

Healthy Hearing Program

Universal Newborn Hearing Screening



Protocols and Guidelines

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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 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.

The Healthy Hearing Protocols and Guidelines provide an overarching set of protocols and guidelines in the one document in order to provide a consistent newborn hearing screening program across the state. They replace a range of separate protocols or guidelines addressing various aspects of the newborn hearing screening process produced previously by individual screening sites.

The layout of these protocols has been designed to allow quick access to relevant sections of the protocols and guidelines as required to find specific information. 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 <http://www.health.qld.gov.au/healthyhearing/pages/protocols.asp>.

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). More than half of children diagnosed with a HL come from the well baby population, born without any known hearing loss risk factors (HLRF) 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.

Early detection of HL in infants is of paramount importance with age of identification and 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.

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) now 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 babies born in Queensland soon after birth.
- Immediate referral to Audiology for diagnostic assessment for any babies who receive a second *Refer* result on their hearing screen.
- Diagnostic follow up assessment of all babies who receive a *Pass* result on their hearing screen but present with risk factors associated with progressive hearing loss.
- Facilitating treatment and/or early intervention for those babies diagnosed with a HL.
- Providing ongoing support and information for families of babies diagnosed with a PHL until the child turns 6 years of age.

1.3 Program Targets/Benchmarks

The Healthy Hearing Program has established the following targets:

Screening Rates	<ul style="list-style-type: none"> ▪ All babies born in Queensland birthing facilities (public/private) offered a hearing screen. <ul style="list-style-type: none"> * <i>100% of eligible babies are offered hearing screening</i> * <i><1% of parents decline screening</i> ▪ 95% of eligible babies will have their screen completed by 3 months corrected age. <ul style="list-style-type: none"> * <i>>97% of eligible babies complete a screen</i> * <i>>97% eligible babies complete a hearing screen before one month corrected age</i> * <i>All babies who do not have a complete screen prior to hospital discharge are followed up within one month</i> * <i>All babies with a 'refer' (positive) result are referred for audiological assessment</i> * <i>>97% babies with a refer (positive) result are referred, monitored and followed up through to diagnostic services</i>
Referral Rates	<ul style="list-style-type: none"> ▪ < 4% of babies screened are referred for diagnostic audiological testing; <ul style="list-style-type: none"> ⇒ babies with a bilateral Refer result offered assessment by Audiology within 2 weeks ⇒ babies with a unilateral Refer result offered assessment by Audiology within 6 weeks. (Diagnostic assessment for above babies will be completed by 6 months corrected age) * <i>>97% of diagnostic audiology assessment is commenced by three months of corrected age, to allow referral for medical evaluation and timely access to intervention services including Australian Hearing.</i> ▪ 95% of babies referred for diagnostic audiological testing attend Audiology. <ul style="list-style-type: none"> * <i>Approximately 0.1% of babies screened will be diagnosed with the target condition</i> ▪ < 4% of babies screened are identified with risk factors for progressive hearing loss; <ul style="list-style-type: none"> ⇒ babies identified with risk factors will be reviewed by their 1st birthday.
Intervention	<ul style="list-style-type: none"> ▪ Average age for intervention/fitting of hearing aids will be 6 months corrected age. <ul style="list-style-type: none"> * <i>>85% of children diagnosed with bilateral hearing loss >40 dBHL are fitted with amplification by six months of age</i> * <i>>95% of children diagnosed with a bilateral hearing loss >40 dBHL are fitted with amplification by 12 months of age</i> ▪ Average age for intervention/fitting of cochlear implants will be 12 months corrected age. <ul style="list-style-type: none"> * <i>>97% of children with 3FAHL of ≥90 dBHL at the initial diagnostic audiology appointment are offered referral for cochlear implant candidacy</i>
<i>Parent Support</i>	<ul style="list-style-type: none"> * <i>Access to key support worker or parent support group is offered throughout the screening, diagnosis and intervention</i>

* *National Standards*

1.4 Program Funding

The Healthy Hearing Program provides funding for equipment and nursing staff labour to perform hearing screens on all babies born in the public and private sectors in Queensland.

