Queensland Health

Screening Protocols and Guidelines 2016 V2

http://www.health.qld.gov.au/healthyhearing/pages/protocols.asp
Revised: June 2020; Review:2023

Queensland Government

Contents

Healthy Hearing Mission Statement

The Healthy Hearing Program aims to improve health outcomes for Queensland children through the earliest possible detection and management of permanent childhood hearing loss. Newborn hearing screening is the first stage of a comprehensive approach to communication development which includes further assessment and early intervention. The Healthy Hearing Program aims to systematically monitor its performance and be alert and responsive to emerging evidence in this field.

1. Introduction

The Healthy Hearing Protocols and Guidelines have been produced with the objective of ensuring newborn hearing screening uniformity across all screening sites, both public and private, in Queensland. This document provides an overarching set of protocols and guidelines to achieve consistency of practice across the state.

The layout of these protocols has been designed to allow quick access to relevant sections of the document. To maintain control of this document, screening sites are encouraged to use the online version of the Healthy Hearing Protocols and Guidelines. This assures that they are referring to the most current and correct version of the document. It can be accessed from the Healthy Hearing Website at https://www.childrens.health.qld.gov.au/chq/our-services/community-health-services/healthy-hearing-program/resources/.

1.1 Program Background/Rationale

Permanent childhood hearing loss (PCHL) is a common congenital anomaly. The incidence of PCHL in newborns is more frequent than any other condition included in neonatal metabolic screening, with 1 to 2 babies per 1000 births diagnosed with a significant hearing loss (HL).[1,2,3] More than half of children diagnosed with a HL come from the well-baby population, born without any known hearing loss risk factors such as family history or medical conditions associated with HL.

The detection of HL in the first 12 months of life can be difficult without the use of technology and often escapes detection by parents and/or the physician until the child fails to attain language milestones. However, recent technological advancements have produced a range of valid and reliable automated instruments that can now be used to screen newborn babies for hearing loss. Access to these instruments has enabled the establishment of cost-effective screening programs for PCHL such as the Healthy Hearing Program. Prior to the introduction of newborn hearing screening in Queensland, the average age of identification of a HL was approximately 30 months (2.5 years).

Early detection of HL in infants is of paramount importance, with age of identification and age of enrolment in intervention being the key variables for achieving optimal language development. International and local evidence suggests that detection of a HL and commencement of early intervention through hearing aid provision and communication habilitation by the age of 6 months may be critical for speech and language development, and the child's future learning and social outcomes.[4]

In line with a growing body of research on the importance of early identification of hearing loss, and in response to community initiative, Queensland Health implemented a universal newborn hearing screening program called the "Healthy Hearing Program". More than 60,000 babies are born in Queensland each year and all Queensland birthing facilities (public and private) offer newborn hearing screening.

1.2 Program Aims

The primary aim of the Healthy Hearing Program is to provide early detection and intervention for babies born with a permanent hearing loss likely to affect speech and language development, by:

- Providing free hearing screening to all Medicare eligible babies born in Queensland soon after birth.
- Providing immediate direct referral to Audiology for diagnostic assessment for any babies who receive a second *Refe*r result on their hearing screen.
- Providing targeted surveillance of all babies who receive a Pass result on their hearing screen but present with risk factors associated with late onset/progressive hearing loss.
- Facilitating treatment and / or early intervention for those babies diagnosed with a PCHL.
- Providing ongoing support and information for families of babies diagnosed with a PCHL until the child turns 6 years of age.

1 American Academy of Paediatrics: Task Force on Newborn and Infant Hearing. (1999). Newborn and Infant Hearing Loss: Detection and Intervention. *Paediatrics*,*103* (2), 527.
2 Smith, RJH., Bale, Jr. JF., & White, K R. (2001). Sensorineural hearing loss in children. *The Lancet*, *365*, 88, 879-890.
3 Thompson, D et al. (2001). Universal Newborn Hearing Screening: Summary of Evidence. *The Journal of American Medical Association, 286*(16) 2001-2010.
4 Yoshinaga-Itano, C et al. (1998). Language of Early– and Later–Identified Children with Hearing Loss. *Pediatrics*,*102*(5), 1161–1171

1.3 Program Targets/Benchmarks

Queensland Health is a signatory to the Council of Australian Government (COAG) 2013 agreement regarding the National Framework for Neonatal Hearing Screening standards. This framework defines the screening pathway for neonatal hearing screening and outlines minimum national standards that underpin reporting for neonatal hearing screening in Australia. The framework can be assessed here: http://www.health.gov.au/internet/main/publishing.nsf/Content/neonatal-hearing-screening

The Healthy Hearing Program has established the following targets:

Target Area	Key Performance Indicators
Screening Rates	Capture: • All Medicare eligible babies born in Queensland birthing facilities (public or private) are offered a hearing screen. • 100% of eligible babies are offered hearing screening. • <1% of parents decline screening. Coverage: • >97% eligible babies complete a hearing screen before one month corrected age. • 99% of eligible babies will have their screen completed by 3 months corrected age*.

Referral Rates	Direct refers:
	• < 2% of babies screened are referred for diagnostic Audiological testing*.
	  ○ Babies with a 'Bilateral Refer' result are offered assessment by Audiology within 2 weeks.
	  ○ Babies with a 'Unilateral Refer' result are offered assessment by Audiology within 6 weeks.
	• All babies with a 'Refer' (positive) result are referred for Audiological assessment within 72 hours of the final screen.
	Early Targeted Surveillance (ETS):
	• All identified babies are referred for Audiological assessment within 72 hours of the final screen (Bilateral 'Pass' result with craniofacial / syndrome risk factors present).
	• Babies in this category are offered assessment by Audiology within 6 weeks.
	Targeted Surveillance referrals:
	• < 4% of babies screened are identified with risk factors for progressive hearing loss; babies identified with risk factors will be reviewed by their 1st birthday.

Parent Support	• >97% babies with a 'Refer' (positive) result are referred, monitored and followed up through to diagnostic services and are provided access to key support and advocacy services.

* Indicates Queensland nominated benchmark.

The Healthy Hearing Program reports state-wide performance and outcomes which cover the following 4 key nominated themes outlined in the National Framework. These areas are:

- Participation and recruitment;
- Screening and identification;
- Assessment and diagnosis;
- Early intervention and management.

1.4 Governance, Program Responsibilities and Devolution to Hospital Health Service (HHS) Entities

The Healthy Hearing Program utilises universal equipment and nursing/midwifery staff to perform hearing screens on all Medicare eligible babies born in both the public and the private sectors in Queensland. The model endorsed ensures a high level of service delivery, able to identify and respond to common challenges and needs in a consistent way regardless of geographical and local boundaries. This model supports state-wide uniformity, equitable access and a standardised level of care.

The Healthy Hearing Program state-wide team are responsible for:

- Partnering with national and international newborn and paediatric exemplars to share knowledge and ensure Queensland infants receive contemporary high value care.
- Setting the strategic direction for the program.
- Developing and maintaining standardised policy and program standards.
- State-wide monitoring and reporting to State and National bodies.
- Undertake routine auditing and evaluation of service delivery and outcomes across all screening sites, and lead quality improvement reviews
- Funding and contractual management with Private birthing hospitals.
- Providing contemporary educational resources for training purposes.
- Reviewing and overseeing the introduction of new technologies (this transcends the traditional HHS boundaries and interfaces with governance function of HHP team).
- Liaising with screening and audiology sites to assist in the co-ordination of care where necessary for babies transferred between hospital facilities and agencies.

The Public Hospitals within each HHS and the Private Hospitals are responsible for:

- Day-to-day operational delivery of newborn hearing screening.
- Timely referral to appropriate Screening, Audiology and Family Support teams.
- Delivery of diagnostic audiology and appropriate medical services where designated.
- Delivery of high-quality care consistent with appropriate clinical interventions.
- Supporting consumers and families to become more knowledgeable and informed.
- Ensuring the screening service is performed by well trained, competent Nurses and Midwives in accordance with HHP Policies and Guidelines and within Scope of Practice requirements.
- Ensuring screening equipment is managed under a current Service Maintenance agreement.
- Providing local leadership regarding all matters relating to newborn hearing screening.
- Facilitate State-wide team access to undertake audit and quality improvement reviews.

Screening is only to be performed by Nurses and Midwives registered by Australian Health Practitioner Regulation Agency (APHRA) and must be directly employed by the facility.

Local Healthy Hearing Program co-ordination role will be the responsibility of a Clinical Nurse equivalent. The role involves:

- Healthy Hearing Database management.
- Tracking of every birth, transfers-in and transfers-out of the facility.
- Monitoring of local decline rate.
- Monitoring of local screening coverage rates, and referral rates to Audiology for assessment.
- Facilitating training and education of new staff, and ongoing development of team knowledge and skills.
- Monitoring compliance of annual screener competency assessments.
- Monitoring usage and stock of screening consumables (ear couplers/hugs and sensors).
- Awareness of, and advocacy for, Service Maintenance coverage for local devices.
- Acting as a resource person for the Healthy Hearing Program to promote awareness and benefits of screening to peers, patients and wider community.
- Assist State-wide representative during onsite audit and quality improvement review activities.

2. Healthy Hearing Screening Criteria & Logistics

2.1 Screening Eligibility Criteria

As a general principle, all newborns should be screened. However, in some situations the screen may need to be delayed and in rare situations screening may not be possible at all or is medically inadvisable.

2.1.1 Eligibility/Baby Selection for Screening

To be eligible for a free hearing screen, a baby must:

- Be eligible/ enrolled for an Australian Medicare Card in the first instance
- Non-Medicare eligible families may incur financial costs for the screen
- Have been born or transferred to a Queensland birthing facility accredited to perform screening
- Be an eligible Home birth (by meeting eligibility for an Australian Medicare card)
- Be between 34 weeks gestational age and ideally 1 month corrected age, however babies born prematurely can be screened up to 3 months corrected age (screening outside these timeframes can be considered after consultation with the area co-ordinator).
- Have normal outer ear anatomy for both ears and no other major cranio-facial abnormalities (as outlined in the Exclusions below in section 2.1.2).
- Be asleep or in a quite settled state and recently fed.
- Be medically stable and have completed any antibiotic or phototherapy treatment.
- Be ready for discharge home within the next three to five days if in a NICU or special care nursery.
- Have had informed parental consent obtained.

If a baby is in theory eligible for a screen but for technical reasons is unable to be screened (e.g. ears are too large for ear couplers/hugs), they should be referred directly to Audiology for assessment.

2.1.2 Exclusions

In rare situations, screening may not be possible or is medically inadvisable. These babies are referred directly to Audiology for assessment. The decision to exclude a baby from the screening program must be made by the treating clinician. Such situations include:

- When it is medically inadvisable to attach the sensors and/or ear couplers/hugs, e.g. if the baby has compromised skin.
- The presence of a major craniofacial abnormality, in particular the obvious malformation or absence of outer ear anatomy, including babies with unilateral or bilateral microtia/atresia. For babies with only 1 normal-looking ear, do not screen the 'good' ear even if this is requested by the treating clinician. The Area Co-ordinator or Head Office will provide additional information and support as required.
- Other conditions which medical staff deem as requiring a full diagnostic assessment by Audiology.

2.1.3 Screening to be Delayed/Postponed

Healthy Hearing screening should be delayed in the following situations:

Baby's condition	**When to Screen**
Baby is less than 34 weeks gestational age.	When baby is ready for discharge (not as soon as they reach 34 weeks gestational age).
Medically unstable.	When baby is healthy enough for discharge.
Being treated for hyperbilirubinaemia (e.g. under phototherapy).	After treatment is ceased and SBR dropped below treatment level.
Receiving/withdrawing from drugs that affect the central nervous system, unless being discharged on the medication.	After treatment is ceased.
Being treated with potentially ototoxic medications (e.g. gentamicin/vancomycin).	Once medication is ceased.
On a ventilator or in an incubator.	When baby is healthy enough for discharge.
Persistently agitated or irritable.	Once baby has settled.

2.2 Screening Equipment

The Queensland Healthy Hearing Program conducts hearing screening using the AccuScreen Newborn Hearing Screener. This device is mobile and non-invasive, utilising Automated Auditory Brainstem Response (AABR) technology to assess the auditory system from the external ear to the auditory brainstem.

The AccuScreen operates by delivering soft chirping sounds at 35 decibels to the baby's ears via disposable earphones (called couplers / hugs). Each "chirp" stimuli evoke a series of identifiable nerve responses from the auditory nerve and brainstem. This neural activity is known as the Auditory Brainstem Response (ABR). Sensors applied to the baby's skin pick up the neural response to sound and transmit the signals to the AccuScreen device which displays ABR bars for Right and Left ears. It then analyses the baby's neural response to determine if it is consistent with a template within the screening device which is derived from ABRs of normal-hearing infants. The AccuScreen detects the ABR waveform with high statistical confidence to determine that a response is either present or absent.

Screening will always occur in simultaneous binaural mode (2 ears tested at the same time) and all repeat screens for any "refer" result will be binaural mode. One ear screening is not permitted under any circumstance.

The AccuScreen device generates either a Pass ✓, Refer ✗, or an Incomplete ? result for each ear[1]. The results are known immediately, and no interpretation of results is required by the screener. A typical screen should take no longer than 4-5 minutes. An average screening time is 2 minutes.

A screening episode (AABR1 / AABR2) is not considered complete until there is a recorded Pass ✓ or Refer ✗ outcome for each ear displayed on the AccuScreen device. Result/s displaying an Incomplete outcome ? must be repeated.

The Nurse Screener may proactively stop the screen to troubleshoot. Stopping a screen is actively encouraged to promote ideal screening conditions, thereby preventing the possibility of false "refer" outcomes.

The maximum number of "starts" recommended under the Protocol is **3 starts** during each screening episode. This is applicable for AABR1 or AABR 2 or on the rare occasion a AABR3. Exceeding the nominated **3 starts** is considered a breach of Protocol which would require a written explanation in the Additional notes section on page 2 of S & R form.

The use of the "pause" button would only be recommended for very quick troubleshooting intervention e.g. electrode lifting, audible Public announcement.
The use of the "stop" button is always preferred to allow longer troubleshooting interventions e.g. baby unsettled and requires another feed or there will be insufficient time left to collect enough responses for an accurate result as the blue progress bar is nearing 50% point.

At the time the Nurse Screener deliberately stops the screen, a ? result will display for one or both ears. The screen is considered Incomplete. A total of 2 restarts may be attempted following successful troubleshooting interventions (maximum of 1 initial start and then 2 restarts). At the time of the 3rd start during AABR1 or AABR2 or AABR3 screen, the Screener should either let the screen progress to an outcome if conditions remain ideal, otherwise stop the screen and return later to perform another episode or leave for another day.

If the screen cannot be completed during an episode in which between 1-3 attempts occurred, these aborted attempts should be documented on Page 2 of the Screening and Referral form (this is useful for other screeners if they are required to perform a screen on the same baby), and a "Comment" on the AccuScreen device is to be selected at the time, explaining why the Screener stopped the screen. The comments on the S & R Form and the AccuScreen for aborted screens must match.

