

# GUIDELINES FOR THE ORGANIZATION AND ADMINISTRATION OF UNIVERSAL NEWBORN HEARING SCREENING PROGRAMS IN THE WELL-BABY NURSERY

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## INTRODUCTION

This document provides recommended guidelines for newborn hearing screening programs for infants in the well-baby nursery. For hearing screening guidelines in the special care nursery and the neonatal intensive care unit (NICU), please see the [Guidelines for the Organization and Administration of Universal Newborn Hearing Screening Programs in the Special Care Nursery and NICU](#).<sup>1</sup> To help ensure that every Minnesota newborn is screened for hearing thresholds outside the typical range, [Minnesota statute 144.966](#)<sup>2</sup> requires that a hearing screen be performed on all newborns prior to hospital discharge. Typical hearing is a range of sound levels measured in decibels (dB HL) between 0 dB HL and 15 dB HL that ensures all the sounds of spoken language are consistently audible.

Because of the importance of early identification of hearing thresholds outside the typical range, all screening, follow-up, and tracking procedures

must, at a minimum, be consistent with national Early Hearing Detection and Intervention (EHDI) guidelines and current Minnesota Department of Health (MDH) Newborn Screening Program recommendations. Additional resources are available from the newborn screening program to assist hospitals and hearing screeners with specific issues of program development and management such as training, supervision, equipment options, and quality assurance issues.



## BACKGROUND

The goal of an EHDI program is to promote communication and access to language from birth for all children through the early identification of hearing thresholds outside the typical range and the initiation of appropriate intervention services. Newborn hearing screening and follow-up plays a critical role in the EHDI process by identifying newborns who are at risk for hearing loss and connecting them with diagnostic, support, and intervention services. Without EHDI, infants who are deaf or hard of hearing may experience delays in a variety of developmental areas, including vocabulary, articulation, intelligibility, social adjustments, and behavior.

National standards specify that screening should be completed as soon as possible but at no later than one month of age; hearing thresholds outside the typical range should be clinically diagnosed as soon as possible but at no later than three months of age; and intervention should be initiated as soon as possible but at no later than six months of age (JCIH, 2007, 2019).

Passing the newborn hearing screening does not guarantee that hearing will remain typical, nor does it eliminate the need to monitor the infant's or child's speech and language development. Audiological re-evaluation during early childhood is recommended when parent(s)/guardian(s) are concerned about hearing and/or speech/language development, as well as for those infants with risk factors for emergent hearing conditions.



## CHILD-AND FAMILY-CENTERED COMMUNICATION

[Minnesota statute 144.966](#)<sup>2</sup> requires newborn hearing screening programs to present information to parent(s)/guardian(s) prior to performing the hearing screen that covers the following topics:

- Potential risks and effects of hearing loss
- Benefits of early detection and intervention
- Nature of the screening procedure
- Applicable costs of screening procedure

[Minnesota statute 144.125](#)<sup>3</sup> provides parental options regarding screening and storage of hearing test results:

- Parent(s)/guardian(s) who choose to refuse or delay hearing screening must complete and sign the [Parental Refusal or Delay of Newborn Screening Form](#).<sup>4</sup> The signed form must be entered into the child's medical record and submitted to MDH.
- Parent(s)/guardian(s) who request that their infant's newborn hearing screening results be destroyed after notification must complete and sign the [Directive to Destroy Newborn Screening Blood Spots and Test Results Form](#).<sup>5</sup> The signed form must be submitted to MDH. If no destruction request is received, hearing screening results are kept for 18 years.

Best practice includes providing the following information to parent(s)/guardian(s) along with their infant's hearing screen result:

- The [Newborn Hearing Screening Fact Sheet](#),<sup>6</sup> which is available to order on the [Newborn Screening Orderable Education Materials and Forms](#)<sup>7</sup> webpage at no cost, provides basic parental information.
- Information on [Risk Factors for Early Childhood Hearing Loss](#).<sup>8</sup>
- Possibility of late or progressive onset of hearing loss, including otitis media.
- [Developmental Milestones for Speech, Language, and Hearing](#).<sup>9</sup>

Per JCIH, screeners must clearly communicate that both ears must pass in the same screening session to have a passing outcome. Parent(s)/guardian(s) should

be counseled that follow-up testing is needed for all non-passing outcomes and that follow-up testing must be completed for both ears.