Labour funding is calculated taking account of:

- Birth rate for the facility in the previous calendar year.
- Salary and oncosts for Queensland Health Nurse Grade 5.
- An estimated 30 minutes per screen, which includes:
 - obtaining informed consent
 - data entry
 - preparing the baby
 - performing the screen
 - explaining the results to parents, and
 - documenting the results in the chart and Personal Health Record (PHR) book.

The program also provides funding annually for:

- Screening consumables (ear couplers and sensors).
- Equipment maintenance contract.
- Program coordination including; database management, tracking of babies and annual screeners competency assessment.

Additional funding may be made available for training and/or professional development and administrative support.

2 Healthy Hearing Screening Criteria & Logistics

2.1 Screening Eligibility Criteria (who is screened)

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 screening, a baby must:

- 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.
- Be asleep or in a quite settled state and recently fed or feeding.
- Be medically stable and have completed any antibiotic or phototherapy treatment.
- Be ready for discharge home within the next day or two if in a NICU or special care nursery.
- Informed parental consent obtained.

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

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: for example, if the baby has compromised skin.
- The presence of a major cranio-facial abnormality: in particular the absence of outer ear anatomy, including babies with unilateral or bilateral atresia.
 - ❖ **For babies with only 1 normal-looking ear, do not screen the 'good' ear.**
- Other conditions which medical staff deems require 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 (eg under phototherapy)	After treatment is ceased
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 (eg gentamicin)	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 Healthy Hearing Program conducts hearing screening using either the ALGO 3 trolley mounted Newborn Hearing Screener or the ALGO 3i portable Newborn Hearing Screener. These are mobile, non-invasive devices which use Automated Auditory Brainstem Response (AABR) technology to assess the auditory system from the external ear to the auditory brainstem.

The ALGO screeners operate by delivering soft clicking sounds to the baby's ears via disposable earphones. Each click evokes a series of identifiable brain waves from an area of the brain called the auditory brainstem. This brain wave activity is known as the auditory brainstem response (ABR). Sensors applied to the baby's skin pick up the brain wave response and transmit the signals to the ALGO screener. It then analyses the baby's response to determine if it is consistent with a template within the screening device which is derived from ABRs of normal-hearing infants. The Algo detects the ABR waveform with high statistical confidence to determine that a response is present.

The devices generate either a *Pass*, *Refer* or *NA* result for each ear. The results are known immediately and no interpretation of results is required by the screener. **A typical screen should take on average between 4 and 7 minutes. A refer result may take longer, and on average should take no more than 10 minutes.**

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
- special care or well baby nursery
- office area or clinician's room
- the baby's home
- other community setting such as RFDS clinic.

Ensure the ALGO 3i portable device is securely positioned on the bassinet, on a flat surface (not metal) or mounting pole (optional) with the display facing away from the baby.

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.

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 Algo 3 and/or 3i.

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:

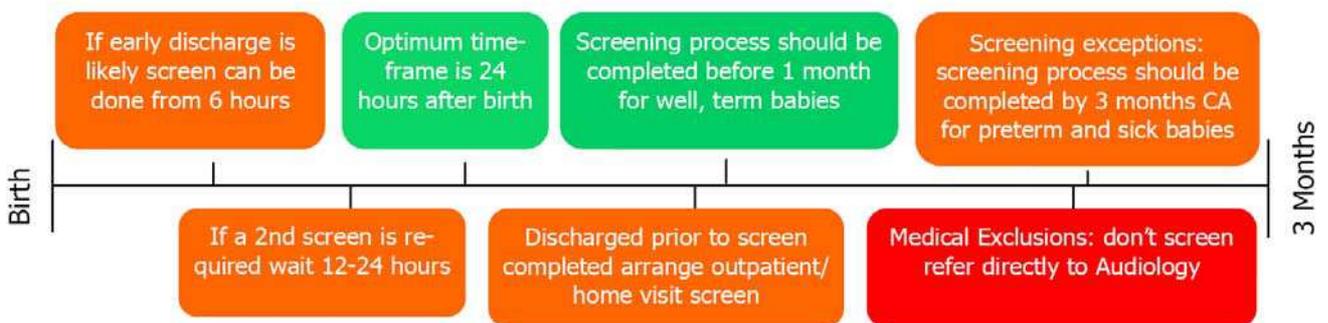
- Obtaining informed consent from parent/s.
- Performing hearing screens.
- Explaining results to parent/s.
- Documenting results.
- Downloading data from the Algo as per local protocols.
- Actioning referrals to Audiology and Family Support Service.