[1] Madsen AccuScreen User Manual Version 04-22-2015

2.3 Screening Location

The Healthy Hearing screen can be performed in any relatively quiet location including;

- at the mother's bedside in the Postnatal ward;
- in a designated hearing screening room, or Outpatient clinic room;
- special care or well-baby nursery;
- office area or clinician's room;
- the baby's home;
- other community setting such as Child and Maternal Health clinic;
- Paediatric ward in some agreed situations.

Parent/s are encouraged to be present at the hearing screen, but the screen can be conducted in their absence providing they have agreed to this arrangement. If separated, baby's ID wrist bands are to be cross checked with the mother when re-united in accordance with local hospital policy and process.

2.4 Screening Staff

The Healthy Hearing screen is to be undertaken by a Midwife, Registered Nurse or Enrolled Nurse who has completed an approved Healthy Hearing education program and achieved competencies in performing the hearing screen using the AccuScreen.
AINs are not eligible to be trained to perform hearing screens.

In some circumstances, the Healthy Hearing screen may also be performed by Indigenous Health Workers who have undertaken the approved Healthy Hearing training program.

Screening staff are responsible for:

- Obtaining informed consent from parent/s.
- Performing hearing screens.
- Explaining results to parent/s.
- Documenting results.
- Exporting data from the AccuScreen as per local protocols.
- Actioning referrals to Audiology and the Queensland Hearing Loss Family Support Service (QHLFSS).

2.5 Screening Timeframe

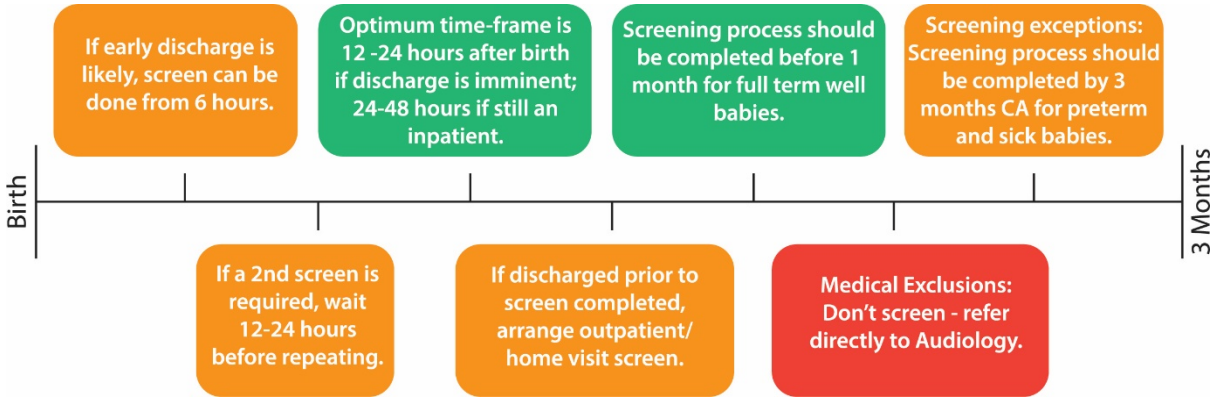
To ensure high capture rates, ideally screening should be performed during the birth admission. The screen can be performed from 6 hours after birth in accordance with the manufacturer's advice. The Screener will be mindful not to interrupt the Baby Friendly Hospital Initiative (BFHI) first few hours of bonding. Very early screening has the potential for false refer outcomes due to presence of birth fluid and debris in the ear canals.

The optimum timeframe is from 12 - 24 hours after birth if the baby's discharge home is imminent. Alternatively, 24 – 48 hours after birth if the baby is still an inpatient. Where a Refer result is obtained for the AABR1, a time period of at least 12 hours, ideally 24 hours should elapse before repeating the screen (AABR2). The program does not support immediate repeat screening following a Refer outcome. Postpone the screen to the next day if discharge is not imminent.

Where babies are discharged prior to completion of the hearing screening process, arrangements should be made to complete the hearing screen as soon as possible via a return visit for a scheduled outpatient appointment or during a home visit by an early discharge nurse, who has been trained and is competent in performing the hearing screen.

The screening process should be completed before the baby reaches 1 month corrected age for well healthy babies, and by 3 months corrected age for sick and premature babies.

Babies who are older than 3 months corrected age and remain an inpatient should be referred to Audiology as a "medical exclusion" for ABR assessment when stable.



2.6 Screening Resources & Ordering Processes

Resources have been developed to assist the screening process and to promote the Healthy Hearing Program (refer to the table below).

Resource		**Application**
Healthy Hearing Forms	Consent Form	• Used to obtain and document parental consent for screening.
	Screening & Referral Form (S&R Form)	• Used to document screening information: including screening results & hearing loss risk factors. • Used to refer babies on to Audiology and QHLFSS.
Brochures	'Your baby's free hearing screen'	• Provides parents with information about the hearing screen and is used to obtain consent.
	'Your Baby's Audiology Hearing Test'	• Given to parents of babies referred to audiology for diagnostic hearing assessment.
	'Your Baby's Follow Up Hearing Test'	• Given to parents of babies who have obtained a bilateral Pass result on screening but have hearing loss risk factor/s requiring Targeted Surveillance & Early Targeted Surveillance

The Healthy Hearing website provides information about how to order these resources and includes consent forms and brochures in translated languages.
The web address is:
https://www.childrens.health.qld.gov.au/chq/our-services/community-health-services/healthy-hearing-program/resources/

Sites should refer to the Healthy Hearing site, as it always provides the most current versions of the program's resources.

3. Healthy Hearing Screening Medico-Legal Issues & Documentation

3.1 Consent

Informed consent is required for this program, and may be given by:

- Either parent / guardian.
- The Department of Child Protection.
- A person nominated by the Family Court.
- The treating consultant if parent is unable to be located/contacted.

In order for parents to give informed consent, they must first be given:

- A copy of the brochure 'Your baby's free hearing screen'.
- Verbal explanations of the screening process, potential results and follow up procedures.
- An opportunity to ask questions.

Before signing the Healthy Hearing Consent Form, the parent/carer is to be given a verbal overview of the content of the form including key inclusions such as:

- The need for ongoing parental monitoring of hearing due to a small chance of a hearing loss not being detected by the screen or developing later in life.
- Implications of not having the hearing screen.
- Notification of results to other professionals if further assessment is required.
- Baby's results to be recorded on a database for follow up and/or research.
- An opportunity to read the form fully if they wish.

If parent/s do not speak and/or read English, a trained/accredited interpreter will be required to obtain consent and inform parents of the results of screen and follow-up actions if required. Translated brochures and consent forms are available in a range of languages on the Healthy Hearing webpage at https://www.childrens.health.qld.gov.au/chq/our-services/community-health-services/healthy-hearing-program/resources/.

A sample Healthy Hearing Consent Form is included in **Appendix 2.**

3.2 Hearing Screen Declined by Parents

A parent's decision to decline the hearing screen is respected. However, it is appropriate to ascertain reasons for declining, and to correct any misunderstandings regarding the hearing screening process and/or risks to the baby. It is also important that parents be fully informed of the potential implications should their baby have an undetected hearing loss.

Where the parent/s continues to decline the screen, the screener is required to;
Request the parent/s sign the Healthy Hearing Consent form, ticking the 'I DO NOT consent to my baby having the hearing screen' box. If a parent refuses to sign the form or the screen is declined by phone this must be documented on the consent form and filed in the baby's chart.
Record the decline on the S&R form, ticking the 'Baby not screened' and 'Declined' boxes and making a notation on Page 2 of S & R Form

- File the Consent and the S&R forms in the baby's medical record and document the decline on the baby's clinical pathway (if used).
- Arrange a letter to the baby's medical practitioner advising that the screen was declined and advising of any risk factors for hearing loss.
- Advise parents that ideally babies should be screened within 1 month corrected age but they may return for the screen before the baby is 3 months corrected age on an outpatient basis should they change their mind. The hospital contact phone number and details should be provided on the 'Your baby's free hearing screen' brochure.

3.3 Surrogacy Consent

In the instance of a surrogate birth, the legal guardianship of the newborn baby remains with the birth mother or birth mother's spouse until such time as a parentage order has been made. Until this order is in place, all consent for screening, audiology or treatment must be provided by the birth mother, not the intended parents. This form (SW549) outlines the required consent responsibilities prior to the parentage order and after the parentage order exists (**Appendix 2**).

3.4 Screening & Referral Form (S&R Form)

The Screening and Referral Form (S&R Form) is completed for all live births regardless of whether the baby completes the hearing screen. This form serves several purposes, including;

- The collection of demographic information.
- The recording of relevant medical history, e.g. the presence of specified risk factors.
- Provision of a template for entering data into the relevant fields on the AccuScreen.
- A referral form to audiology for immediate diagnostic assessment.
- A referral form to audiology for follow-up assessment due to the presence of specified risk factors.
- A referral form to the Queensland Hearing Loss Family Support Service.
- A documentation record of the hearing screen results and/or other follow-up actions.

The Baby's Details and High-Risk Indicators sections are completed by referring firstly to the medical chart rather than just asking the mother or family. The chart provides a more reliable source of information, protects the patient's privacy and may reduce unnecessary embarrassment when discussing sensitive topics. The exception is collection of information on Family history of permanent childhood hearing loss. This usually requires discussion with the parent/s or the family as this aspect of medical history is often not well documented in the medical record.

Hearing loss risk factors[2] include:

- Family history of permanent childhood hearing loss.
- Syndromes associated with hearing loss (e.g. Down & Pierre Robin).
- Prolonged ventilation ≥ 120hrs (IPPV / CPAP / HHFNCT).
- Bacterial meningitis.
- Severe asphyxia at birth (convulsions / HIE / PPHN).
- Craniofacial anomalies e.g. cleft palates (excluding cleft lips and skin tags).
- Hyperbilirubinemia – levels ≥ exchange transfusion range as per appropriate Queensland Clinical Guideline Nomogram – Jaundice management for the baby.
- Perinatal infection of the baby (confirmed / suspected) - Toxoplasmosis, Rubella, CMV, Herpes, Syphilis.
- Professional concern/major medical concerns / Chemotherapy – details of the specific concern must be recorded.

Where a baby dies or is transferred out soon after birth for medical or surgical reasons before the hearing screen process has been commenced, the high-risk indicators may be left blank, however if a Tertiary hospital is involved in the care, risk factors should be up to date at time of transfer to step down facility. The risk factors should be summarised or left blank.

Screening and Referral (S&R) forms should be uploaded into the Child Record on QChild for any Direct, Early Targeted Surveillance, and Targeted Surveillance referrals. The S&R form should also be uploaded if a baby is transferred to another hospital. This allows all clinicians access to the form.

If a baby's family declines the screen or fails to attend scheduled screening appointment/s, all sections of the form, except the Screening Results, are to be completed.
In instances of Neonatal death, a completed S & R Form will be uploaded to QChild.

The Notes page is used to record further information about the hearing screen history, such as:

- Failure to attend appointments.
- Attempts to contact parent/s to arrange appointments.
- Additional information or advice sought from medical practitioners, audiologists or others regarding high risk indicators, etc.

Both Page 1 & Page 2 of the completed Screening and Referral is filed in the nominated section of the baby's medical chart and a copy uploaded to QChild.

A copy of the Screening and Referral form is in **Appendix 2**

[2] Beswick R et al (2013) Which risk factors predict postnatal hearing loss in children? J Am Acad Audiol. Mar,24(3):205-13

3.5 Additional/General Documentation

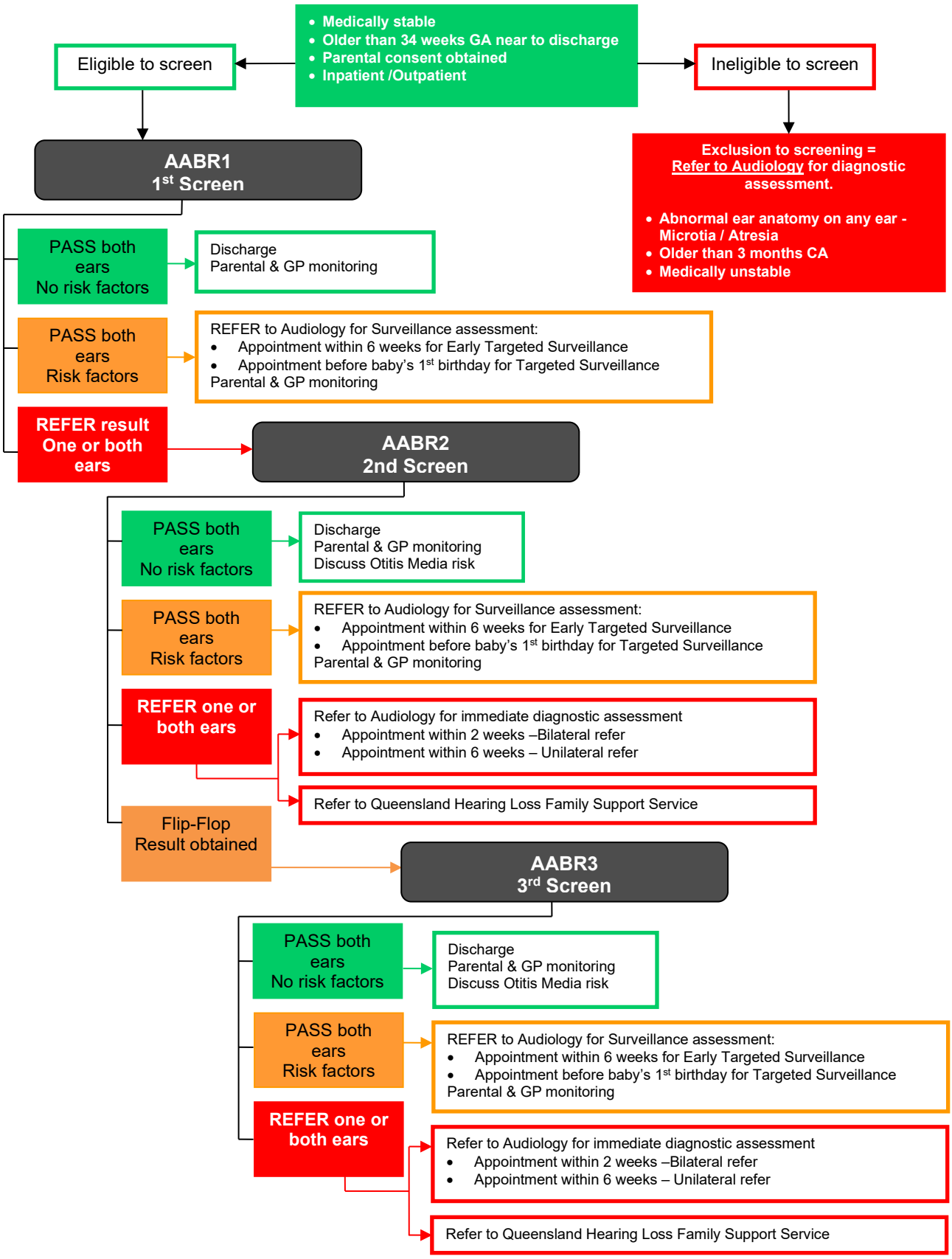
Additional and general documentation associated with the Healthy Hearing processes include:

Documentation	Action
Personal Health Record (PHR) Book	Hearing screen results are to be recorded on the appropriate page in the baby's PHR Book. Any risk factors and follow up actions required such as AABR2 or Audiological assessment are also recorded.
Documentation in Charts/ Clinical Pathways	Record the results of the hearing screen on the baby's/mother's Clinical Pathway (if used). Otherwise, follow local protocols for additional documentation requirements.
Standard Letters	Standard letters have been developed to assist in follow-up, referral and tracking of babies who have been screened in the HHP.
Audiology Brochures	If a baby is referred to Audiology for diagnostic or surveillance assessment, the name and contact details for the relevant Audiology service should be recorded on the relevant brochure that has been given to parents.