Use of a [Teach Back Tool](#)<sup>10</sup> is recommended to ensure that families of infants who need outpatient follow-up clearly understand what next steps are needed.

## PERSONNEL PERFORMING HEARING SCREENING

Screening may be performed by trained personnel, including the following:

- Audiologists, audiological technicians/assistants
- Nurses
- Nursing assistants
- Other trained medical personnel

Although licensed audiologists do not need to conduct the actual hearing screening, audiologists are uniquely qualified to develop and implement all aspects of an EHDI program. Newborn hearing screening programs benefit from direct access to audiological consultation to address screening criteria, quality assurance, follow-up assessment, and intervention services.



### Training qualified screeners

Ensuring all screeners are competent is critical for every screening program. Training qualified screeners is an ongoing process and should be based on current best practice procedures as reported in professional literature and recommended by the Newborn Screening Program. Training typically includes three phases: initial training and demonstration of competency and skills, ongoing quality assurance, and refresher training.

The initial training may need to be provided using multiple resources and over several days. Initial training and demonstration of competency and skills shall include the following, at a minimum:

- ✓ Completion of required hospital/birthing center orientation, including:
  - Infection control policies and procedures
  - Hospital infant security procedures
  - Cultural sensitivity
- ✓ Completion of instructional training for newborn hearing screening:
  - Benefits of early detection of hearing loss
  - Hearing screening equipment use and care instruction
  - Knowledge of hospital or birth facility hearing screening policy and procedures
  - Documentation of screening results
  - Communicating screening results to the infant's parent(s)/guardian(s) and appropriate medical staff personnel
- ✓ Demonstration of competency and skills to perform hearing screening should be completed annually and documented appropriately:
  - Measure the trainee's competency based on performance in the nursery environment using the [Performance Based Criterion Checklist](#)<sup>11</sup> or a similar performance evaluation tool.
- ✓ Ongoing quality assurance of screeners shall include the following, at a minimum:
  - Performing periodic observations of each screener in the nursery environment by a skilled professional such as an audiologist and/or program manager.
  - Review of hearing screening data (e.g., total number of screens and number of failed screens) by an audiologist and/or program manager for each screener to determine their effectiveness.

Refresher training should be completed annually, with

individual trainings available as needed. Refresher trainings should measure the trainee's competency based on performance in the nursery environment using the [Performance Based Criterion Checklist](#)<sup>11</sup> or a similar performance evaluation tool.

Resources for training may include a combination of experienced screening program managers; local, licensed clinical and educational audiologists; MDH audiologists; hearing screening equipment manufacturers; national online training modules such as the [Newborn Hearing Screening Training Curriculum](#)<sup>12</sup> offered by the National Center for Hearing Assessment and Management (NCHAM); or other online resources as recommended by the MDH Newborn Screening Program. It is not a requirement that all nursery personnel be trained to perform newborn hearing screening. Each facility may select appropriate staff to carry out the hearing screening and related duties.

## HEARING SCREENING EQUIPMENT

Screening programs must use objective physiological screening methods such as automated auditory brainstem response (AABR) or otoacoustic emissions (OAE). OAEs can be either distortion product (DPOAE) or transient evoked (TEOAE). AABR and OAE do not require a behavioral response from the infant and have proven to be effective screening measures. All hearing screening equipment must meet technical specifications, calibration standards, and hospital safety standards. A quality screening program benefits

from incorporating new and improved evidence-based technologies and procedures as they become available.

## Stimulus parameters

Sample stimuli: TEOAEs should be measured in response to a broadband click at approximately 80-84 dB peSPL. DPOAEs should be measured in response to a series of paired tones (f1 and f2), with a ratio of 1.22 at a moderate level, where  $L1/L2 = 65/55$  dB SPL (AAA, 2012; Abdala, Winter, & Shera, 2017).

Newborn screening AABRs are typically are evoked using click stimuli at 30 to 35 dB nHL at a moderate stimulus rate. Non-automated ABR screening is only appropriate if performed by audiologist who have expertise in ABR testing and interpretation in the newborn population.