2.5 Screening Timeframe

To ensure high capture rates, screening should be performed during the birth admission. The screen can be performed from 6 hours after birth. However, the optimum timeframe is from 12 hours after birth, providing the baby will still be an inpatient. Where a Refer result is obtained for the AABR1, a time period of at least 12 to 24 hours should be left before repeating the screen (AABR2).

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 competent in performing the hearing screen.

The screening process should be completed before the baby reaches 3 months corrected age.



Note: The general rule is ideally babies should be screened before they reach 3 months corrected age. However babies can be screened up to 6 months, following consultation with the area co-ordinator.

2.6 Screening Resources & Ordering Processes

Resources have been developed to assist the screening process and to promote the HHP, including;

	Resource	Application
Healthy Hearing Forms	Consent Form	<ul style="list-style-type: none"> Used to obtain and document parental consent for screening
	Screening & Referral Form (S&R Form)	<ul style="list-style-type: none"> Used to document screening information: including screening results & hearing loss risk factors Used to refer babies onto Audiology and QHLFSS
Brochures	'Your baby's free hearing screen'	<ul style="list-style-type: none"> Provides parents with information about the hearing screen and used to obtain consent
	'Your Baby's Audiology Hearing Test'	<ul style="list-style-type: none"> Given to parents of babies referred to audiology for diagnostic hearing assessment.
	'Your Baby's Follow Up Hearing Test'	<ul style="list-style-type: none"> Given to parents of babies with a hearing loss risk factor.
Consent form and brochures are available in translated languages on the Healthy Hearing Website		

Information about how to order these resources is available on the Healthy Hearing website at www.health.qld.gov.au/healthyhearing/pages/order.asp. Sites should refer to the Healthy Hearing Website as it 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.
- Baby's guardian.
- Department of Child Protection.
- Person nominated by the Family Court.
- 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'.
- A verbal explanation 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 in a de-identified form 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, obtaining consent is required using a form translated into the appropriate language. Forms are available in a range of languages on the Healthy Hearing webpage at <http://www.health.qld.gov.au/healthyhearing/pages/transltdres.asp>. Audio translations are also available in a limited number of languages for individuals who are not literate in their own language. These can be copied to an iPod, MP3 player or CD for playing to the parent/s.

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.
- File the Consent and the S&R forms in the baby's medical record. Document the *decline* on the baby's clinical pathway (if used).
- Arrange a letter to the baby's medical practitioner advising screen declined, and advising of any high risk factors for a progressive/delayed onset hearing loss (**Appendix 3**).
- Advise parents that they may return for the screen before the baby is 3 months of age on an outpatient basis should they change their mind. However, babies can be screened up to 6 months. Hospital contact phone number and details should be provided on the '*Your baby's free hearing screen*' brochure.

3.3 Screening & Referral Form (S&R Form)

The Screening and Referral Form (S&R Form) is completed for all live births regardless of whether or not the baby completes the hearing screen. This form serves several purposes, including;

- Collects demographic information.
- Records relevant medical history: for example, the presence of specified risk factors.
- Template for entering data into the relevant fields on the screen of the algo 3 or 3i.
- Referral form to audiology for immediate diagnostic assessment.
- Referral form to audiology for follow-up assessment of specified risk factors.
- Referral form to the Queensland Hearing Loss Family Support Service.
- 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 include:

- Syndromes associated with hearing loss (eg. Downs, FAS)
- Prolonged ventilation ≥ 5 days (IPPV / CPAP / HHFNCT)
- Bacterial meningitis (confirmed / suspected)
- Severe asphyxia at birth (convulsions / HIE / PPHN)
- Craniofacial anomalies eg. cleft palates (excluding cleft lips and skin tags)
- Hyperbilirubinemia levels $\geq 450\mu\text{mol/l}$ (Term) or $\geq 340\mu\text{mol/l}$ (Preterm) Max SBR level
- Proven / suspected congenital infection of the baby (Toxoplasmosis, Rubella, CMV, Herpes, Syphilis)
- Professional concern/major medical conditions— details of the specific concern must be recorded.