4. Screening Protocol/Pathways

4.1 Screening Pathways

The diagram below illustrates the basic screening protocol.



4.2 Referral Processes

The table below summarises the referral processes, dependent upon the screening outcome.

Referral to	Action Required
Clinician Override or Medical Exclusion to Screening = Immediate Direct Refer to Audiology	• A medical practitioner may make the decision to refer a baby directly for audiology testing without undergoing the initial AABR1 process. Notations are required in medical chart notes. The Consent Form and S&R Form are to be completed and forwarded to the relevant Audiology service (either by fax or email). Local protocols should be followed. In the private sector, a referral from the baby's paediatrician/medical practitioner may also be required. • Babies with microtia / atresia are excluded from screening and are considered a Direct refer, to be seen at Audiology within a 2-week timeframe. • QHLFSS referral is made by forwarding a copy of the Consent Form and S&R Form, including Notes page if relevant, to the QHLFSS Brisbane Office (either by fax or email) • Provide parents with the brochure 'Your Baby's Audiology Hearing Test'. • Upload both pages of S&R Form and Consent Form to the 'Notes & Admin' section of baby's QChild database record. • The Audiology service must be added as a Professional Contact on the child's QChild record, and a referral created to the Audiology service as soon as possible, to allow audiology to access the baby's QChild record.
Refer on AABR2/AABR3 = Immediate Direct Refer to Audiology**	Refer baby for immediate diagnostic assessment to an appropriate paediatric audiology service. A list of appropriate public Audiology services is available on the HH website at https://www.childrens.health.qld.gov.au/chq/our-services/community-health-services/healthy-hearing-program/screening/ • Private Audiology services are also available. • Audiology referral is made by sending (either by fax or email) a copy of the Consent Form and S&R Form, including Notes page if relevant, to the approved Audiology service. In the private sector, a referral from the baby's paediatrician/medical practitioner may also be required. • QHLFSS referral is made by forwarding a copy of the Consent Form and S&R Form, including Notes page if relevant, to the QHLFSS Brisbane Office (either by fax or email) • Provide parents with the brochure 'Your Baby's Audiology Hearing Test'. • Upload both pages of S&R Form and Consent Form to the 'Notes & Admin' section of baby's QChild database record.
Pass with Risk Factors = Refer to Audiology for Early Targeted Surveillance or Targeted Surveillance**	• Babies who have obtained a *Pass* result in their hearing screen but are identified with specific risk factors are referred to paediatric Audiology for assessment. The screener is to forward the referral to Audiology immediately, however the exact timing of the assessment depends on the risk factors present & will be determined by the Audiology service. Early Targeted Surveillance referrals (i.e. craniofacial anomalies and syndromes associated with hearing loss) are assessed by audiology within 6 weeks. All other risk factors (i.e. Targeted Surveillance referrals) are reviewed by the baby's 1st birthday. • Audiology referral is made by forwarding a copy of both the Consent Form and both pages of S&R Form, including Notes page if relevant, to the approved Audiology service, either by fax or email, following local protocol. • Provide parents with the brochure 'Your Baby's Follow Up Hearing Test'. Record name & contact details for the Audiology service on the brochure. • Upload both pages of S&R Form and Consent Form to the 'Notes & Admin' section of baby's QChild database record. • **Do not refer these babies to QHLFSS**. Audiology will arrange referral to QHLFSS, if a diagnosis of permanent hearing loss is made.

**Note: when the raw screening data is imported into QChild, automated QChild referrals to Audiology and QHLFSS are made according to the screening protocol and pathway.

4.3 When the Hearing Screen is Not Initiated or Completed in Hospital

If a screening process is not started or completed in hospital due to an early discharge, the baby should be offered an alternative arrangement such as an outpatient clinic appointment or an early discharge service as soon as possible. Arrangements may be made for the baby to be screened at another hospital if this is more convenient. The process should follow the same inpatient AABR1 & AABR2 protocol. Every effort should be made to screen these babies without increasing the lost to follow up rate. The referring site is required to upload the S&R Form to the QChild database record and enter information in the 'Notes & Admin' section of the QChild record.

The agreed arrangement is to be documented in the 'Follow up Actions' section of the S&R Form following discussion with the mother. Any additional information or changes to the agreed plan/appointments are to be recorded on Page 2 of the S & R Form and both pages are to be scanned and uploaded to QChild.

If efforts to arrange a hearing screen are unsuccessful, a standard letter is to be sent to the parents providing them with information about future options for accessing hearing screening. Where all efforts to arrange a hearing screen are unsuccessful, a letter is to be sent to the baby's GP notifying them that the baby has not received a hearing screen, listing any risk factors evident for the baby.

4.4 Unusual Circumstances Requiring an Additional Screen or Direct Referral to Audiology

Listed below are circumstances which fall outside of the usual screening and referral pathway.

Circumstance	Action
Flip/Flop result	• Occurs when a *Refer* result is obtained for one ear and a *Pass* for the other ear on the first screen (AABR1), then the results for each ear are reversed on the second screen (AABR2). • A third screen should be conducted (AABR3) following the same AABR2 protocol and results documented on S&R Form and in the inpatient medical notes in accordance with local protocols.
Raised/rebound serum bilirubin levels of the baby at exchange transfusion levels	• Re-screening is required for any baby who has completed the hearing screen and received a 'Pass' result for both ears, but subsequently during their birth admission develops serum bilirubin levels ≥ exchange transfusion range as per appropriate Nomogram for the baby. High risk indicators/s will need to be modified at the time of re-screening and referral to Audiology for follow up surveillance. • Babies discharged from their birth admission and readmitted to hospital e.g. Paediatric Ward with hyperbilirubinemia, should be referred by the treating Paediatric clinician to Audiology if deemed necessary, according to usual referral pathways and medical protocols. Referral back to the screening program for a repeat screen is not appropriate other than at those few sites where it is the policy to do so if the baby is < 28 days of life.
Previously screened baby prescribed antibiotics post-screen	• Re-screening is required when a baby who has completed the hearing screen with a 'Pass' result for both ears, but subsequently during their birth admission is prescribed ototoxic antibiotics (e.g. gentamicin/vancomycin). • The re-screen should be performed prior to discharge from hospital or as an Outpatient, after the antibiotics have been ceased.
Screening device malfunction	• Where it is realised at the completion of the screen that a 'Refer' result has been caused by a technical problem that is readily identified and corrected on site, such as a loose or partially disconnected cable or a dislodged ear coupler/hug, a repeat screen should be conducted as soon as possible. • An explanation should be provided to the family.
Incorrect ear coupler placement	• If placement of the Right and Left ear transducers has been reversed; the screen should be terminated, placement corrected and screen re-started. If a Pass/Refer result has already been given for one or both ears, both ears must be rescreened. • The initial screen attempt should be considered invalid, with the reason being documented on the 'Notes' page of the S&R Form. • The screener is to discuss the action with the family as appropriate.

	• Where a Pass or Refer result is obtained for the invalid screen in at least 1 ear, the electronic record should be retained as part of the baby's screening history, with an explanatory note entered on the screening database. • The local HH data manager must be notified of the situation.

4.5 Detailed Summary of Potential Result Combinations, Follow-up Actions & Documentation

A detailed summary of possible outcomes of screening, follow up actions and documentation required is available in **Appendix 3**.

5. What to Say to Parents - Screener's Scripts

The Healthy Hearing Program has developed a series of standardised 'scripts. These are to be used by screeners when talking to parents in various situations. The rationale for developing these standardised scripts is to ensure the information and explanations provided by staff performing the hearing screens:

- Is consistent between screeners & between facilities;
- Is simple but clear & comprehensive;
- Is accurate, correct terminology is used; and
- Reduces the opportunity for misinterpretation of information by parents.

The Healthy Hearing 'scripts' may be varied somewhat to suit individual situations and communication styles. Scripts have been developed for several scenarios including:

- Offering a hearing screen.
- Gaining consent.
- Screening outcomes.

A summary of various hearing screen scenarios and key content areas, along with sample scripts to guide screeners when speaking to parents for each scenario, are provided in **Appendix 4**.

6. Troubleshooting to Reduce Screening Times & False Refers

The troubleshooting guide available in **Appendix 6** should be used to complement existing troubleshooting guides developed by Natus Medical. These guides assist both individual screeners and sites to achieve best practice, by minimising screening times and reducing false refers.

7. Site Responsibility for Equipment Care, Cleaning and Maintenance

The following table details the activities required to maintain the equipment used for hearing screening. If at any time you suspect the AccuScreen is not functioning properly, or any parts appear damaged, do not use it. Call Natus Medical Technical Service or your HH Area Co-ordinator for help.

Item / Tasks	Required Action
AccuScreen Device and Consumables	• Use only AccuScreen screening supplies as per manufacturer recommendations. • Consumables (ear couplers, hugs & sensor tabs) are single use only. If the baby requires a new screen, new ear couplers / hugs and sensor tabs are used. • Check expiry dates on consumables before use. • Any problem with sensor tabs/ear couplers or hugs should be reported to Natus Medical and/or the area co-ordinator. Note the batch number and expiry date of the item/s. Faulty packs may be returned to Natus Medical for replacement. • Notify your site co-ordinator of any equipment failures, who will forward a fault notification to Area Co-ordinators and Head Office to track fault trends. • AccuScreen devices should be placed on the docking station when not in use. • There is a Standing Order Agreement with Otometrics a division of Natus Medical Pty Ltd in place for the supply of AccuScreen equipment & screening consumables. Sydney head office phone 1800 290 772.

Cleaning Equipment	• Infection control protocols apply to the hearing screening equipment and associated consumables. Standard precautions and principles of asepsis are used when performing the hearing screen. • Parents may keep the used ear couplers/hugs if they wish. Otherwise the ear couplers/hugs and sensors must be disposed of following each hearing screen. • After each screen, all cables must be appropriately cleaned, according to local hospital protocols. For detailed guidance, refer to the AccuScreen guide in **Appendix 7.** • At completion of screening for the day, the sensor clips should be cleaned using an Alco-wipe.

Routine Equipment Checks & Maintenance	• Screening sites are required to undertake routine equipment checks and maintenance daily at the start of each screening day, or when screening is required at smaller sites.
	• Equipment checks:
	  ○ Perform a full equipment check using the AccuScreen Quality Test Kit (electrode cable and ear coupler/hug cable).
	  ○ Perform a visual examination of the cables, connections, electrical cords, trolley and device for any signs of damage or defects.
	• If the equipment fails any of the checks, contact the technical section at Natus Medical 1800 290 772 for advice and notify area co-ordinator.
	• Leave the AccuScreen in the docking station with power cord ON when not in use.
	• The AccuScreen should provide 8 hours of screening when fully charged.

Acoustic Cables Calibration	• The AccuScreen acoustic cable (Acoustic Transducer/Ear Coupler/Hug Cable) is to be calibrated **every 12 months** in accordance with manufacturer recommendations. **Appendix 9** • It is the combined responsibility of Natus Medical and the local Healthy Hearing Team Leader/Co-ordinator to ensure that the annual calibration is completed in a timely manner. In addition, faulty cables should be replaced immediately. • Calibration will be performed onsite at the screening facility when possible. • Do not send any cable by courier unless instructed to do so by Natus Medical. • The calibration sticker will be attached to the cable, and to the device, and will clearly nominate the “month due” for the next calibration. • Details of the newly exchanged cable number and next calibration due date is to be logged on the site facility database (when available). • Retain a copy of the Calibration Certificate on local network drive for future reference

Important note: Whenever an AccuScreen leaves your site or you receive a replacement/loan device, you must inform Healthy Hearing Head Office immediately as device numbers at your site will need to be adjusted in the QChild database.

8. Healthy Hearing Information System - QChild

The Healthy Hearing Program’s information system, called QChild, is designed to facilitate ongoing management of babies and reporting to Queensland Health. It allows the department to monitor the Program and ensure that the goals and objectives are being achieved. It also aims to ensure accurate and timely information is available to other professionals involved with the child and family.

QChild enables:

- Data on babies screened to be stored and aggregated.
- Analysis of information collected to:
  - Identify any babies who have missed or not completed the screening process;
  - Compare outcomes against program targets;
  - Identify any quality assurance or training needs;
  - Identify trends and other resource requirements;
  - Undertake research (de-identified data).
- Referrals to be made to Paediatric Diagnostic Audiology Services and the QHLFSS.

Each facility must nominate a HH database manager at Clinical Nurse equivalent level, to manage/oversee the local database, including the tasks listed in the table below (this is usually the HH Site Co-ordinator). The database manager is required to undertake a formal QChild training program. A comprehensive user guide will be provided as part of this training.

Task	Frequency of completion
The screener is to ensure demographic & risk factor data is entered correctly into the AccuScreen, using the *S&R form* as a template.	• At the time of performing the screen for babies as they are to be screened, or in preparation for performing a screen.
Ensure that data is exported from the AccuScreen regularly. Note: Refer results on AABR2 are to be exported **within 72 hours** of the screening date. This applies to all sites regardless of size and birth numbers.	• Ideally weekly in very small sites. • Daily or weekly in larger facilities as appropriate.
Ensure that exported data is saved onto a **network drive** and imported/ uploaded into the database on a regular basis.	• Ideally weekly in very small sites • Daily or weekly in larger facilities.
Import data into the database at regular intervals ensuring it matches to demographic data imported centrally each day from the Client Directory, and clean data.	• Ideally weekly in very small sites. • Daily or weekly in larger facilities.
Cleaning data &/or completing data entry for records downloaded from the AccuScreen.	• Ideally weekly in very small sites. • Daily or weekly in larger facilities.
Troubleshooting where Client Directory data does not match to an accompanying screen.	• Ideally weekly in very small sites. • Daily or weekly in larger facilities.
Running reports.	• At least monthly in all sites. • More frequently in larger facilities.
Reviewing the database to identify any quality assurance issues requiring intervention.	• At least monthly in all sites. • More frequently in larger facilities.