Default stimulus parameters of both OAE and AABR equipment should be reviewed by skilled professionals such as a consulting audiologist or MDH audiologist to ensure they are appropriately set or to adjust them to be in accordance with clinically accepted national practices (Ontario Infant Hearing Program, 2019). The equipment vendor will need to be contacted to complete an annual equipment calibration. Screening staff should conduct regular equipment performance quality checks. A "test mode" is sometimes built into the equipment.

## Criteria for a passing result

Pass/did not pass criteria need to be selected and monitored carefully to maximize sensitivity and specificity (Gorga et al., 1997). In most cases, pass/did not pass criteria are already preset into the hearing screening equipment by the manufacturer. When hearing screens are administered, a pass or did not pass result should automatically appear. There should be no interpretation of results by the hearing screener at the time of the screen. Pass/did not pass criteria should be reviewed regularly by a consulting audiologist or MDH audiologist and should be in accordance with clinically accepted national practices. Some equipment will use the terminology "pass/fail." Examples of criteria built into screening equipment are shown below.



## OAE

Typical passing criteria for TEOAEs include overall reproducibility greater than 50 percent, at least 50 low noise samples collected, stimulus stability of 75 percent or greater, and responses present at least 6 dB above noise floor for at least three of the five test frequencies.

Typical passing criteria for DPOAEs requires absolute response amplitude of at least  $-6$  dB SPL and responses at least 6 dB above the noise floor at three or more of the test frequency bands.

## AABR

Screening AABR pass criteria for newborns typically requires repeatable Wave V evoked responses to clicks at  $\leq 35$  dB nHL for each ear, within specific latency parameters.

## HEARING SCREENING PROTOCOL

The following screening protocols have been developed by local experts and are based on nationally accepted guidelines put forth by the Joint Committee on Infant Hearing (JCIH) in the *Year 2019 Position Statement: Principles and Guidelines for Early Hearing Detection and Intervention Programs* (JCIH, 2019). They have been tailored to fit Minnesota's system of care to help ensure that every infant receives quality screening and follow-up throughout the state. See details about the [Hearing Screening Result and Follow-up Process](#)<sup>13</sup> and a sample [Newborn Hearing Screening Flowchart for the Well-Baby Nursery](#)<sup>14</sup> that outlines this process.

### Inpatient hearing screening

The initial hearing screen is the first screen performed on a newborn; preferably at least 12 hours after birth. The screen may be performed sooner if needed; The initial hearing screen is the first screen performed on a newborn; preferably at least 12 hours after birth. The screen may be performed sooner if needed; however, a higher referral rate may occur due to residual birthing debris in the ear canal. Infants who



refer/did not pass the initial hearing screen should be rescreened prior to discharge.

If an infant does not pass the rescreen in one or both ears, an appointment for outpatient rescreening or audiological evaluation should be scheduled for the family prior to discharge.

Inpatient hearing screening should consist of **no more than two attempts** using the same screening technique on each ear—assuming the infant is calm and quiet and there are neither equipment problems nor environmental interference during either test. The likelihood of obtaining a pass by chance alone is increased when screening is performed repeatedly, which means a child with hearing loss may go undetected and may experience a variety of developmental delays.

Both ears must pass in a single screening session to be considered as an overall passing result. If the screener stops the session and returns to screen at a later time, that is considered a separate screening session. Combining passing results in opposite ears on successive screens does not make a passing result.



## Follow-up/documentation of inpatient hearing screening

[Minnesota statute 144.966](#)<sup>2</sup> requires the following:

- Screening results must be documented in the infant's medical record. Consistent documentation in all areas of the medical record should be verified (discharge summary, flowsheets, charting summary, printouts from screening device, etc.) and should be consistent with results submitted electronically through the MNScreen secure platform.
- Screening results must be communicated to the infant's parent(s)/guardian(s) both verbally and in writing. The newborn screening program has parent Hearing Screen Results Notification sheets available in multiple languages. These are available to order at no cost on the [MDH Newborn Screening Orderable Education Materials and Forms](#)<sup>7</sup> webpage.
- Screening results must be communicated in writing to the infant's primary care provider within ten days of the final screen and be available at the first clinic visit, whichever comes first.
- Screening results **must** be exported daily to MDH via the MNScreen secure electronic platform (minimum one to two times per week for facilities with less than ten babies per week). Back-up staff must be available to complete this task during vacation, illness, or unexpected absences.

