV	ECC	Impedance	ECV	ECC	Impedance
Comments	N/A					
TEOAE	Pass Absent Attempted Not done			Pass Absent Attempted Not done		
Comments	N/A					
Behavioural Test	Visual Reinforcement Audiometry (VRA) Performance Test Play Audiometry Pure Tone Audiometry (PTA)					
Hearing loss						
Comments	**Please indicate** • **reasons for difference in test strategy where it varies from recommended procedures** • **nature of response** • **whether no sound trial completed** • **evidence of false positives** • **localisation**					
Behavioural Test	**Behavioural Observation Audiometry / Distraction testing**					
Sound	**Level (Sound Level Meter)**			**Response**		

MANAGEMENT PLAN

Actions for next visit
Amplification discussion (Please record any conversation of H/aid / CI/BAHA and outcome)
Discharge
Next appointment arranged on
Review 3 months / 6 months / 1 year
Review in complex clinic
Open appointment for 1 year
ABR to be booked under sedation/GA
Refer to Ear Nose &Throat Consultant / Paediatrician
Advised olive oil / sodium bicarbonate

Appendix 2 Example Appointment Report

Summary:

1. **Satisfactory hearing in each ear.**
2. **Satisfactory hearing with both ears listening together.**
3. **Mild hearing loss.**
4. **Incomplete hearing assessment.**

#Client first name# attended the Children's Audiology Clinic for a hearing assessment.

A patient history was taken, and consent was obtained for the necessary audiological testing.

On examination, otoscopy shows no abnormalities detected with a clear view of the eardrum/ retracted eardrums / perforations/ grommets/ dull eardrums/ non-occluding wax/ blocked wax/ active infection. Tympanometry, a measure of the health of the middle ear, indicated healthy middle ear function/negative middle ear pressure/evidence of glue ear.

Normal- binaural

The results of the assessment indicate that #Client first name# has satisfactory hearing with both ears listening together which would indicate that the better hearing ear has good access to speech and language. We cannot rule out a one-sided hearing loss based on today's results. A copy of the audiogram can be seen in Appendix A.

Normal- bilateral

The results of the assessment indicate that #Client first name# has satisfactory hearing in both ears, indicating good access to speech and language. A copy of the audiogram can be seen in Appendix A.

Mild hearing loss- unilateral

The results of the assessment indicate that #Client first name# has a mild/moderate hearing loss in the left ear/right ear***.*** This indicates acceptable access to speech and language in a quiet environment however a one-sided hearing loss may make it harder to listen in background noise. The hearing loss is likely due to the presence of glue ear. A copy of the audiogram can be seen in Appendix A.

Mild hearing loss- bilateral

The results of the assessment indicate that #Client first name# has a mild/moderate hearing loss in both ears. It will help to use communication tactics to help your child access speech and language. The hearing loss is likely due to the presence of glue ear. A copy of the audiogram can be seen in Appendix A.

Mild hearing loss- binaural

The results of the assessment indicate that #Client first name# has a mild/moderate hearing loss with both ears listening together. It will help to use communication tactics to help your child access speech and language. The hearing loss is likely due to the presence of glue ear. A copy of the audiogram can be seen in Appendix A.

Incomplete- No results

We attempted to assess #Client first name#'s hearing today however we were unable to obtain a complete set of results.

Incomplete- MEG's

We attempted to assess #Client first name#'s hearing today however we were unable to obtain a complete set of results. #Client first name# responded to everyday sounds at quiet levels. This would rule out a significant hearing loss with both ears listening together. We do not have any information about each individual ear, nor can we rule out a mild hearing loss based on these results.

OAE

We have carried out an oto-acoustic emission test to check #Client first name#'s cochlear function. A clear response was obtained from both ears. This would indicate satisfactory sensory hearing.

Wax removal referral

Consent was obtained for referral to a specialist nurse for wax removal. Olive oil has been issued/advised, and advice has been given regarding administration.

Management

The results were discussed and the following has been agreed:

- Discharge #Client first name# from the department.
- Offer a Patient Initiated Follow Up appointment if any concerns arise within the next 12 months. Departmental contact details can be found at the top of this letter.
- Review in _ months / weeks/ on an annual basis in accordance with surveillance protocols.
- Advised/Issued an Otovent to help with middle ear congestion.
- Review on _____ for further assessment.

If you require any further information or have any queries/concerns, please do not hesitate to contact us.

We appreciate any feedback you may have to improve our service. Please scan the QR code using your mobile phone camera or a QR code reader and select the hospital and department you attended from the drop-down menu. Alternatively, please follow this link and select the hospital and department you attended using the drop-down menu: https://bit.ly/3xDEHJm.

Yours sincerely

#Appointment resource user full name#
#Appointment resource user title#

This document has been electronically signed by the Administrator on behalf of the audiologist