8.1 Data Entry

It is important that data is entered using the approved codes as per the S&R Form, to avoid incorrect codes and data entries that cannot be accepted by QChild. Entries should be checked for spelling and accuracy by the screener.

If a screener becomes aware that they incorrectly entered data after they have completed the screen, they should notify the Site Co-ordinator, providing the details of the error together with the correct information. The data manager will then correct the record once it is uploaded into the database.

Where an additional screen has been conducted for any reason, this record should be retained on the database as an accurate reflection of the screening history for each baby.

8.2 Reporting Requirements

Data entry must be finalised within a timely manner (ideally weekly) to facilitate access and review by area/state-wide Co-ordinators. It is important to remember that data with referrals to audiology must be prioritised. National KPIs recommend electronic records are made available to Audiology within 72 hours of the screening Refer result.

The local Site Co-ordinator should also run a report at least monthly to identify any issues requiring intervention including:

- Data entry;
- Timeliness of screening of babies;
- Refer result rates;
- Missed or 'In Process/ needs screen' records;
- Track older ill babies approaching 3 months corrected age limit;
- Finalise parental declines & send letters to family & GP;
- Finalise inter hospital referral/transfers;
- Finalise Manual Audiology referrals if required.

Private Hospitals
The HH Program has the capacity to upload birth registration data so that screening data can be matched to it.

9. Healthy Hearing Screener Training Standards

To maintain statewide consistency in the delivery of a 'universal' newborn hearing screening program, screeners are required to participate in an approved Healthy Hearing Screener Training program and be assessed competent by the local or Area HH Co-ordinator/Team Leader prior to undertaking newborn hearing screening.

The Healthy Hearing Screener Training comprises two major components:
1. Developing theoretical knowledge and understanding of the rationale for universal newborn hearing screening and associated policies and procedures.
2. Developing practical skills in performing hearing screens.

Competencies are assessed at the completion of formal training, and again after the participants have undertaken a total of 5 screens independently.

The Screener Training program is in two parts. The theory is to be undertaken by the new screening staff by completing the 8 - 9 Webinar modules and embedded quiz questions. There are 5 video links for practical screening education and troubleshooting tips. Screeners must also complete the iLearn package and iLearn quiz and send their certificate to the HH Co-ordinator at their hospital.
Once this is completed, they must perform 5 screens with the co-ordinator for their hospital or approved assessor. It is reasonable to postpone the iLearn quiz until some screening experience has been achieved.

Appendix 8.

Local HH facility co-ordinators are required to notify the HH Area Co-ordinator of any need for training and/or to advise who has received the education packages. This is necessary to:
- Ensure that the local co-ordinator has access to current Webinar training programs and resources.
- Facilitate/coordinate training across sites.
- Provide any assistance or support required.
- Add new screeners to QChild and AccuLink

9.1 Objectives

By completion of the Screener Training program, participants are expected to be able to undertake the following at a satisfactory standard:
- Explain the benefits and process of newborn hearing screening to parents and professional colleagues.
- Perform newborn hearing screens, including appropriate baby selection and troubleshooting.
- Complete the necessary documentation, including the completion of the Consent Form, recording the appropriate information on the S&R Form, documentation in the PHR Book and in clinical pathways/charts according to local protocols.

9.2 Competencies

Screener competencies have been compiled with reference to the Australian Nursing and Midwifery Council documents 'National Competency Standards for Registered Nurses, Enrolled Nurses and Midwives'.

Clinical competence is performance based and related to demands of the practice situation. Assessment of practice is considered a valid model of assessment of core competencies, skills and knowledge.

Specific competencies that must be demonstrated at the completion of training, and thereafter on an annual basis, are detailed in **Appendix 8**. These comprise both an assessment of practical hearing screening skills and completion of the online hearing screening knowledge assessment module/s. Once

both components have been completed to a satisfactory standard, the Certificate of Competence generated by the online module link will be signed off by the Healthy Hearing Team Leader to certify that the screener is competent to perform Healthy Hearing screens for another year.

9.3 Training Format & Competency Assessment

Guidelines for conducting training activities and assessing competencies are available in **Appendix 8**.

Competencies must be reassessed annually unless there is a break of 6 months or more in practice. In the latter situation, the screener should have their competencies reassessed prior to recommencing screening.

Screeners moving between facilities must show proof of recent theory & on-line competencies and be assessed by the local site co-ordinator to evaluate script and screening practice before being allowed to screen independently.

Appendices

Appendix 1 – Healthy Hearing Glossary of Terms

Term	Explanation/Description
AABR 1	The first hearing screen performed where a *Refer* or *Pass* result is obtained for one or both ears.
AABR 2	The second hearing screen performed following a *Refer* outcome in one or both ears on the first (AABR1) screen where a *Refer* or *Pass* result is obtained again for one or both ears.
AABR 3	Unusual event when a third screen is required. May occur when a Flip-Flop outcome or reversed result for an ear that previously Passed. This is considered the final screen in this situation
Audiological/Early or Routine Targeted Surveillance	Babies who receive a *Pass* result for both ears on their first (AABR1) or second (AABR2) hearing screen but who present with the risk factors for delayed onset or progressive hearing loss listed on the Healthy Hearing Screening & Referral form require referral to Audiology for comprehensive assessment either at 6 weeks post screen or before they reach 12 months corrected age.
Corrected age	Equals the chronological age in weeks minus time born before 40 weeks.
Healthy Hearing Screening	▪ Is undertaken using the AccuScreen device using Automated Auditory Brainstem Response (AABR) technology. Brain wave responses are automatically measured and interpreted as a *Pass* ✓ or *Refer* ✗ response. ▪ Will only detect a hearing loss sufficient to interfere with speech & language development, not whether hearing thresholds are within normal limits. ▪ Is not diagnostic, just identifies individuals who require further assessment. Only diagnostic tests (audiological & medical) can confirm the presence of a hearing loss. ▪ Only indicates whether hearing is adequate for the development of normal speech and language skills at the time of screening.
Medically suitable	Babies who are at least 34 weeks gestational age & preferably < than 1 month corrected age & who have no significant craniofacial abnormalities; are in an open crib; off ventilators; & are not receiving central nervous system stimulants (eg caffeine), ototoxic medications or phototherapy for hyperbilirubinaemia. Babies can be screened up to 3 months corrected age for preterm and sick babies.
Nurse screener	▪ Midwife, Registered Nurse or Enrolled Nurse who has completed an approved education program and achieved competencies in performing universal newborn hearing screening using the AccuScreen. ▪ AINs are not eligible to be trained to perform hearing screens. ▪ In some circumstances, hearing screening may also be performed by Indigenous Health Workers who have undertaken an approved training program.
Pass result	▪ ✓ PASS requires a minimum of 800 matched template responses from the baby's brain against the algorithm embedded in the AccuScreen software program ▪ ✓ PASS indicates that an auditory brainstem response was repeatedly detected as being present to a 35 decibel Chirp based stimuli ▪ Only indicates that hearing is adequate at the time of screening for the development of normal speech and language. ▪ It does not indicate that the baby can hear at normal levels or guarantee that the baby's hearing will not change over time. ▪ A slight hearing loss could still be present and hearing can change over time so ongoing parental monitoring using the Hearing and Speech Checklist is essential.
Refer result	▪ ✗ REFER is when there has not been 800 sufficient matching responses to the template analysed within the AABR technology. ▪ ✗ REFER is after a maximum stimulation time of 4 minutes has elapsed and there has been insufficient matches against the template algorithm embedded in the AccuScreen software program. Uncommon "fast refer" outcome can occur within a 20 – 30 second period.

	▪ Only indicates that further assessment (second screen or diagnostic Audiology) is required. ▪ Does not indicate that a hearing loss is present, though it is important to acknowledge that this is one possibility. ▪  screen prompt is considered an incomplete screen attempt. This  prompt will occur when the noise level in the room is too high, or the baby is not settled enough to screen, or if the impedance prevents the screen starting or continuing.
Screen	A procedure applied to a non-selected population to identify those who require diagnostic assessment. ▪ Advantage of screening is the identification of individuals who would not otherwise be suspected of having a problem. *Screening results are not diagnostic: they only indicate the possibility of a condition being present or absent.*
Screening device / AccuScreen	▪ Device approved for Healthy Hearing Program to perform newborn hearing screening ▪ Stimulus used for the AABR AccuScreen is set at 35 decibels - Chirp technology ▪ Chirp rate is introduced at 78 – 82 chirps per second

List of Abbreviations

AABR:	Automated Auditory Brainstem Response	HLRF:	Hearing Loss Risk Factors
ABR:	Auditory Brainstem Response	PCHL:	Permanent Childhood Hearing Loss
CP:	Clinical Pathway	PHL:	Permanent Hearing Loss
ETS:	Early Targeted Surveillance	PHR:	Personal Health Record Book
FSF:	Family Support Facilitator	QHLFSS:	Queensland Hearing Loss Family
HH:	Healthy Hearing		Support Service
HHP:	Healthy Hearing Program	S&R Form:	Screening and Referral Form
HL:	Hearing Loss		

Appendix 2 – Healthy Hearing Forms

Please see the below table for a summary of the forms used by the Healthy Hearing Program. Copies of the forms can be located on the pages following the table.

Translated versions of the Consent Form in various languages can be found on the Healthy Hearing Website for printing at: https://www.childrens.health.qld.gov.au/chq/our-services/community-health-services/healthy-hearing-program/resources/

Form Title	Target Group	Purpose
Healthy Hearing Program Consent	Parent/s of all babies who give consent or decline the hearing screen	Medico-legal document for recording: • Parent/s understanding of the hearing screen & any risks associated with having/not having screen • possible use of the results including recording in the data base, research & notification to other health professionals • parent/s consent/decline of hearing screen
Healthy Hearing Program Newborn Hearing Screening & Referral	To be completed for all babies regardless of whether they commence/complete the hearing screen process	Medico-legal document used to: • record demographic & medical data including presence of high-risk indicators for hearing loss • record results & follow-up actions of screen for filing in babies' clinical charts • refer baby to Audiology & Family Support Service • provide a template for data entry into AccuScreen • any additional information re screening history
Consent for Release of Healthy Hearing Information in a Surrogacy Situation	To be completed by the biological mother prior to parentage order; or by the intended parent once the parentage order has been made.	Medico-legal document used to clarify the legal rights regarding who can provide consent for screening, and who is considered the Next of Kin. This form needs to be signed when the baby requires referral to audiology (Direct, ETS or TS referral). It should be forwarded with the original Consent Form and S&R Form to the Audiology Service and to the QHLFSS.

Queensland Government

Healthy Hearing Program

Consent

Facility: .....

□□□□□□□□□□□□□□□□□□

URN:

Family name:

Given name(s):

Address:

Date of birth: Sex: ☐ M ☐ F ☐ I

BABY'S LABEL

□□□□□□□□□□□□□□□□□□

URN:

Family name:

Given name(s):

Address:

Date of birth:

MOTHER'S LABEL

A. The hearing screen

I understand that all newborn babies should have a hearing screen to check if the baby might have a hearing problem.

B. Are there any risks?

I understand that there are no known risks of injury to a baby in this procedure, but:

- There is a small chance that the hearing screen may show that there is no hearing loss where there might in fact be a hearing loss.
- A child could still develop a hearing loss later in life. It is therefore important for parents to continue to monitor their baby's hearing.

I understand that if I do not give consent for my child to have the hearing screen, a hearing loss might not be detected until a later stage. Later detection may mean that my child could experience delayed language development.

C. Parent consent or decline

I acknowledge that:

- I have read or have had explained to me the brochure - "Your baby's hearing screen", and ..... has explained to me Queensland's Healthy Hearing Program.
  (name of hospital staff member)
- I was able to ask questions and raise concerns about the procedure and its risks. My questions and concerns have been discussed and answered to my satisfaction.
- I understand that where it is indicated that my child requires further testing, health professionals such as my GP, Child Health Nurse, Paediatrician, Audiologist, Family Support Facilitator and staff of the Healthy Hearing Program may be notified of the results and I may be contacted by staff associated with the Healthy Hearing Program.

I also understand that:

- The results of the screen will be recorded on a database which assists with follow-up of babies who require further testing or treatment. The database also allows for monitoring of the Healthy Hearing Program.
- Information from the database may be used for research purposes but names will not be used in any reports or published information.
- If clinical assessment indicates that my child should not be screened then they will be referred to Audiology for diagnostic assessment.

On the basis of the above statements:

Screening
☐ I consent to my baby having the hearing screen.
☐ I ***DO NOT*** consent to my baby having the hearing screen.

Clinical exclusion to screening
☐ I consent to my baby being referred to Audiology, without screening.
☐ I ***DO NOT*** consent to my baby being referred to Audiology, without screening.

Parent name (please print):	Signature:	Date:

D. Hospital staff statement

- I have explained to the parent the procedure and the risks.
- I have given the parent an opportunity to ask questions about any of the above matters and raise any other concerns which I have answered as fully as possible. I am of the opinion that the parent understood the above information.

Staff member name (please print):	Signature:	Date:

Interpreter / cultural needs

Is an Interpreter Service required? ☐ Yes ☐ No
If *yes*, is a qualified Interpreter present? ☐ Yes ☐ No
Is a Cultural Support Person present? ☐ Yes ☐ No

I have given a translation in ..... of the consent form and any verbal and written information given to the parent by the hospital staff member.

Interpreter name (please print):	Signature:	Date:

DO NOT WRITE IN THIS BINDING MARGIN

HEALTHY HEARING PROGRAM - CONSENT

v6.00 - 04/2019
Mat. No.: 10188212
SW011

Queensland Government

Healthy Hearing Program
Newborn Hearing Screening and Referral

Facility: .....

(Affix identification label here)

BABY'S LABEL

URN:
Family name:
Given name(s):
Address:
Date of birth: Sex: ☐ M ☐ F ☐ I

Alternative contact and relationship information:
(FOB: Father of baby, MGF: Maternal grandfather, PGM Paternal grandmother, Aunt of baby etc, Friend)

Name (1): .....
Phone number: ..... R'ship .....
Name (2): .....
Phone number: ..... R'ship .....

Medical contact:
Name: .....
Address: .....