Where a baby dies or is transferred out for medical reasons before the hearing screen process is commenced, high risk indicators can be left blank.

If a baby's family declines the screen or fails to attend scheduled screening appointment/s then all sections of the form except *Screening Results* are to be completed.

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.

The completed form is filed in the nominated section of the baby's medical chart.

Refer **Appendix 2** for a sample of the S&R form and a step-by-step guide for completing this form.

3.4 Additional/General Documentation

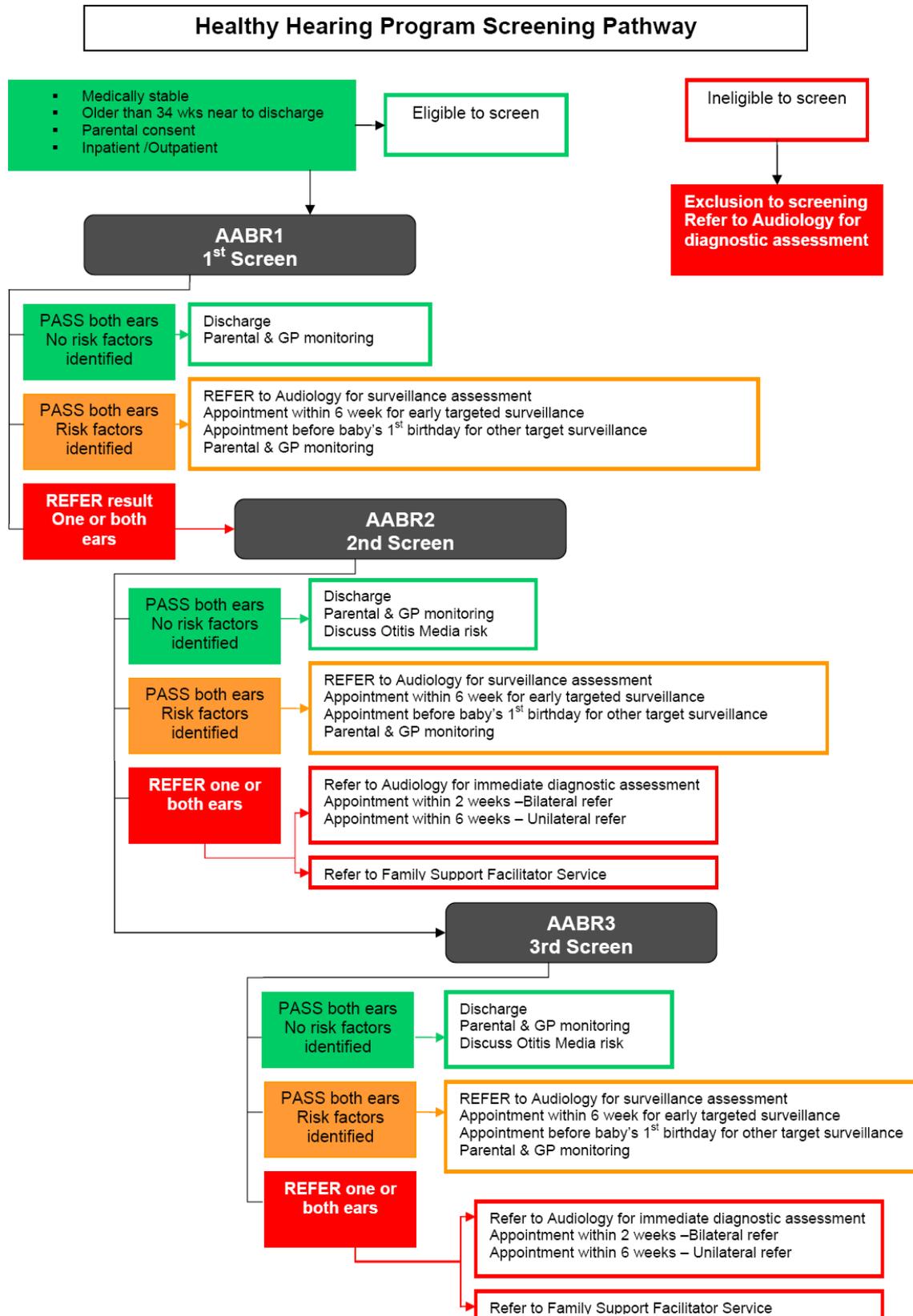
Additional and general documentation associated with the Healthy Hearing processes, include:

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, etc	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 (refer Appendix 3).
Audiology Brochures	If a baby is referred to Audiology for diagnostic or surveillance assessment, name and contact for the relevant Audiology service should be recorded on the relevant brochure 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, depending on the screening outcome.

Referral to	Action Required
Direct Referral to Audiologist - Clinician Override/Medical Exclusion to Screening	A medical practitioner may make a decision to refer a baby directly for diagnostic audiological testing without undergoing the initial AABR1 process. Notations are required on medical chart notes. The S&R form is to be completed and forwarded to the relevant Audiology service. Local protocols should be followed.
Immediate Referral to Audiologist following a 2 nd Refer Result	<p>A refer result on the second screen (AABR2): Refer baby for immediate diagnostic assessment to an appropriate paediatric audiology service as per protocol. A list of appropriate public Audiology services is available on the HH website at www.health.qld.gov.au/healthyhearing/pages/audiology.asp. Private Audiology services are also available.</p> <p>Audiology referral is made by forwarding (usually via fax) a copy of the Consent form and S&R form, including <i>Notes</i> page if relevant, to the Audiology service. The Audiology service must be added as a Professional Contact on the Healthy Hearing database as soon as possible to allow access the baby's electronic record.</p> <p>Provide parents with a copy of the brochure 'Your Baby's Audiology Hearing Test'.</p> <p>In the private sector, a referral from the baby's paediatrician/medical practitioner will also be required.</p> <p>If a baby referred to Audiology for immediate diagnostic assessment also has risk factors, the diagnostic assessment will take priority. Audiology will take over responsibility for managing ongoing surveillance.</p>
Immediate Referral to the Queensland Hearing Loss Family Support Service (QLHFSS) following a 2 nd Refer Result	<p>Babies referred to Audiology for immediate diagnostic assessment are also referred to the QLHFSS. Referral is made by faxing a copy of both the baby's S&R form and Consent form to the QLHFSS Brisbane' office only.</p> <p>'Your Baby's Audiology Hearing Test' brochure provides contact details for QLHFSS should a family wish to initiate contact prior to hearing from the service.</p>
Referral for Surveillance Audiology/Targeted Surveillance	<p>Babies who have obtained a <i>Pass</i> 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; exact timing of the assessment depends on the risk factor & will be determined by the Audiologist. (e.g. craniofacial and syndromes associated with progressive hearing loss review by 6 weeks or all other risk factors reviewed by the baby's 1st birthday)</p> <p>Referral is made by forwarding a copy of both the Consent form and S&R form, including <i>Notes</i> page if relevant, to approved Audiology service, usually via fax, follow local protocol.</p> <p>Do not refer these babies to QLHFSS, except in unusual circumstances - eg if parents are distressed. Audiology will arrange referral to QLHFSS if necessary following assessment.</p> <p>Provide parents with a copy of the brochure 'Your Baby's Follow Up Hearing Test'. Record name & contact details for the Audiology service on the brochure.</p>

Note: when the screening raw data is imported into QChild automated referrals to Audiology and QLHFSS are made according the screening protocol and pathway. However, manual referrals to Audiology must be made for professional concern risk factors and if a risk factor for hearing loss is identified after the screen has been imported into QChild.