Minnesota best practice recommends the following:

- For infants with refer/did not pass results, an outpatient follow-up appointment for hearing rescreening or pediatric audiological evaluation should be scheduled before the infant is discharged from the hospital. Ideally, this evaluation should occur by two weeks of age.
- The infant's primary care provider and newborn screening program staff should be promptly notified of the date/location of the follow-up rescreen or diagnostic appointment to help facilitate timely services. Hospital staff can add a hearing case note in MNScreen containing this information.
- Families of infants who receive refer/did not pass results on newborn hearing screening should be provided with information about the importance of follow-up.

## Outpatient rescreening

If the infant does not pass the final inpatient hearing screening in one or both ears, an outpatient rescreen may be completed ideally between one to two weeks of age and no later than one month of age. Both ears must pass in a single screening session to be considered an overall passing result. Combining passing results in opposite ears on successive screens does not make a passing result.

National guidelines recommend allowing one to two weeks from the time of the initial screen to allow any transient ear conditions to resolve before rescreening. Best practice recommends that the following be included as part of the rescreen:

- Take a complete history, including neonatal history, history of any family member who was deaf or hard of hearing during childhood, and the parent(s)/guardian(s)' observations of their infant's response to sounds at home.
- Use either AABR or OAE, regardless of which technology was used for the inpatient hearing screening. JCIH 2019 guidance is that either technology is acceptable for outpatient rescreening of infants from the well-baby nursery. However, it is still preferred to rescreen with AABR if AABR was used in the nursery.



- Rescreen both ears even if only one ear did not pass the inpatient hearing screening.
- The rescreen should consist of a maximum of a single valid rescreen of both ears in the same session, assuming that the infant is calm and quiet and there are neither equipment problems nor environmental interference during either attempt.

## Follow-up/documentation of outpatient rescreening

[Minnesota statute 144.966<sup>2</sup>](#) requires the following:

- Outpatient rescreening results must be documented in the infant's medical record.
- Outpatient rescreening results must be communicated to the infant's parent(s)/guardian(s) both verbally and in writing. The newborn screening program has parent Hearing Screen Results Notification sheets available in multiple languages and these are available at no cost on the [MDH Newborn Screening Orderable Education Materials and Forms<sup>7</sup>](#) webpage.
- Outpatient rescreening results must be communicated to the infant's primary care provider in writing within one week.
- Outpatient rescreening results must be reported to newborn screening program staff within one week.

Minnesota best practice recommends the following:

- For infants who refer/did not pass on outpatient rescreening, a diagnostic audiology appointment should be scheduled for the infant before they leave. The primary care provider and newborn screening program staff should be promptly notified by the outpatient screening provider of the date/time of the diagnostic audiology appointment to help facilitate timely services.
- Families of infants who refer/did not pass on the outpatient rescreening should be provided information about the importance of follow-up.

## Missed hearing screen

Rarely, hearing screening is not completed prior to hospital discharge. If this occurs, the hospital or unit

discharging the infant home should:

- Report that the hearing screen was "missed" in MNScreen as a hearing case note or general case note.
- Indicate in the discharge summary that the hearing screen was missed, and ensure that the infant's parent(s)/guardian(s) and primary care provider receive this notice.
- Schedule the infant for screening within one to two weeks following discharge and communicate this appointment date and location to the parent(s)/guardian(s), primary care provider, and in MNScreen as a hearing case note or general case note.
- If the infant returns to the nursery for screening, follow the process above for follow-up/documentation of outpatient hearing screening

## Refusal/opt out

Refusing newborn hearing screening is a serious decision and could result in long-term developmental delays if hearing loss is not identified early. Parent(s)/guardian(s) should discuss the risks and consequences of this choice with their infant's primary care provider to make a fully informed decision. Parent(s)/guardian(s) who choose to refuse newborn hearing screening must complete and sign the [Parental Refusal or Delay of Newborn Screening Form<sup>4</sup>](#) prior to hospital





## Readmitted infants

Infants readmitted to the hospital during the first month of life with conditions associated with potential hearing loss (e.g., hyperbilirubinemia, sepsis) need to have an AABR hearing screen repeated prior to discharge even if the baby passed newborn hearing screening prior to re-admission (JCIH, 2019).