(Affix identification label here)

MOTHER'S LABEL

URN:
Family name:
Given name(s):
Address:
Date of birth:

Baby's details

UR Number ..... (enter UR number for hospital where screen is performed)
Hospital of birth ..... (enter approved HHP code for facility site)
Gestational age at birth: ..... weeks (enter number in whole weeks only)
Location of Screen: ☐ Maternity ☐ ICN ☐ SCN ☐ Birth Suite / Centre ☐ OPD ☐ Home ☐ Community ☐ Paed Ward
Indigenous Status: ☐ **1.** Aboriginal ☐ **2.** Torres Strait Islander ☐ **3.** Aboriginal and Torres Strait Islander ☐ **4.** Not Aboriginal or Torres Strait Islander ☐ **9.** Not stated

High risk indicators (If *'yes'*, Audiology surveillance is required: copy of completed form to be sent to Audiology)

☐ Yes ☐ No Family history of permanent childhood hearing loss (**mother / father / siblings of baby only**) excluding grommets / ear infection / trauma Details: .....
☐ Yes ☐ No ***Syndromes associated with hearing loss** (e.g. Downs, Pierre Robin) Details: .....
☐ Yes ☐ No Prolonged ventilation ≥ 120 hours (IPPV / CPAP / HHFNCT) Number of hours: .....
☐ Yes ☐ No Bacterial meningitis Details: .....
☐ Yes ☐ No Severe asphyxia at birth (convulsions / HIE / PPHN) Details: .....
☐ Yes ☐ No ***Craniofacial anomalies** eg. cleft palate (**exclude** cleft lip and skin tags) Details: .....
☐ Yes ☐ No Hyperbilirubinemia levels ≥ exchange transfusion range as per appropriate Nomogram for the baby See over for required evidence. Highest SBR level: ..... µmol/l Date: / / Age in hours: .....
☐ Yes ☐ No Perinatal Infection of the baby (confirmed / suspected): ☐ Toxoplasmosis ☐ Rubella ☐ CMV ☐ Herpes ☐ Syphilis
☐ Yes ☐ No Professional / other major medical concerns / Chemotherapy Details: .....

AABR 1 screening results

Date: ..... Time: .....
Right Ear: ☐ Pass ☐ Refer
Left Ear: ☐ Pass ☐ Refer
☐ Milestones, monitoring, otitis media discussed
Name: .....
Designation: .....
Signature: .....
Comments: .....

AABR 2 screening results

Date: ..... Time: .....
Right Ear: ☐ Pass ☐ Refer
Left Ear: ☐ Pass ☐ Refer
☐ Milestones, monitoring, otitis media discussed
Name: .....
Designation: .....
Signature: .....
Comments: .....

Follow up actions

☐ **OPD Screening app't on** ..... **at** .....
☐ **Result reversal (Flip Flop):** AABR3 required → see page 2
☐ **Information letter to:** .....
re: ☐ Pass with risk factors ☐ Parental decline
☐ FTA / LTF Date letter sent: .....

Referral process

☐ **Refer to Audiology at:** .....
Date of referral sent: .....
for: ☐ Audiology **ABR** assessment
☐ Brochure provided to family for **ABR**
OR
for: ☐ ***Early targeted surveillance by **6 weeks**
☐ Targeted surveillance by **first birthday**
☐ Brochure provided to family for Early T/S or T/Surv
☐ **Refer to Family Support Facilitator (QHLFSS)**
Date referral sent to QHLFSS: .....
(Direct Refers only)
Interpreter required: ☐ Yes ☐ No
Language: .....

Screen not completed

☐ Baby not screened at this facility
☐ Screen incomplete at this facility
☐ Declined to screen
☐ Baby died after birth Date: .....
☐ Transferred to: ..... Date: .....
☐ Failed to attend (FTA) / Lost to follow up (LTF)
☐ Audiology → Medical exclusion **Microtia / Atresia** of any ear .....
☐ Audiology → Clinician override / Too ill to screen .....

DO NOT WRITE IN THIS BINDING MARGIN

NEWBORN HEARING SCREENING AND REFERRAL

v10.00 - 04/2020

SW012

Queensland Government

Queensland Government

Healthy Hearing Program

Newborn Hearing Screening and Referral

(Affix identification label here)

BABY'S LABEL

URN:

Family name:

Given name(s):

Address:

Date of birth: Sex: ☐ M ☐ F ☐ I

AABR 3 screening results

If required after result reversal (flip flop)

Date: ..... Time: .....

Right Ear: ☐ Pass ☐ Refer

Left Ear: ☐ Pass ☐ Refer

☐ Milestones, monitoring, otitis media discussed

Name: .....

Designation: ..... Signature: .....

Comments: .....

(Affix identification label here)

MOTHER'S LABEL

URN:

Family name:

Given name(s):

Address:

Date of birth:

Aborted screen documentation

Aborted by Screener: ☐ Impedance ☐ Myogenic/EEG ☐ Background noise ☐ Lack of ABR progress	Aborted by Screener: ☐ Impedance ☐ Myogenic/EEG ☐ Background noise ☐ Lack of ABR progress	Aborted by Screener: ☐ Impedance ☐ Myogenic/EEG ☐ Background noise ☐ Lack of ABR progress
Date:	Date:	Date: .....
Name:	Name:	Name: .....

High risk Factor: Hyperbilirubinemia documentation

* Screener must attach a completed copy of the baby's plotted *Queensland Clinical Guidelines Nomogram* appropriate for baby's **gestation**, **weight**, **age** and **risks**. https://www.health.qld.gov.au/qcg

If plotted Nomogram "with risk factors" has been selected - **please circle appropriate risk/s:**
Sepsis / Haemolysis / Acidosis / Asphyxia / Other as nominated by Neonatologist .....

Additional notes (May be used, as required, to record additional data and free text notes)

Date / Time	*Add signature, printed name, staff category, date and time to all entries* **MAKE ALL NOTES CONCISE AND RELEVANT** Leave no gaps between entries

DO NOT WRITE IN THIS BINDING MARGIN

Queensland Government Healthy Hearing Program

Consent for Release of Healthy Hearing Information in a Surrogacy Situation

Facility: .....

(Affix patient identification label here)

URN:

Family Name:

Given Names:

Address:

Date of Birth: Sex: ☐ M ☐ F ☐ I

BABY'S LABEL

(Affix patient identification label here)

URN:

Family Name:

Given Names:

Address:

Date of Birth: Sex: ☐ M ☐ F ☐ I

MOTHER'S LABEL

All newborn babies born in public and private facilities in Queensland are registered on the hospital's information system, usually using the format birth mother's surname and "baby of …" (first name of mother). The Healthy Hearing Program receives a summary of this birth data. Hearing screen records are then matched with the birth registration records and stored on a database. This assists the program to follow-up any babies who missed having a screen or who require further testing or treatment.

If the result of the hearing screen is a 'Pass' result for both ears and there are no risk factors for future hearing loss, no further action will be taken with this record.

If a baby has a 'Refer' result on their second hearing screen or if they have any risk factors that could lead to the development of a hearing loss in the future, they will be referred to an audiology service for further investigation and to the Family Support Service. If a hearing loss is detected, the audiology service will refer the baby on to other services. These services will be able to access and update the baby's record on the Healthy Hearing database, QChild.

For a surrogate birth, it is important that staff of the Healthy Hearing Program know who they can contact if your baby does need follow up testing or treatment. Please tick one of the following options:

☐ **Prior to Parentage Order:**

- The **birth mother** and/or **birth mother's spouse** remain the legal guardians of the baby until a parentage order has been made.
- Until a parentage order is made, all consent for screening, referrals and/or treatment must be provided by the **birth mother and/or birth mother's spouse** and not the **Intended parents**.
- The baby will be identified as the baby of the **birth mother** until a parentage order is made.
- The baby will be identified under the **birth mother's** surname and "baby of… first name of mother" (or the first name identified by the **birth mother**).
- The **birth mother and/or birth mother's spouse** will be listed as the **primary contact** in case there is any need for follow up testing or treatment.
- The contact details of the **Intended Parents and/or Couple** will be listed on the system as a **secondary or alternative contact** but they cannot provide consent for any screening, referrals and/or treatment until after a parentage order has been made.

Name of Birth Mother:	Signature:	Date:
Name of Witness (Health Service employee):	Signature:	Date:

☐ **Once the Parentage Order is in place:**

- The baby will be identified under the name of the **parent/s** (previously known as the **Intended Parents and/or Couple** prior to the Parentage Order being made).
- The parent/s will be listed as the **primary contact**.
- The database will be changed to reflect the parentage update i.e. the birth mother's contact details will be removed from the record and will only be accessible by QChild system administrators.
- The original parentage order must be sighted by a Health Service employee.

☐ **The original parentage order has been sighted.**

☐ **The Healthy Hearing Program Consent form has also been signed.**

Name of Parent:	Signature:	Date:
Name of Witness (Health Service employee):	Signature:	Date:

DO NOT WRITE IN THIS BINDING MARGIN

CONSENT FOR RELEASE OF HEALTHY HEARING INFORMATION IN A SURROGACY SITUATION

v1.00 - 06/2014

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Page 1 of 1

Queensland Government

Possible AABR1 Outcomes (including follow-up action and documentation)

AABR1 Pass/Pass	RESULT Pass result in both ears - No High Risk Indicators INTERPRETATION Bilateral Pass SCREEN STATUS Screening Complete	**Follow Up Actions** • No further formal assessment required. • Advise parent to monitor baby's milestones against Speech & Hearing checklist on HH brochure.	**Documentation Requirements** • Complete the AABR1 Screening results section of the S&R form: o Tick the Pass box for the Right and Left ears. o Enter date, screener details, signature and comments if necessary. • Complete the Follow up Actions section of the Healthy Hearing S&R form: o Tick Milestones, monitoring &/or otitis media discussed. • Record the result in baby's Personal Health Record Book. • File the Consent form in the baby's clinical chart. • File the S&R Form in the baby's clinical chart. • Complete clinical pathways document (if used) or record variance in mother's and / or baby's chart.
AABR1 Pass/Pass - with risk factors	RESULT Pass result in both ears - High Risk Indicator/s Present INTERPRETATION Early Targeted Surveillance or Targeted Surveliillance SCREEN STATUS Screening Complete - Pass with Surveillance	**Follow Up Actions** • Refer to Audiology for follow up assessment within 6 weeks/before baby's 1st birthday. • Encourage parents to monitor baby's milestones against Speech & Hearing checklist on HH brochure & to contact Audiology for an earlier appointment if they are concerned. • Emphasis the importance of attending for diagnostic assessment, remind them that the screen is not diagnostic. • Encourage parent/s to contact Audiology if they have any questions prior to appointment. • Provide parent with 'Your baby's follow-up hearing test' brochure.	**Documentation Requirements** • Complete the AABR1 Screening results section of the S&R form: o Tick the Pass box for the Right and Left ears. o Enter date, screener details, signature and comments if necessary. • Complete the Follow up Actions section of the Healthy Hearing S&R form: o Tick Milestones, monitoring &/or otitis media discussed. o Record location & date of referral to Audiology. o Tick Surveillance box. o Record appointment details if known. • Record the result in the baby's PHR Book & list the risk factors. • Fax/forward a copy of completed S&R Form, including Notes page, to Audiology. • File the S&R Form in the baby's clinical chart. • Complete clinical pathway document (if used)/record variance in mother's and /or baby's charts.
AABR1 Refer Result	RESULT Refer result both ears or Refer result one ear and pass in other ear INTERPRETATION Bilateral refer (Both ears) Unilateral refer (one ear) SCREEN STATUS AABR2 Required	**Follow Up Actions** • AABR2 required: o Rescreen as soon as possible, ideally leave a minimum of 12-24 hours between screens. o If a baby is attending as an outpatient the AABR2 should be performed within 1-2 weeks. •Complete screen by 1 month for term healthy babies, and 3 months corrected age for sick or preterm babies.	**Documentation Requirements** • Complete the AABR1 Screening results section of the S&R form: o Tick the Pass/Refer box as appropriate for the Right and Left ears. o Enter date, screener details, signature and comments if necessary. • Record the result in baby's Personal Health Record Book. • File the Consent form in the baby's clinical chart. • File the S&R Form in the baby's clinical chart. • Complete clinical pathways document (if used) or record variation in mother's and /or baby's charts.
AABR1 - Incomplete Result	RESULT No result in one ear and a pass/refer for other ear INTERPRETATION Screen Incomplete SCREEN STATUS Repeat AABR1	**Follow Up Actions** • Repeat AABR1 as soon as practical. A maximum of 2 repeats in the same screening episode will be allowed. Ensure conditions are suitable to restart. • Rescreen both ears. • If a baby is attending as an outpatient the AABR1 should be performed within 1-2 weeks . • Complete screen by 1 month for term healthy babies, and 3 months corrected age for sick or preterm babies.	**Documentation Requirements** • As a complete screen has not been obtained, the AABR1 screening results box should be left blank & outcome of screen recorded on Notes page of S&R Form. • The Screen Incomplete box should only be ticked if baby has been discharged from HH. • File the Consent form in the baby's clinical chart. • File the S&R Form in the baby's clinical chart. • Complete clinical pathways document (if used) or record variance in mother's and / or baby's charts.

Possible AABR2 Outcomes (including follow-up action and documentation)