4.3 If 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 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 the *Notes* page of this form.

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 (refer **Appendix 3**).

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
4.4.1 Flip/Flop result	<p>Occurs when a <i>Refer</i> result is obtained for one ear and a <i>Pass</i> for the other ear on the first screen (AABR1), then the results for each ear are reversed on the second screen (AABR2).</p> <p>A third screen should be conducted (AABR3) following the same AABR2 protocol and results documented in S&R Form and in patient medical notes in accordance with local protocols.</p>
4.4.2 Raised/rebound serum bilirubin levels of the baby	<ul style="list-style-type: none"> Re-screening is required where a baby who has completed the hearing screen and received a <i>Pass</i> result for both ears, subsequently during their birth admission develops serum bilirubin levels ≥ 450 $\mu\text{mol/l}$ for a term baby and ≥ 340 $\mu\text{mol/l}$ for a preterm baby. <p>High risk indicators/s will need to be modified at the time of re-screening and referral to Audiology for follow up surveillance.</p> <p>Babies discharged from their birth admission and readmitted to the Paediatric Ward for any reason including hyperbilirubinemia should be referred by the treating clinician to Audiology for assessment according to usual referral pathways and medical protocols, or back to the screening program for a repeat screen in those sites where it is the policy to do so.</p>
4.4.3 Screening device malfunction	<p>Where it is realised at the completion of the screen that a <i>Refer</i> 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, a repeat screen should be conducted as soon as possible.</p> <p>An explanation should be provided to the family.</p>
4.4.4 Incorrect ear coupler placement	<p>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 <i>Pass/Refer</i> result has already been given for one or both ears, both ears must be rescreened.</p> <p>The initial screen/screen attempt should be considered invalid, with the reason being documented on the <i>Notes</i> page of the S&R form.</p> <p>The screener is to discuss the action with the family as appropriate.</p> <p>Where a <i>Pass</i> or <i>Refer</i> 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.</p> <p>Where no result is obtained for either ear prior to terminating screen, no electronic record</p>

<p>4.4.5 'Reversed Leads' message - when leads are correctly placed</p>	<p>will be retained by the portable Algo 3i. For Algo 3 trolley machine users, you must leave a note for the local HH data manager notifying them of the situation.</p> <p>On rare occasions a 'Reversed Leads' message is generated when the nape and vertex sensor tabs are correctly placed.</p> <p>The following process is to be followed in such situations:</p> <ul style="list-style-type: none"> • Verify that the sensor tabs are correctly placed and attached to the correct sensor clips • Re-attempt to screen the baby - once only (ie <u>only 2 screen attempts in total</u>) • If error message re-occurs, terminate attempts to screen the baby • Refer the baby to Audiology for immediate diagnostic assessment as per usual protocols. • Add a notation on the Notes section of the Screening & Referral Form re the appearance of the 'Reversed Leads' message despite correct placement • Refer the baby to QHLFSS as per usual protocols <p>Do not reverse the nape and vertex tabs from correct to incorrect positions in an attempt to obtain a screening outcome</p> <p>❖The appearance of the Reversed Leads message in this situation <u>cannot be interpreted</u> in any way. It has occurred with babies later found to have normal hearing as well as others diagnosed with hearing problems. It may be associated with a more mature ABR response which does not match the template in the Algo or with abnormal auditory function such as Auditory Neuropathy Spectrum Disorder.</p>
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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 hearing screens:

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

The Healthy Hearing 'scripts' may be varied somewhat to suit individual situations and communication styles. Scripts have been developed for a number of 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 Scanmedics (refer **Appendix 6**). These guides assist both individual screeners and sites 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 anytime you suspect the Algo is not functioning properly or any parts appear damaged, do not use it. Call Scanmedics Technical Service (02 9882 2088), or your HH Area Coordinator for assistance.