Because of the high incidence of neural hearing conditions associated with significantly elevated bilirubin, these infants should be referred for audiological assessment to include ABR measures. It is possible that infants with total serum bilirubin concentrations lower than the total serum bilirubin concentration at which exchange transfusion is indicated may develop auditory neuropathy spectrum disorder. Until further evidence exists of a safe total serum bilirubin level for bilirubin-induced auditory toxicity, an exchange transfusion should be used as the criterion for triggering comprehensive auditory evaluation.

Diagnostic follow-up for cases of bacterial and viral meningitis is recommended (JCIH, 2019). Bacterial meningitis is more highly associated with hearing loss. Following bacterial meningitis, infants should have diagnostic audiology testing as soon as possible after the acute phase is over (Rodenburg-Vlot et al., 2018).

If a hearing re-screen or diagnostic hearing testing prior to discharge cannot be completed for infants that are readmitted during the first month of life, then an appointment with an audiologist experienced in testing children should be scheduled.

## Out-of-hospital births

[Minnesota statute 144.966](#)<sup>2</sup> requires all health professionals attending a birth outside of a hospital to provide information (orally and in writing) to parent(s)/guardian(s) about the importance of hearing screening and where they can have their infant screened.

For infants born outside of a birthing hospital (e.g., at home or a non-hospital birth center), there are several options available to ensure that newborn hearing screening is performed. There are many

discharge. The hospital/unit discharging the infant to home is responsible for faxing this form to the newborn screening program and providing copies to the parent(s)/guardian(s) and primary care provider.

Parent(s)/guardian(s) also have the option to destroy newborn screening blood spots and test results and/or hearing screening test results after screening is complete. A copy of the necessary form can be found on the [Newborn Screening Orderable Education Materials and Forms](#)<sup>7</sup> webpage.

## Transferred infants

If an infant is transferred to a different hospital or unit within the same hospital, conduct the newborn hearing screening before transfer, if possible, and communicate the results with the receiving facility or unit. It is important for the transferring hospital/unit to inform the receiving hospital/unit about all screening that has been done. If newborn hearing screening cannot occur before the transfer, alert the newborn screening program of the infant's transfer using the TRANSFER function in MNScreen to enter the receiving hospital/unit or facility name. Transfers between various units within the same hospital (e.g., WBN to NICU or PCVICU or PICU) frequently result in missed hearing screening. Clear communication about the hearing screening status can avoid a missed screen. The hospital or unit that discharges the infant home is responsible for screening the infants hearing and reporting the results to the family, primary care provider, and MDH Newborn Screening Program.



midwives throughout the state of Minnesota with access to screening equipment who have been trained by newborn screening program audiologists to perform newborn hearing screening. The Minnesota Council of Professional Midwives (MCCPM), for example, has distributed hearing screening equipment to trained members practicing across the state to screen newborns for hearing loss. MCCPM members also offer newborn hearing screening to families who are not clients in their practice. Midwives who do not have access to hearing screening equipment are encouraged to educate parent(s)/guardian(s) about newborn hearing screening and set up a hearing screening appointment with another provider before the infant is one month of age. See the [Guidelines for the Organization and Administration of Universal Newborn Hearing Screening Programs for Out-of-Hospital Births](#)<sup>15</sup> for additional information.

## TIMELY CASE MANAGEMENT

The purpose of a hearing screen is to identify infants who need further testing. It is important to remember that a hearing screen is not a diagnostic tool.

EHDI is part of a continuum of care that progresses from parental education to screening, to assessment, to amplification (if elected), to educational intervention. Many professionals working in different entities and at different phases of the EHDI process need to work together and clearly communicate follow-up steps in order to provide quality care and ensure access to language and early detection of children who are deaf or hard of hearing. Hospital screening staff plays a critical role in this process. For infants who do not pass newborn hearing screening and subsequent outpatient rescreening, timely assessment referrals must be made to audiologists with expertise in pediatric physiological and behavioral assessment and management. See the [Minnesota EHDI Website](#)<sup>16</sup> to locate providers that offer pediatric diagnostic assessments and habilitation services in Minnesota.