AABR2 Pass/Pass	**RESULT** **Pass result in both ears - No High Risk Indicators** **INTERPRETATION** **Bilateral Pass** **SCREEN STATUS** **Screening Complete**	**Follow Up Actions** • No further formal assessment required. • Advise parent to monitor baby's milestones against Speech & Hearing checklist on HH brochure. • Discuss higher risk of developing Otitis Media in first year (following refer on AABR1).	**Documentation Requirements** • Complete the AABR2 Screening results section of the S&R form: o Tick the Pass box for the Right and Left ears. o Enter date, screener details, signature and comments if necessary. • Complete the Follow up Actions section of the Healthy Hearing S&R form: o Tick Milestones, monitoring &/or otitis media discussed. • Record the result in baby's Personal Health Record Book. • File the S&R Form in the baby's clinical chart. • Complete clinical pathways document (if used) or record variance in mother's and / or baby's charts.
AABR2 Pass/Pass - with risk factors	**RESULT** **Pass result in both ears - High Risk Indicator/s Present** **INTERPRETATION** **EarlyTargeted Surveillance or Targeted Surveillance** **SCREEN STATUS** **Screening Complete - Pass with Surveillance**	**Follow Up Actions** • Refer to Audiology for follow up assessment within 6 weeks/before baby's 1st birthday. • Encourage parents to monitor baby's milestones against Speech & Hearing checklist on HH brochure & to contact Audiology for an earlier appointment if they are concerned. • Emphasise importance of attending diagnostic assessment, remind them the screen is not diagnostic. • Encourage parent/s to contact Audiology if they have any questions prior to appointment. • Provide parent with 'Your baby's follow-up hearing test' brochure.	**Documentation Requirements** • Complete the AABR2 Screening results section of the S&R Form: o Tick the Pass box for the Right and Left ears. o Enter date, screener details, signature and comments if necessary. • Complete the Follow up Actions section of the Healthy Hearing S&R Form: o Tick Milestones, monitoring &/or otitis media discussed. o Record location & date of referral to Audiology. o Tick Surveillance box. o Record appointment details if known. • Record the result in the baby's PHR Book & list the risk factors. • Fax/forward a copy of completed S&R form, including Notes page, to Audiology. • File the S&R Form in the baby's clinical chart. • Complete clinical pathway document (if used)/record notation in mother's &/or baby's charts.
AABR2 Refer Result	**RESULT** **Refer result both ears or Refer result one ear and pass in other ear** **INTERPRETATION** **Bilateral refer (Both ears)** **Unilateral refer (one ear)** **SCREEN STATUS** **Immediate diagnostic audiology assessment**	**Follow Up Actions** • Provide the family with 'Your baby's audiology hearing test' brochure • Note audiology contact details in space provided on brochure • Remind parents of the possible reasons for the *Refer* result, as listed on brochure • Emphasis the importance of attending for diagnostic assessment • Rescreen as soon as possible, ideally leave a minimum of 12-24 hours between screens • Encourage parent/s to contact Audiology/FSF if they have questions prior to appointment	**Documentation Requirements** • Complete the AABR2 Screening results section of the S&R form o Tick the Pass/Refer box as appropriate for the Right and Left ears. o Enter date, screener details, signature and comments if necessary. • Complete the Follow up Actions section of the Healthy Hearing S&R Form: o Tick Milestones, monitoring &/or otitis media discussed. o Record location & date of referral to Audiology. o Tick Audiology Assessment box. o Record appointment details if known. • Record date of referral to Family Support Service. • Record the result in baby's Personal Health Record Book. • Fax/forward a copy of completed S&R Form, including Notes pag, to Audiology. • Fax a copy fo the completed S&R Form, including Notes page, to QHLFSS. • File the S&R Form in the baby's clinical chart. • Complete clinical pathways document (if used) or record notation in mother's &/or baby's charts.
AABR2 NA or NA/NA Result	**RESULT** **No result in one ear and a pass/refer for other ear** **INTERPRETATION** **Screen Incomplete** **SCREEN STATUS** **Repeat AABR2**	**Follow Up Actions** • Repeat AABR2 as soon as practical & rescreen both ears. A maximum of 2 repeats in the same screening episode will be allowed. Ensure conditions are suitable to restart. • If a baby is attending as an outpatient, the AABR2 should be performed within 1-2 weeks. • Complete screen by 1 month for term healthy babies, and 3 months corrected age for sick or preterm babies.	**Documentation Requirements** • Leave AABR2 screening results box blank & record screen outcome in Notes section of S&R Form. • The Screen Incomplete box should only be ticked if baby has been discharged from HH. • File the Consent form in the baby's clinical chart. • File the S&R Form in the baby's clinical chart. • Complete clinical pathways document (if used) or record variance in mother's and / or baby's charts.
AABR2 FLIP/FLOP Result	**RESULT** **Result reversal - *Refer* result is obtained in an ear that gave a *Pass* result in previous screen, and vice versa.** **INTERPRETATION** **Flip/Flop** **SCREEN STATUS** **Perform 3rd screen**	**Follow Up Actions** • Advise parents that alternating results may reflect fluctuating status within the ear (e.g. fluid/debris) and not an equipment fault. • Preferably leave 12-24 hours before rescreening. • Complete screen by 1 month for term healthy babies, and 3 months corrected age for sick or preterm babies.	**Documentation Requirements** • Complete the AABR2 Screening results section of the S&R Form: o Tick the Pass/Refer box as appropriate for the Right and Left ears. o Enter date, screener details, signature and comments if necessary. • Record the result in the baby's Personal Health Record Book. • File the S&R Form in the baby's clinical chart. • Complete clinical pathways document (if used) or record variance in mother's and / or baby's charts.

Appendix 4 – Screener's Scripts

Summary of the Various Hearing Screen Scenarios and Key Content Areas for Inclusion

Hearing Screen Scenario	Purpose/Key points to be included
Arranging an initial Healthy Hearing Screen Parent/s may be familiar / not familiar with Healthy Hearing Program	▪ Explain program aims & offer screen ▪ Describe procedure as per brochure ○ How the screen is done ○ Potential results ○ Meaning of a *Pass* ✓ & a *Refer* ✗ result means ○ Potential follow up actions (AABR2; Audiology) ▪ Key elements of script all contained in HH brochure ▪ Use brochure as a prompt sheet ▪ Provide parents with an opportunity to ask questions
Pass ✓ **result on the 1st Healthy Hearing Screen** Parent/s of baby with a *Pass* result for both ears & without risk factors	▪ Remind parent/s: ○ *Pass* ✓ only indicates baby can hear at a level required for speech & language development ○ *Pass* is not for life → ear infections, trauma, etc ○ Need for them to monitor of baby's milestones against *Hearing & speech checklist* ▪ Advise parents to seek Audiology referral if they are concerned about baby's hearing in the future
Pass ✓ **result on the 1st Healthy Hearing Screen with risk factor/s** Parent/s of baby with a *Pass* result for both ears with 1 or more risk factors (Early targeted surveillance and routine Targeted surveillance)	▪ Remind parent/s: ○ *Pass* ✓ only indicates baby can hear at a level required for speech & language development ○ *Pass* is not for life → ear infections, trauma, etc ○ Need for referral to Audiology for follow up assessment prior to 6 weeks for Early Targeted Surveillance or 12 months if routine Targeted surveillance due to risk factor/s for delayed onset/progressive hearing loss ○ Need for them to monitor of baby's milestones against *Hearing & speech checklist* ▪ Advise parents to seek earlier referral to Audiology if they have any concerns about baby's hearing prior to the scheduled Audiology appointment
Refer ✗ **result on the 1st Healthy Hearing Screen** Parent/s of baby with a *Refer* result for one/ both ears on AABR1	▪ Remind parent/s that *Refer* ✗ result only indicates that further assessment is required ▪ Explain the range of reasons for a *Refer* result, acknowledging a hearing loss as one possibility ▪ Emphasise the importance of attending for the second screen to clarify the situation ▪ Decide arrangements with parent/s for AABR2
Pass ✓ **result on the 2nd Healthy Hearing Screen** Parent/s of baby with a *Pass* result for both ears on AABR2 & without risk factors	▪ Remind parent/s: ○ *Pass* ✓ only indicates baby can hear at a level required for speech & language development ○ *Pass* is not for life → ear infections, trauma, etc ○ Advise parent/s of potential increased risk of otitis media (glue ear) due to *Refer* result on AABR1 ○ Need for parents to monitor of baby's milestones against *Hearing & speech checklist* ▪ Advise parents to seek referral to Audiology if they have any concerns about baby's hearing in the future
Pass ✓ **result on the 2nd Healthy Hearing Screen with risk factor/s** Parent/s of baby with a *Pass* result for both ears on AABR2 & with 1 or more risk factors (Early targeted surveillance and routine Targeted surveillance)	▪ Remind parent/s: ○ *Pass* ✓ only indicates baby can hear at a level required for speech & language development ○ *Pass* is not for life → ear infections, trauma, etc ○ Need for referral to Audiology for follow up assessment prior to 6 weeks for Early Targeted Surveillance, or 12 months if routine Targeted surveillance due to risk factor/s for delayed onset/progressive hearing loss ○ Need for them to monitor of baby's milestones against *Hearing & speech checklist* ▪ Advise parents to seek earlier referral to Audiology if they have any concerns about baby's hearing prior to the scheduled Audiology appointment

Hearing Screen Scenario	Purpose/Key points to be included
Refer result on the 2nd Healthy Hearing Screen Parent/s of baby with a *Refer* result for one or both ears on AABR1	▪ Remind parent/s: ○ that *Refer* result only indicates that more detailed assessment by Audiology is required ○ of possible reasons for a *Refer* result, acknowledging the possibility of a hearing loss as one reason but not the only reason ▪ Explain the referral process to Audiology ▪ Provide parents with a copy of the brochure *Your Baby's Audiology Hearing Test* ▪ Baby is automatically referred to the Family Support Service who will contact them within a week of referral by mail & phone ▪ Provide parents with Audiology contact details & encourage them to contact the Audiologist of FSF if they have questions/concerns prior to the appointment
Parent/s decline Healthy Hearing Screen Following standard introduction	▪If a parent declines screen: ○ Ask if they have a specific reason for declining ○ Assess if there is any misunderstanding re risks, process, etc & clarify ○ Reinforce implications for i.e. speech, language, education if HL remains undetected ○ Ask parent to sign *Decline* section of the *Healthy Hearing Consent* form ○ Advise that the baby's GP/paediatrician will be notified ○ Offer to screen later should they change their mind ○ Provide Healthy Hearing brochure & contact details
3rd screen required due to result reversal (Flip/flop) Parent/s of baby with Refer result on opposite ears on AABR1 & 2	▪ Explain to parents that: ○ 2nd Refer result is required on the same ear for referral to Audiology ○ if another Refer result is obtained in either ear then the baby will be referred to Audiology ▪ Remind parent/s that the *Refer* result still only indicates that further assessment is required ▪ Reassure parents that the result reversal does not indicate an equipment malfunction but can result from fluctuating responses in the ears due to changing fluid levels, debris in the ear from the birth process moving, positioning of the baby, etc ▪ Emphasise the importance of attending for the third screen to clarify the situation Decide arrangements with parent/s for AABR3

Healthy Hearing (Generic) Screener Script – Parent Information

Introduction / Explanation of Screening process to parent / carer

Hello, I am …… from the Healthy Hearing team.
I would like to offer your baby a hearing screen.
Have you had an opportunity to read the brochure?
I will need to obtain your written consent in order to proceed. Do you have any questions?
Can I explain the screening process for you?

- We use a technique called an AABR / Automated Auditory Brainstem Response.
- Three small sticky gel pads will be gently placed on your baby's head and cheek area
- Earphones are placed over both ears, and a series of soft clicking noises are played through these earphones.
- The sticky pads or sensors will pick up your baby's brain response to these sounds and send it to the machine for analysis
- The machine will automatically indicate a PASS ✓ or a REFER X result.
- It is a quick screen if your baby is in a quiet/settled state. It is not painful, and most babies sleep through the screen.
- Do you have any questions? Can I go over any details again for you?

The results of the screen

- If your baby is settled & the screen is completed, we can tell you the result at the end of the screen.
- If your baby does not settle, we will attempt the screen later in the day.
- As soon as the screen is complete, and the machine gives an automatic result we will be able to tell you the result.

What does PASS/REFER mean?

A PASS ✓ result indicates that your baby hears at levels required for normal speech & language development at the time of the screen. Your baby can hear you speak.

A REFER X result means we will need to repeat the hearing screen again.

Sometimes there might be a ? symbol displayed

The AccuScreen will automatically stop screening and display a ? symbol if the conditions are not ideal to continue the screen. This may involve settling the baby, or reapplying skin sensor pads, or ensuring the room is quiet. The Nurse screener will need to restart the hearing screen.

Obtaining consent

I would like to explain the consent form to you
Have you had an opportunity to look over the brochure describing the screening process?
Do you have any questions about the brochure information?

(Section A)

This section recommends all babies should have their hearing checked

(Section B)

This part outlines there are no known risks of injury to your baby during the screen

There is a small chance of a false result from this screening process (1 in a million)

It is important for you to continue to monitor your baby's hearing even after the screen today

This outlines that a delay in detecting a hearing loss could delay your baby's language development

(Section C)

This is where I sign (screening staff member) after I have explained the screening process for you

I encourage you to raise any questions or concerns at this stage

Should your baby require further hearing tests, your consent on this form will allow us to share the screening information with other health professionals

The screening results will be stored on our database
All information is confidential, and no names are used when reports are generated for program evaluation and research purposes

In the situation where your baby can not be screened for a clinical reason, a referral to Audiology will be arranged instead, this will bypass the screening procedure.

This is where you need to tick the box “I do” or “I do not consent”
Please sign and date in this section here ……

(Section D)

This is where I need to sign and date the form after I have explained the screening process to you

This section is used if an interpreter is required

Are you happy to continue with the screen today?
Are there any other questions I can help you with?

PASS outcome Well baby- no ‘risk factors’

- A **PASS result** ✓ today indicates that your baby hears at levels required for normal speech & language development at the time of the screen- your baby can hear you speak.
- We will not routinely assess your babies hearing again.
- Hearing constantly changes throughout our lives and it is important that you monitor these changes. This is not a pass for life.
- We recommend that you refer to the hearing & speech checklist in ‘Your baby’s free hearing screen’ brochure. This gives details of the expected responses of your baby up to 18 months of age.
- If you have any concerns regarding your baby’s hearing, please contact your GP for a referral to Audiology.
- The Audiology Department located at the …. (*insert local name here*)… can assess a child’s hearing at any age using a variety of age appropriate techniques.
- Do you have any questions? Can I go over any details again for you?

PASS result from AABR screening - Babies with ‘Risk Factors’

- A **PASS result** ✓ today indicates that your baby hears at levels required for normal speech & language development at the time of the screen- your baby can hear you speak.
- Hearing constantly changes throughout our lives and it is important that you monitor these changes. This is not a pass for life.
- We recommend that you refer to the hearing & speech checklist in ‘Your baby’s free hearing screen’ brochure. This gives details of the expected responses of your baby up to 18 months of age.
- Your responses to the “**at risk**” questions for progressive hearing loss highlight the need for us to **continue to monitor your baby’s hearing closely**.

**(Script for generic surveillance appointment)

- You will be offered an appointment around your baby's **1st birthday** to attend the Audiology Department at the ….(insert Hospital) …. for further assessment.
- This appointment will be posted out to you.
- However, if you become concerned regarding your baby's hearing, they will accept a referral from your GP at any stage.
- Do you have any questions? Can I go over any details again for you?

(Script for **EARLY surveillance by 6 weeks post screening e.g. Craniofacial anomalies, and Syndromes associated with progressive hearing loss)

- You will be offered an appointment for your baby within 6 weeks to attend the Audiology Department at the …(insert Hospital) ...for further assessment.
- This appointment will be posted out to you.
- However, if you become concerned regarding your baby's hearing before this appointment, please contact the Audiology department and discuss this matter further.
- Do you have any questions? Can I go over any details again for you?

A REFER result on *AABR1*

- A **REFER** result today indicates that your baby needs another screen.
- There are several reasons why your baby requires a further screen
  1. The screen was attempted when the baby was too young (Protocol recommends 4 - 6 hours or older)
  2. Baby was unsettled during the screen
  3. Excessive background noise during the screen – screening conditions or environment were not ideal
  4. Baby may have fluid or a temporary blockage in their ear
  5. Temporary blockage of the external ear canal due to
     - position of baby's head
     - pressure on the canal
     - residual birth debris in the ear canal
     - residual vernix in the ear canal
  6. Possibility of some degree of hearing loss
  7. Do you have any questions? Can I go over any details again for you?

What happens if the baby refers?

- If the baby refers on either ear, we will repeat the screen
- This may be in hospital or we will arrange for you to return for another screen as an outpatient

REFER AABR1- Appointment arranged AABR2

- The same technique will be used to assess your baby's hearing.
- The nurse screener will be able to explain the results following the screen.
- This repeat screen will be undertaken either in the Hospital prior to discharge or in OPD.
- If you are unable to attend the OPD appointment, please contact …. *(Insert local phone contact here)* and we will be happy to arrange another appointment for you.
- Do you have any questions? Can I go over any details again for you?