<p>7.1 General/Consumables</p>	<p>Use only Natus screening supplies with ALGO screeners as per manufacturer recommendations. Non-Natus supplies may damage the ALGO screen and may affect screening results.</p> <p>Consumables (ear couplers & sensor tabs are single use only. If the baby requires a new screen, new ear couplers and sensor tabs are used.</p> <p>Check expiry dates on consumables before use.</p> <p>Any problems with sensor tabs/ear couplers should be reported to Scanmedics and/or the area coordinator. Note the batch number and expiry date of the item/s. Faulty packs may be returned to Scanmedics for replacement.</p> <p>Notify your site coordinator of any equipment failures, who will forward a fault notification to area coordinators and central coordinators to track fault trends.</p> <p>Store cables in the drawer/recess at the back of the Algo 3 trolley or in back pack/other safer location for the Algo 3i portable machines, when not in use.</p> <p>Algo 3i portable devices should be store in the battery charger, when not in use.</p> <p>A Standing Order Agreement with Scanmedics for the supply of Natus equipment and screening consumables. More information about ordering from Scanmedics is available on the Healthy Hearing website at www.health.qld.gov.au/healthyhearing/pages/order.asp.</p>
<p>7.2 Cleaning Equipment</p>	<p>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.</p> <p>Parents may keep the used ear couplers if they wish. Otherwise the ear couplers and sensors must be disposed of following each hearing screen.</p> <p>After each screen, all cables must be appropriately cleaned, according to local hospital protocols. For detailed guidance, refer to Scanmedics' Cleaning Algo 3 and Algo 3i Cables guide in Appendix 7.</p> <p>At completion of screening for the day the sensor clips teeth should be cleaned using an Alco wipe, to remove any build up of gel or debris that may cause unexplained high myogenic levels.</p> <p>Do not remove/wet the sound insulating material (wool) inside the ATA housing (acoustic transducer). Removal of the wool will cause the ALGO screener to deliver a louder click stimulus than intended, and could result in invalid screening results.</p>
<p>7.3 Routine Equipment Checks & Maintenance</p>	<p>Screening sites are required to undertake routine equipment checks and maintenance on a monthly basis. It is recommended that these be scheduled for the end of each month.</p> <p>Should the equipment fail any of the checks, contact the technical section at Scanmedics on 02 9882 2088 for advice and notify area coordinator.</p> <p>For the trolley mounted Algo3 devices this will include:</p> <ul style="list-style-type: none"> ▪ Leaving the Algo 3 switched on at the wall, trolley and laptop for an uninterrupted period of 24 hours, or two 12 hour periods, to ensure configuration of the real-time clock to preventing 'drift' of time and date. ▪ Performing a full equipment check using the Algo check kit (Impedance, Artifact, Acoustic). ▪ Visual examination of the cables, connections, electrical cords, trolley and device for any signs of damage or defects. <p>For Algo3i devices this will include:</p> <ul style="list-style-type: none"> ▪ Performing a full equipment check using the Algo check kit (Impedance, Artifact and

	<p>Acoustic checks).</p> <ul style="list-style-type: none"> ▪ Examination of the cables, connections, electrical cords, trolley and device for any signs of damage or defects. ▪ Checking battery is charged. Charge time is approximately 4 hours and will be adequate for approximately 4 hours continuous screening. <p>The check is to be documented and dated in accordance with local protocol.</p>
<p>7.4 ATA Cables Calibration</p>	<p>The ATA cable (Acoustic Transducer/Earphone Cable) needs to be calibrated every 12 months in accordance with manufacturer recommendations:</p> <p>It is the responsibility of the local Healthy Hearing Team Leader/Coordinator to notify Scanmedics by email that the calibration is due and arrange a replacement.</p> <ul style="list-style-type: none"> ▪ Once the new cable is received, the original cable is returned to Scanmedics for calibration and redistribution. ▪ For the Algo 3 trolley machine, record the date that the new cable is first used on the tag on the cable. ▪ For the Algo 3i portable machine, once the cable is attached it counts down from 365 days to remind you when calibration is next required. This information is displayed on main menu window. A shutdown message will appear after a 90 days grace period indicating no more screening can be performed. <p>Details of the newly exchanged cable number and next calibration due date is to be logged on the site facility database (when available).</p>

Important note: whenever an Algo 3/3i leaves your site or you receive a replacement/loan device you must inform Healthy Hearing head office immediately as they will need to adjust device numbers at your site in the QChild database.