The nationally recommended timeline for hearing screening and follow-up is commonly referred to as the 1-3-6 plan. The timeline includes the following benchmarks:

- Screening is complete at no later than **one month** of age
- Diagnostic audiological assessment is complete at no later than **three months** of age.
- Intervention services, including amplification (if elected), are initiated at no later than **six months** of age.

In order to provide appropriate access to language stimulation and intervention services as soon as possible, the earliest possible age of identification is encouraged for two reasons. First, the infant can receive earlier intervention for auditory and/or visual access to language. Second, objective audiologic testing can be completed without sedation during the natural sleep that occurs when newborns are young enough to sleep for prolonged periods of time (JCIH 2019).

Without an adequate follow-up plan, even the best EHDI program is ineffective. Please refer to the current [Early Hearing Detection and Intervention \(EHDI\) Guidelines for Audiologists – Section 1: Guidelines for Infant Audiologic Assessment](#)<sup>17</sup> and [Early Hearing Detection and Intervention \(EHDI\) Guidelines for Audiologists – Section 3: Guidelines for Pediatric Amplification](#)<sup>18</sup> for additional information on recommended best practices.

## Follow-up for middle ear effusion

Although persistent middle ear effusion often involves medical referral, which may delay the evaluation timeline several weeks, diagnostic audiological evaluation must not be repeatedly postponed solely due to middle ear dysfunction and should still be complete before three months of age. The information from a diagnostic audiological evaluation is valuable both in determining the extent of the effect of the middle ear condition on the infant's hearing and in identifying whether an underlying sensorineural hearing condition exists, thereby impacting the course of both medical and educational intervention.

## Follow-up for Infants with Risk Factors for Early Childhood Hearing Loss (JCIH, 2019)

Routine surveillance of all infants for speech and language milestones and signs of hearing loss is a standard part of well-child care provided by the medical home provider. Given that an additional one to two children per thousand will develop hearing loss after birth and by early school age, children who pass newborn hearing screening and have a risk factor for delayed onset or progressive hearing loss should receive more targeted monitoring.

The timing and number of hearing re-evaluations for children with risk factors was updated by JCIH, 2019. See [Risk Factors for Early Childhood Hearing Loss](#)<sup>8</sup> for a detailed list.

- Monitoring for most risk factors begins at nine months of age.
- Earlier follow-up beginning at three months after occurrence is indicated for children with head trauma, culture positive post-natal infections associated with sensorineural hearing loss (meningitis or encephalitis), or caregiver concern.
- Infants diagnosed with congenital Cytomegalovirus (cCMV) infection will need earlier and more frequent audiologic monitoring beginning by one month of age (or no later than one month after cCMV is confirmed with urine test) to detect emerging hearing thresholds outside the typical range or vestibular dysfunction, identify progression of existing hearing levels, and plan appropriate intervention. As of February 2023, Minnesota began screening all infants for cCMV, and will notify and work with primary care providers to ensure that an initial diagnostic audiology assessment is scheduled as soon as possible when an infant has confirmed cCMV. Refer to [Audiology Guidelines for Infants with Congenital Cytomegalovirus](#)<sup>19</sup> for additional information.



## QUALITY ASSURANCE/QUALITY IMPROVEMENT

The health department and hospitals work together to ensure and improve the quality of screening programs across the state so that every Minnesota infant receives comprehensive screening and follow-up. To help hospitals evaluate and improve their performance, MDH sends semi-annual quality assurance reports to every screening program.

Each hospital can contribute to quality assurance by monitoring and improving the quality of its own screening program.