PASS following AABR2 screen – include otitis media information

- Refer to appropriate "PASS" script above ie Pass with / without risk factors
  (Include the otitis media evidence from Karen Doyle et al 2004 paper)
- There is some evidence that babies who do not pass their first hearing screen at 48 hours of life and go on to pass their second screen have a higher incidence of an otitis media before their first birthday. (twice as likely to develop)
- We recommend that you are very vigilant in monitoring your baby's speech and language milestones and seek the review of your family GP when concerns arise.

FLIP FLOP outcome following AABR2 screen – reversed result for an ear that previously passed

- This is an unusual screening outcome and does not occur very frequently
- Today the device has indicated a REFER result on an ear that had PASSED on the earlier screen
- This result does not indicate an equipment malfunction
- It does mean that there is fluctuating responses in the ears to changing fluid levels, debris in the ear from the birth process, moving and positioning of the baby
- A third hearing screen is required to complete the hearing screening pathway
- If the AABR3 screen indicates another REFER outcome on either ear, we will arrange a referral to Audiology for your baby
- If the AABR3 screen outcome is a PASS for both ears, there will be no further screens performed. We encourage you to monitor your baby's language milestones using the "hearing and speech checklist" on the back of the brochure

REFER AABR2- Diagnostic appointment to be arranged at the appointed hospital

- A **REFER** result has been obtained on your baby's second screen.
- Repeat the above reasons for a refer outcome…….. i.e. blockage of external or internal ear, possibility of a hearing loss
- I will arrange an appointment for a more detailed (diagnostic) test using a similar technique with earphones and sticky pads with the …. (insert referral centre here) Audiology department
- This is performed by an Audiologist who is a specialist in the testing of hearing.
- With your referral to Audiology, we will link you with the **QLD Hearing Loss Family Support Service**.
  This service has offices in Brisbane and Townsville and provides early support, advocacy and information to families whose children have been diagnosed with a permanent hearing loss. If your baby is found to have a permanent hearing loss, a Family Support Facilitator will contact you, and will be available to work with you and your family.

- You will need to attend Audiology Department ….(*insert referral centre here*)… Please check your appointment letter for details and contact numbers
- I will return with a location map to help you find the Audiology department, and parking stations in the area.
- Do you have any questions? Can I explain the process again for you?

It is best if your baby sleeps during the audiology testing. They recommend that you feed & settle your baby just before the appointment. It may take up to 2 hours and will give them more information about your baby's hearing. They will discuss the results with you following the assessment.

We suggest you have another adult with you to assist with the baby, the testing equipment and information gathering at the appointment.

It is important that you contact Audiology if you are unable to attend your appointment as soon as possible.

You can ring and speak to an Audiologist at any time if you require any further information regarding the assessment on ….(insert number here) … they are very keen to answer your questions.

DECLINE FROM PARENT / CARER

When a parent declines the HHP screen we are required to

- record their decision on the HHP consent form
- document decline in the baby's medical record
- record the decline on the HHP Screening and Referral form
- advise them of the proactive language milestone monitoring required by them

I respect your decision to decline the HHP screen
May I ask why you are declining? Can I explain any part of the screening process again for you?

I will make a note of your decline in your baby's medical record.
Would you please indicate your decline on this form (HHP consent form/ section C) in this section here ….

Should you wish to change your mind later, we can perform the hearing screen up to 3 months of age. We cannot offer it after that time period.
The contact phone number to arrange a screen is …….. I will write it here on the brochure

Can I show you this section on the brochure (point out milestones) that lists the normal language milestones your baby should be achieving up to 18 months of age?

We will be in contact with your family GP to request continued monitoring of your baby's language milestones in partnership with you.

Appendix 5 – Syndromes and Risk Factors Associated with Hearing Loss & Craniofacial risk factors

The table below provides a list of syndromes and conditions that are associated with congenital and progressive hearing loss.

Please note: SNHL = Sensorineural Hearing Loss; SN = Sensorineural; HL = Hearing Loss

	Syndrome / Condition	Description / Features	Types of Hearing Loss
A	Achondroplasia	Dwarfism, skeletal ossification disorder	Conductive or SNHL
	Albers-Schonberg Disease of Osteoporosis	Brittle, thickened, chalky bones	Conductive or SNHL
	Albinism with Blue Irides	Pigmentation disorder eyes, skin, hair	SNHL
	Alport Syndrome	Nephritis and cataracts	Progressive SNHL
	Apert Syndrome	Craniosynostosis, midface anomalies, middle ear involvement	Conductive HL
	Aplasias (errors during embryonic development) • Michel aplasia • Mondini aplasia • Scheibe aplasia	• Complete absence of inner ear & auditory nerve • Abnormal development of the structure (turns) of the cochlear • Abnormal formation of the cochlear membrane	SNHL
	Asphyxia at birth / neonatal period	Resuscitation required / poor APGAR, seizures, neurological involvement	SNHL, including auditory neuropathy
B	Bacterial Meningitis (confirmed)	Auditory involvement, can have sudden permanent hearing loss	SNHL, central effects
	Bjornstad Syndrome	Dry, brittle, flat, twisted hair	SNHL
	Branchio-Oto-Renal syndrome (BOR)	Renal anomalies, auricular pits, pinnae malformations	Conductive, SN or mixed HL
C	Carraro Syndrome	Absence of the Tibia bone	SNHL
	Camurati-Engelmann Disease	Skeletal - enlarged diaphysis of the long bones	Conductive, SN or mixed HL
	Chemotherapy medications (mother and baby)	Cisplatin, Carboplatin - inner ear hair cells affected	SNHL
	Cerebral Palsy	Hypoxic episode during development or birth asphyxia	SNHL
	Corpus Callosum – Absent or agenesis	Malformation of band of white matter joining 2 hemispheres of the brain	SNHL, central effects
	Craniofacial abnormalities **(Direct refer for ABR – do not screen)** • Atresia of the ear canal • Absent/malformed pinna	• Complete/partial closure of the ear canal • Microtia, atresia, stenosis, malformation of the pinna	Conductive, SN or Mixed HL

	Cleft Palate *(Early t/surveillance referral)*	Malformation of the hard palate (Exclude cleft lip if only feature present)	Conductive HL
	CHARGE Syndrome	Abnormalities: Coloboma (eyes), Heart, Atresia (nares), Renal, Genital, Ear	Conductive, SN or mixed HL. Can have auditory neuropathy.
	Cleidocranial Dysostosis	Retarded ossification, narrowed auditory canal	Conductive & SNHL
	Cockayne Syndrome	Growth failure, neurologic delay, retinal atrophy	SNHL
	Cornelia de Lange Syndrome	SGA, limb malformations, cardiac defects, cleft palate	Conductive, SN or mixed HL
	Crouzon Syndrome	Craniosynostosis, midface anomalies, outer & middle ear defects	Conductive, SN or mixed HL (majority are conductive)
D	Dwarfism	Skeletal anomalies, shortness, short fingers	SNHL
	Down Syndrome *(Early t/surveillance referral)*	Middle ear anomalies - ossicles, otitis media infections	Conductive, SN or mixed HL
E	Encephalitis	Infection, auditory involvement	Sudden SNHL
	Engelmann Syndrome	Bone dysplasia, increased skeletal density affecting auditory function	Conductive, SN or mixed HL
F	Fanconi Anaemia Syndrome	Impaired renal transport, growth delay	SNHL
	Family History of hearing loss	Permanent hearing loss evident in early infancy < 6 years (see Qld Health - S&R list)	Permanent Conductive or SNHL
	Fetal Alcohol Syndrome	LBW, skeletal anomalies, cleft palate, pinnae anomalies	Conductive or SNHL
	Fraser Syndrome	Adherent eyelids, external ear malformations, syndactyly	Conductive or SNHL
	Friedreich Ataxia	Progressive ataxia, cataracts	SNHL
G	Goldenhar Syndrome	Eye, ear and mouth anomalies	Conductive or SNHL
H	Hemifacial Microsomia	Abnormal development on one side of the face, atresia/ stenosis canal	Conductive or SNHL
	Hermann Syndrome	Late onset of disease. Epilepsy, speech, ataxia, renal disease	SNHL
	Hyperbilirubinaemia	Auditory nerve function affected due to excessive bilirubin	SNHL, may have auditory neuropathy
	Hypoxic Ischaemic Encephalopathy (HIE)	Severe asphyxia with neurological sequelae, hypotonic limbs, significant morbidity	SNHL, may have auditory neuropathy
	Hydrocephalus *(Early T/surveillance referral)*	IVH Grade 3 & 4, internal cranial anomalies, obstructed ventricle flow, 8th Cranial Nerve involvement	SNHL
	Hunter and Hurler Syndrome	Progressive manifestation of coarse facial features	Conductive, SN or mixed HL

I	Infections (confirmed congenital) • Cytomegalovirus • Herpes • Rubella • Toxoplasmosis • Syphilis	• Herpes virus 5, microcephaly, hepatosplenomegaly, jaundice, IUGR • Congenital neonatal herpes infection HSV-1 & 2 - High mortality • LBW, purpura, jaundice, Organ of Corti degeneration • Parasitic infection, chorioretinitis, cerebral calcification, convulsions • Nasal discharge, rash, anaemia, jaundice, osteochondritis	SNHL
	Intraventricular Haemorrhage - Grades 3, 4 and above (IVH) *(Professional concern referral)*	Bleeding within the brain structures causing adverse neurological complications	SNHL, central effects
J	Jervell and Lange-Nielsen Syndrome	Cardiovascular disorder, fainting, sudden death a feature, auditory involvement	SNHL
K	Keratopachyderma with Digital Constrictions (aka Vohwinkel-Nockemann Syndrome)	Hyperkeratosis of palms, soles, knees, elbows, fingers and toes.	SNHL
	Klippel-Feil Syndrome	Craniofacial and skeletal disorder, short neck, cleft, poorly developed inner ear structures	Conductive or SNHL
L	Laurence-Moon-Biedl-Bardet Syndromes	Retinitis pigmentosa, polydactyly	SNHL
	LEOPARD Syndrome (aka Multiple Lentigines Syndrome)	Pigment disorder, café au lait spots, cardiac, ocular, genital, growth delay	SNHL
	Long QT Syndrome (LQTS)	Cardiac condition, sudden death	SNHL
M	Marshall Syndrome	Short stature, skeletal defects, cataracts	SNHL
	Meningitis – confirmed bacterial in neonatal period	Inner hair cells in cochlear damaged by virus	SNHL
	Mitochondrial Disorders	DNA - Maternal inheritance pattern	SNHL
	Microcephaly *(Early T/surveillance referral)*	Cranial size smaller than expected, mild to severe developmental delays	SNHL
	Moebius Syndrome	Connective tissue disorder, facial paralysis (cranial nerves 6 & 7), middle ear anomalies	Conductive or SNHL
	Muckle-Wells Syndrome	Onset in teens, urticaria, renal failure	SNHL

N	Neurofibromatosis Type II	Intracranial tumours, 8th Cranial nerve, acoustic neuroma	SNHL
	Noonan Syndrome	Congenital heart defects, short stature, broad webbed neck, flat nasal bridge, hypotonia	Predominantly SNHL
	Norrie Disease	Eye disorder, auditory impairment	SNHL
O	Oculo-Auriculo-Vertebral Syndrome (OAV) (aka Goldenhar Syndrome)	Facial asymmetry, anomalies of external, middle ear, cranial nerve	SNHL, central effects
	Olmsted Syndrome	Rare, infantile onset of hyperkeratosis of palmar and plantar surfaces	SNHL
	Optic Atrophy and Polyneuropathy	Progressive visual loss, polyneuropathy in childhood	Progressive SNHL
	Ototoxic Medication – Maternal use during pregnancy • Quinine (malarial treatment/ SLE therapy/ arthritis) • Cisplatin (maternal chemo)	Cause damage to hair cells of the inner ear	SNHL
	Osteogenesis Imperfecta	"brittle bones", stapes malformation	Conductive, SN or mixed HL
P	Paget's disease	Juvenile skeletal disorder, bone pain, swelling	Progressive mixed HL
	Persistent Pulmonary Hypertension of the Newborn (PPHN)	Ventilation, progressive hypoxia, persistent foetal circulation	SNHL, central effects
	Pierre Robin Syndrome (*Early t/surveillance referral)*	Craniofacial anomaly, micrognathia, glossoptosis, may have cleft palate	Conductive, SN or mixed HL
	Periauricular Abnormalities	Ear canal atresia, facial paralysis (**Exclude** ear pits and tags)	Conductive or SNHL
	Periventricular Leukomalacia (PVL)	Ischaemic cystic changes in the brain matter predisposing to Cerebral palsy	SNHL, central effects
	Piebaldness	Lack of pigment in hair, ataxia, blue irides	SNHL
	Pendred Syndrome	Thyroid goiter - iodine imbalance in inner hair cells	SNHL
	Pyle's Syndrome (Pyle Disease)	Enlargement and sclerosis of the facial bones, ribs, clavicles	SNHL
R	Refsum Syndrome (Refsum Disease)	Organ of Corti degeneration, inner ear anomalies, eye disorder	SNHL
	Richards-Rundle Syndrome	CNS disorder, ataxia, muscle wasting	Progressive SNHL
S	Stickler Syndrome	Flattened facial profile, cleft palate, ocular changes	Conductive or SNHL

T	Treacher Collins Syndrome	Head and neck anomalies, atresia of canal, abnormal middle ear	Conductive HL
	Trisomy 21 (Down Syndrome) (*Early t/surveillance referral)*	Recurrent middle ear infections	Conductive or SNHL
	Trisomy 13, 15 & 18	High mortality rate	Conductive or SNHL
	Turner Syndrome	Gonadal dysgenesis, webbed neck & digits, micrognathia	Conductive or SNHL
U	Usher Syndrome	Retinitis pigmentosa, tunnel vision, vertigo, organ of Corti degeneration	SNHL
V	Ventilation	Mechanical ventilation for longer than 5 days (120+ hours) increased neonatal risks	SNHL
	Van der Hoeve Syndrome	"brittle bone", stapes malformation	Conductive or SNHL
	Vohwinkel-Nockemann Syndrome	Hyperkeratosis of palms, soles, knees, elbows, fingers and toes.	SNHL (may be progressive)
	Von Recklinghausen Syndrome	Hyperkeratosis of palms, soles, knees, elbows, acoustic neuroma, renal	SNHL
W	Waardenburg Syndrome (Type 1 & 2)	White forelock, iris colour different in one eye, prominent mandible, cleft	SNHL
	Wildervanck Syndrome	Dysmorphic facial features, atresia of ear canals, eyeball retraction	SN or mixed HL
	Winter Syndrome	Renal anomalies, genital malformation, malformed ear and canals	Conductive HL

References

Healthy Hearing Program – Target Surveillance review 2012
John Muir Medical Centre USA (2000) - Hearing loss indication list
Northern and Downs (2002), Hearing in Children 5th edition
Newton (2002), Paediatric Audiological Medicine
Patricia Gillilan - Audiologist USA
Queensland Medicines Advice Information Service memo 2019

Date last reviewed: **May 2020**
Due for review: **2023**

Appendix 6 – Troubleshooting Measures for the AccuScreen

Please refer to the following two pages for troubleshooting information for the AccuScreen regarding:

- Conducting an equipment check, and
- Controlling the screening conditions.