8 Healthy Hearing Information System

The Healthy Hearing (HH) information system is designed to facilitate ongoing management of babies and reporting to Queensland Health on the program. 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.

In particular, the HH information system 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
- Referrals to be made to Paediatric Diagnostic Audiology Services and the Family Support Service.

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

Task	Frequency
<p>Ensure demographic & risk factor data is entered correctly into the Algo 3 or 3i using the <i>S&R form</i> as a template</p>	<ul style="list-style-type: none"> ○ At the time of performing the screen for babies who have a hearing screen or in preparation for performing a screen at a later time.
<p>Ensure that data is downloaded from the Algo/s regularly</p>	<ul style="list-style-type: none"> ○ At least fortnightly in very small sites. ○ Weekly or daily in larger facilities as appropriate.
<p>Ensure that downloaded data is saved onto a network drive and imported into the database on a regular basis</p>	<ul style="list-style-type: none"> ○ At least fortnightly in very small sites. ○ Weekly or daily 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	<ul style="list-style-type: none"> ○ At least fortnightly in very small sites. ○ Weekly or daily in larger facilities.
Cleaning data &/or completing data entry for records downloaded from the Algo 3i	<ul style="list-style-type: none"> ○ At least fortnightly in very small sites. ○ Weekly or daily in larger facilities.
Troubleshooting where Client Directory data does not match to an accompanying screen	<ul style="list-style-type: none"> ○ At least fortnightly in very small sites. ○ Weekly or daily in larger facilities.
Running reports	<ul style="list-style-type: none"> ○ At least monthly in all sites. ○ More frequently in larger facilities.
Reviewing the database to identify any quality assurance issues requiring intervention	<ul style="list-style-type: none"> ○ 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 the Healthy Hearing Database. Entries should be checked for spelling and accuracy before leaving the data entry screen/s of the Algo.

If a screener becomes aware that they have made an incorrect data entry after they have completed the screen, they should leave a note for the database manager, explaining the details of the error together with the correct information. The data manager will then correct the record once it is downloaded 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. Incomplete or additional screens should not be deleted to ‘tidy up’ the database.

8.2 Reporting Requirements

Data entry must be finalised within a timely manner (ideally fortnightly) to facilitate access and review by area/state-wide Coordinators. (Note: data with referrals to audiology should be prioritised).

The local data manager 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.

Private Hospitals

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

9.0 Healthy Hearing Screener Training Standards

To maintain statewide consistency and deliver a ‘universal’ newborn hearing screening program, staff are required to participate in an approved Healthy Hearing Screener Training program and be assessed competent by the local or Area HH Coordinator/Team Leader prior to undertaking newborn hearing screening.

Healthy Hearing 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 participant have undertaken a total of 5 screens independently.

Ideally, the training program is conducted over 1 ½ to 2 consecutive days in order to maximise retention and application of knowledge in the practical situation. A sample training program is provided in **Appendix 8**.

Local HH facility coordinators are required to notify the HH Area Coordinator of any need for training programs and/or to advise of any proposed training programs. This is necessary to:

- Ensure that the local coordinator has access to current training programs and resources.
- Facilitate/coordinate training across sites.
- Provide any assistance or support required.

9.1 Objectives

By completion of the 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 trouble shooting.
- Complete the necessary documentation, including; recording the appropriate information on the S&R form, the PHR Book and on clinical pathways/charts according to local protocols.

9.2 Competencies

Screeener competencies have been compiled with reference to the Australian Nursing and Midwifery Council documents National Competency Standards for Registered Nurses, Enrolled Nurses and Midwives. (web link www.ancm.org.au). 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 on an annual basis are detailed in **Appendix 8**. These comprise of both an assessment of practical hearing screening skills and completion of the online hearing screening knowledge assessment module HELM. Once both components have been completed to a satisfactory standard the certificate of competence generated by HELM will be signed off by the Healthy Hearing Team Leader to certify that the screener is competent to perform Healthy Hearing screens.

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.