Hospitals should establish a quality assurance protocol and be able to report, on an annual basis, critical performance data including, but not limited to, the following:

- Total number of live births
- Number of newborns screened
- Number of newborns who passed the hearing screening
- Number of newborns who did not pass the hearing screening (results by right ear, left ear and both ears)
- Number of newborns whose parent(s)/guardian(s) refused newborn hearing screening
- Number of newborns whose parent(s)/guardian(s) did not refuse screening but who were “missed” (not screened)

- Number of follow-up appointments scheduled for newborns who did not pass the hearing screen or were missed
- Total number of newborns transferred in/out of the facility
- Number of newborns screened who were transferred in/out of the facility
- Number of deceased newborns

At a minimum, methods should be in place for monitoring refer/did not pass rates to ensure effective screening and for monitoring parent/guardian satisfaction with the hearing screening process. A hospital nursery with an effective hearing screening program should have a referral rate of four percent or less.



All hospital birth facilities need written protocols for newborn hearing screening that include quality assurance practices. Components of a quality assurance program include data management, screener performance, site performance, outcome measures, and follow-up compliance. The overall goal of quality assurance is information management and accountability to the following stakeholders:

- Infants and their families
- Advocates
- Clinical and educational audiologists
- EHDI managers
- Hospitals
- Medical and educational specialists
- Otolaryngologists
- Primary care providers
- Screeners
- State of Minnesota

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## SELECTED LINKS

1 Guidelines for the Organization and Administration of Universal Newborn Hearing Screening Programs in the Special Care Nursery and Neonatal Intensive Care Unit (NICU) <https://www.health.state.mn.us/docs/people/childrencyouth/improveehdi/guidenicu.pdf>

2 Minnesota Statute 144.966 <https://www.revisor.mn.gov/statutes/cite/144.966>

3 Minnesota statute 144.125 <https://www.revisor.mn.gov/statutes/cite/144.125>

4 Parental Refusal or Delay of Newborn Screening Form <https://www.health.state.mn.us/people/newbornscreening/materials/legalforms/refusaldelay.pdf>

5 Directive to Destroy Newborn Screening Blood Spots and Test Results Form <https://www.health.state.mn.us/people/newbornscreening/materials/legalforms/2020directivetodestroy.pdf>

6 Newborn Hearing Screening Fact Sheet <https://www.health.state.mn.us/people/newbornscreening/materials/hearingsscreeningfactsheet.pdf>

7 MDH Newborn Screening Orderable Education Materials and Forms <https://www.health.state.mn.us/people/newbornscreening/materials/education.html>

8 Risk Factors for Early Childhood Hearing Loss <https://www.health.state.mn.us/docs/improveehdi/riskindicators.pdf>

9 Developmental Milestones for Speech, Language, and Hearing <https://www.health.state.mn.us/docs/people/childrencyouth/improveehdi/hearingspeechmilestones.pdf>

10 Teach Back Tool <https://www.health.state.mn.us/docs/people/childrencyouth/improveehdi/teachback.pdf>

11 Performance Based Criterion Checklist <https://www.health.state.mn.us/docs/people/childrencyouth/improveehdi/compchcklst.pdf>

12 NCHAM Newborn Hearing Screening Training Curriculum <http://www.infanthearing.org/nhstc/index.html>

13 Hearing Screening Result and Follow-up Process <https://www.health.state.mn.us/docs/improveehdi/hrscrfuwellbaby.pdf>

14 Newborn Hearing Screening Flowchart for the Well-Baby Nursery <https://www.health.state.mn.us/docs/improveehdi/flowmythswbnrsry.pdf>

15 Guidelines for the Organization and Administration of Universal Newborn Hearing Screening Programs for Out-of-Hospital Births <https://www.health.state.mn.us/docs/people/childrencyouth/improveehdi/guideooh.pdf>

16 Minnesota EHDI Website <https://www.health.state.mn.us/people/childrencyouth/improveehdi/providers.html>

17 Guidelines for Infant Audiologic Assessment <https://www.health.state.mn.us/docs/people/childrencyouth/improveehdi/guideehdiaudiol.pdf>

18 Guidelines for Pediatric Amplification <https://www.health.state.mn.us/docs/people/childrencyouth/improveehdi/guideamplification.pdf>

19 Audiology Guidelines for Infants with Congenital Cytomegalovirus <https://www.health.state.mn.us/docs/people/childrencyouth/improveehdi/audiogdlnccmv.pdf>