These pages can be printed for easy reference in your clinical area.

MADSEN AccuScreen® Appendix 6: Troubleshooting AccuScreen

Conducting an Equipment Check:

Electrode Cable, and **Coupler** **or** **Hug Cable**:

1 Turn on the AccuScreen by long-pressing the button on the side.

A. On/Off switch

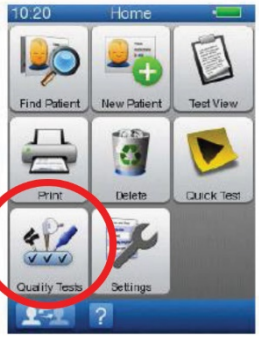
2 Select, **USER** = **Staff ID#** from the list.

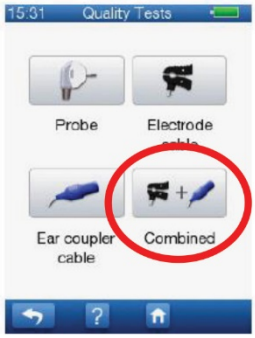
Enter your **PASSWORD: "Abcd"**

(Then select the **facility** and **location** by pressing the only button selection on each following screen).

3 Attach the Electrode Cable ends to the metal bars of the ABR tester, and insert the Red and Blue coupler cable ends into the left and right side holes of the ABR tester.

4 Choose **Quality Tests** icon, and combined



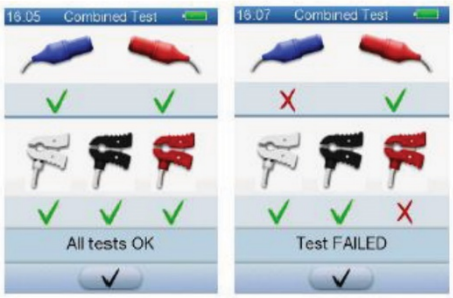


Perform a **manual listening check** by holding each speaker up to your ear before hitting **combined** to verify a chirp sound can be heard.
Repeat the test for the other earhug/earcup cable (if both are supplied).

5 If all test are ok simply click 

If the test failed, re-check the connections to the ABR tester and re-test.

If the test failed twice. Replace faulty cable with spare cable and re-test untill all tests OK appears.



Contact **Natus Medical Pty Ltd** if you have any questions:
Phone: 1800 290 772
Email: service.anz@natus.com

MADSEN AccuScreen® Appendix 6: Troubleshooting AccuScreen

Controlling screen conditions

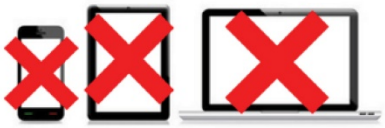
Ensure the following noises isn't interfering with your screen:

Acoustical

*Normal conversation level is >65dB HL 1m from the baby. 35dB HL is less than a whisper!

NO AUDIBLE CHIRP = NO ABR = FALSE REFER.

Electrical



Turn off all electronic devices to be safe.

*Florescent Lights and some medical equipment can also cause interference.

Myogenic

*Sucking, any movement, and just being awake/alert can potentially increase EEG.

Also ensure you completely control the screening setup:

LOW Impedances

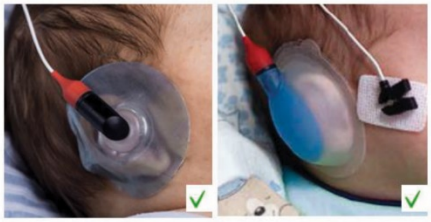
< 4kΩ or Green is ideal for all sensors

< 12kΩ or Yellow will slow you down

> 12kΩ or Red will auto STOP the screen

**Balance between sensors must be less than 4-5kΩ* or display will be RED and the screen will be stopped

TIGHT Hug/Coupler Seals:



*A break in the surrounding seal will cause background sounds to leak into the ear canal and slow down your screen times.

Contact **Natus Medical Pty Ltd** if you have any questions:

Phone: 1800 290 772

Email: service.anz@natus.com

Appendix 7 – Cleaning AccuScreen Cables

Please refer to the next page for instructions on caring for and cleaning the AccuScreen cables.

The page can be printed for easy reference in your clinical area.

MADSEN AccuScreen® Appendix 7: Cleaning AccuScreen Cables

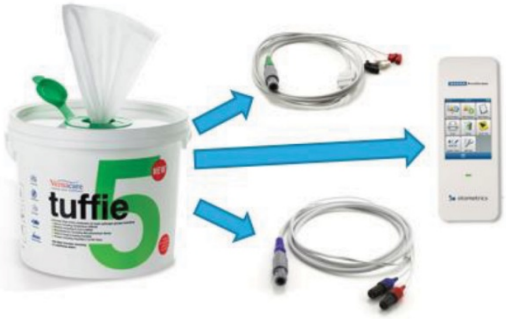
AccuScreen cables are durable and built to withstand everyday use.

However all AccuScreen cables contain delicate components such as calibrated speakers and data memory which can be damaged if mishandled.

Treat them with care and follow the tips below to ensure you achieve the maximum longevity with all AccuScreen cables:

- Gently roll the cable so it forms its natural memory circle, then place in the drawer or hang on a hook on the cart.
- Never kink or bend any cable in one place. Cables are like a metal paperclip, excessive bending at one point will make them break!

- Use "Tuffies" to clean cables and Accuscreen unit/touchscreen.
- While cleaning: Support cable end and wipe in opposite direction to minimise strain on cable.
- Never immerse ear coupler cable or ear hug cable in liquid.



- Alcohol wipes are only ok to use on sensor cable clips.

Contact **Natus Medical Pty Ltd** for calibration and support:
Phone: 1800 290 772
Email: service.anz@natus.com

Appendix 8 – Screener Competency & Sample Training Program

Training Format & Competency Assessment

Guidelines for conducting training activities and assessing competencies are listed in the following table:

Theory - Clinical Information and Screening Equipment Function and Operation	A variety of processes can be used: • Theory based Webinar x 8 - 9 modules / Troubleshooting tips x 5 videos • Demonstration and supervised practice • Online iLearn platform and Quiz
Practical Screening - Initial	Participants perform screens in pairs (or as determined by trainer) and are observed by trainer • One trainee performs screen and one records data • Feedback should be provided immediately following screen (i.e. not with parent/s present unless necessary for successful completion of screen). At least 2 screenings per trainee should be undertaken under these conditions.
Practical Screening - Independent	Screener performs screens alone – with direct or indirect supervision (to be determined by trainer). 5 screenings to be successfully performed under these conditions. Competencies formally assessed by local/area Healthy Hearing Coordinator via: • Observation of at least 2 complete screens • Screener can complete iLearn quiz assessment online to generate a competency certificate which can be signed off by team leader Feedback/Review process with trainer/ co-ordinator.

Annual mandatory competencies will consist of one practical screening assessment and the completion of the online e-Learning module iLearn: https://ilearn.health.qld.gov.au/d2l/login

Guidelines for Assessing Practical Competencies

Specific competencies that must be demonstrated at the completion of training are detailed in the following table.

Theoretical knowledge & understanding of evidence for universal newborn hearing screening	Demonstrates: • a clear understanding of basic anatomy & physiology of the ear • a basic understanding of the different types of hearing loss • a clear understanding of the impact of a HL on speech & language development • a good understanding of the State-wide and local policy in relation to screening protocols and procedures • a clear understanding of the circumstances in which a child is listed for follow-up and identify the procedures involved Can explain: • the benefits of early identification of a hearing loss and resulting early intervention and/or management • the normal developmental milestones for hearing and the importance of monitoring those with all babies

Communication with parent/s and colleagues **Offering a hearing screen** **Seeking informed consent**	Provide a competent and complete explanation of the screening rationale and process used when offering a hearing screen to parent/s, including: • Benefits of early identification and intervention. • Description of how the screen is performed. • Likely duration of the screening process. • Possible results and their meanings. • Any follow up actions that might be required. Seek informed consent from parents, providing an overview of the key contents of the HH Consent form prior to signature. Demonstrates: • appropriate language when communicating with parent/s • use translated HH resources &/or interpreter if necessary • sensitivity to possible concerns of parent/s & provide an opportunity for them to seek clarification in order to minimise parental anxiety • collaborative working practices, in liaising and problem-solving with other members of the maternity team in relation to the hearing screen including data collection, timing of screen, etc. Provide parent/s with any other information/explanations as necessary before, during or after the hearing screen. Remind parents at completion of screen what their baby's results mean. Ensure parent/s have follow-up appointments at outpatients or with diagnostic services (audiology) if required.
Screening methodology **Technical aspects of conducting a screen**	Demonstrates: • a clear understanding of the data which must be collected and recorded, its significance and the procedures for collecting and recording it • appropriate infection control measures when handling babies and using equipment • appropriate care in the use, cleaning, maintenance and storage of equipment • an understanding of appropriate actions should data be entered incorrectly/consumables be applied incorrectly. Perform a complete screen, without supervision/feedback, demonstrating: • Appropriate baby selection • Selection of an appropriate environment • Accurate input of data to AccuScreen device • Appropriate skin preparation • Correct sensor connection and placement • Correct ear coupler / hug placement • Settling of the baby if disturbed during preparation. Monitor screen's progress and troubleshoot appropriately. Correctly record data in the patient medical record, PHR Book, S&R Form. Perform an equipment check.

HEALTHY HEARING
NEWBORN HEARING SCREENING PROGRAM

_____ Hospital

QUEENSLAND GOVERNMENT

Skills Assessment for Screening with the AccuScreen Newborn Hearing Screener

NAME: _____ **ID:** _____ **Assessor Name:** _____ **ID:** _____

Tick Applicable Box: ☐ Assessment after 2 screens ☐ Assessment after 5 screens ☐ Annual assessment

Procedure	Newborn Hearing Screen Skills to be evaluated (C = Competent, D = Needs Development, S = Requires Supervision)	Rating Scale C	D	S
Screen offer	Clear and accurate information given to parents / carer ▪ Brochure in appropriate language provided &/or interpreter used ▪ Reason / aim of screening program explained ▪ Procedure described using clear, simple language and terms ▪ Possible screening outcomes explained			
	Consent obtained using form &/or interpreter in appropriate language			
	Opportunities provided for parents / carer to ask questions			
Baby selection	Baby selected was eligible to screen and in an appropriate state Baby identity checked against ID labels and wristband, and verbally checked with parent			
Data collection	▪ Healthy Hearing Screening & Referral Form completed correctly ▪ Patient demographics and correct identifying name and medical record number			
	▪ Hearing loss "high risk indicators" identified → Information obtained from medical record → Clarification with parent as required			
Procedure	Correct patient data / information entered into Accuscreen			
	Confirmed that baby was in a quiet, settled state before proceeding			
	Skin evaluated and prepared correctly			
	Sensors placed correctly			
	Ear couplers / hugs applied correctly			
	Progress of screen observed and monitored ▪ Ensured minimal environmental noise, myogenic, impedance values and EEG levels ▪ ABR bar and Progress bars monitored ▪ Troubleshooting undertaken before starting to minimize false refers			
Post screen	Screen outcome / result explained to parents			
	Ongoing language milestone monitoring, and Otitis Media risk discussed			
	Parents / carer encouraged to ask questions and further information provided as required			
	Appropriate follow-up process /action undertaken as required ▪ AABR2 arrangements ▪ Referral for diagnostic Audiology appointment within 2 to 6-week time frame ▪ Referral to Family Support Service when ABR appointment required ▪ Referral for Surveillance Audiology scenarios ○ Early Target Surveillance by 6wks ○ Routine Surveillance prior to 1st birthday			
	Written record / documentation process completed			
	Communicated as appropriate with other care providers Nursing/Audiology/FSF/Medical			
	Disposed of used equipment and completed infection control measures correctly			
	Demonstrated appropriate equipment care & storage of cables			
Housekeeping	Performed Quality tests correctly – **Combined** – Electrode and ear coupler / hug cable			
	Demonstrated knowledge of processes for faults, daily / weekly checks & annual ear coupler/hug cable **calibration**			
	Aware of downloading process for patient screening data via docking station			

Competency: ☐ **Achieved** ☐ **Interim** (reassessment required) ☐ **Not Achieved**

Comments/Recommendations:

Screener Signature: ..... / / **Assessor Signature:** ..... / /

MADSEN AccuScreen® **Calibration Flow Sheet**

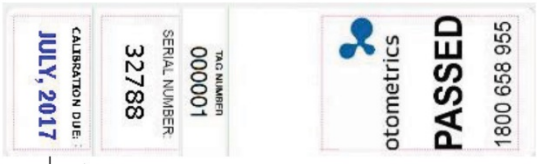
Queensland Healthy Hearing Annual calibration process:

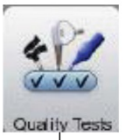
Otometrics quality process applicable at all Queensland screening sites:

- The following is covered under the maintenance contract tendered and incurs an annual fee of $2,255 per AccuScreen device.
- **Annual** calibration of **AccuScreen Unit**, Ear **Coupler Cable**, and Ear **hug cable** to be performed **onsite** of **every** screening **site**.
- 1-hour calibration time required per one device and cables onsite.
- Otometrics will contact by phone and email 1 month before calibration is due
- Screening site is responsible for scheduling onsite calibration.
- Do not send any cable by post or courier to our head office, unless instructed by an Otometrics calibration technician or staff.

Calibration due 12 months after previous device/cable calibration date:

- A calibration sticker/label featuring the due month & year will be clearly located on each unit and cable.
- The "Ear Coupler cable" serial#, "Ear hug cable" serial#, and the "AccuScreen Unit" serial# will be documented during calibration by Otometrics, and featured on the calibration sticker/label.
- A calibration certificate with unit and cable serial #'s and date of calibration will be generated on completion.





To be performed daily on all 3 cables (Appendix 6).

If fault found after 2nd attempt, contact Otometrics for onsite response or possible replacement. Response will be 1. phone support or 2. on site repair or 3. loan unit sent and device returned to Otometrics

1 Month Prior to Month Due:
- Reminder Email sent to site manager.
- Cc email sent to Area Co-Ordinator.

<2weeks till due with no response: Otometrics Emails Site Manager & Cc Area Co-Ordinator.

Onsite Calibration **Date Scheduled** with Otometrics.

Contact **Natus Medical Pty Ltd** for sales and support:
Phone: 1800 290 772
Email: service.anz@natus.com

Calibration and Testing performed on unit and cables.
Labels with month due updated on unit and cables.
Calibration certificate issued via email to site manager and/or area co-ordinator.
Otometrics Database register of serial #'s and location updated.

Replacement cable issued.
Cal month due of unit applied to new cable.
Cable serial# updated on Otometrics unit calibration database.
Area Co-Ordinator cc email sent.
Each cable can only be replaced 1x per year, and only if the fault is confirmed by Otometrics.