Louisiana Birthing Facilities

Newborn Hearing Screening Guidelines

Louisiana Early Hearing Detection and Intervention

Louisiana Department of Health | Office of Public Health | Bureau of Family Health

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INTRODUCTION

Each year, approximately 6,000 babies are born in the United States with permanent hearing loss. According to the National Institute on Deafness and Communication Disorders (NIDCD)[1], every year in the United States two to three children out of every 1,000 are born with detectable hearing loss in one or both ears. Hearing loss is considered the most frequently occurring birth condition. Additionally, another two to three children per 1,000 will acquire a hearing loss after birth. This document was designed to assist birthing facilities in developing and implementing quality hearing screening programs that are based upon best practices, Louisiana law, and rules and regulations of the legislation.

A comprehensive Early Hearing Detection and Intervention (EHDI) program includes the following components:

- Universal newborn hearing screening
- Follow-up screening for infants who do not pass the inpatient screening
- Diagnostic hearing evaluation
- Enrollment into early intervention services
- Data management/surveillance

Mission

The Louisiana Early Hearing Detection and Intervention (LA EHDI) program supports coordinated systems of care that ensure families of babies and children who are deaf or hard-of-hearing (D/HH) receive appropriate and timely services. These services include hearing screening, diagnosis, early intervention (EI), and family-to-family support. For more information go to the LA EHDI website[2].

Legislation and Rules

In 2002, the Louisiana legislation, *Identification of Hearing Loss in Infants*[3], mandated hearing screening of newborns prior to discharge from birthing facilities and reporting of results to the Office of Public Health. The same legislation also created a fourteen-member Advisory Council to advise and assist the Office of Public Health.

The Advisory Council consists of representatives from different disciplines of the health and education communities, including an otolaryngologist or otologist, neonatologist, pediatrician, hospital administrator, teacher/administrator certified in education of the deaf, audiologist, speech/language pathologist, deaf person, parent of an oral D/HH child, parent of a D/HH child using total communication, representative of Louisiana Department of Education, representative of the Office designated by the Assistant Secretary of the Office, representative from Louisiana Commission for the Deaf, and representative from Louisiana Association of the Deaf.

For more information, see Louisiana Administrative Code, Title 48[4].

[1] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10278076/
[2] https://ldh.la.gov/page/LouisianaEHDI
[3] https://legis.la.gov/Legis/Law.aspx?p=y&d=100582
[4] https://www.doa.la.gov/media/nddmoi1p/48v2.doc

HEARING SCREENING PROGRAM SUPERVISOR QUALIFICATIONS

Appropriate training and supervision of all screening personnel is critical to ensure an efficient and accurate screening program. Screening must be performed by either the program supervisor or screeners trained and supervised by the program supervisor. An individual who is eligible to supervise the newborn hearing screening program will have submitted evidence of training to the Office of Public Health, *and* met one of the following qualifications:

Hearing Screening Program Supervisor Qualifications

1. Board-eligible or board-certified physicians with special training in auditory brainstem response testing and/or otoacoustic emissions and in infant hearing testing; or
   Audiologists licensed by the Louisiana Board of Examiners for Speech Pathology and Audiology with special training in auditory brainstem response testing and/or otoacoustic emissions testing and in infant hearing testing.

Hearing Screening Program Supervisor Responsibilities

General supervision requirements of trained screeners include:

- Supervisor is accessible by telephone while screenings are being performed.
- Review a percentage of screening documentation and copies of the newborn hearing screening report (NHSR).
- Perform periodic direct observation* of each screener at least once per month as they perform hearing screenings for one year.
- Perform direct observation* of each screener every three months following one year of observation as described above.

*Examples of direct observations that qualify to meet this requirement include review of NHSR forms, competency training, screening competency checks, meetings to discuss screening and procedures, etc.

Education and Training:

- Identify screener roles, responsibilities, assigned tasks, and scope of practice
- Provide competency-based hands-on training through formal instruction
- Demonstrate basic screening equipment operation, and address all aspects of screening accountabilities, including knowledge of and competence with:
    - Basic anatomy and physiology of the ear and nature of responses being measured
    - Patient and non-patient factors that influence responses
    - Screening procedures, documentation, and reporting
    - Proper and effective communication for providing accurate and appropriate information to families to ensure 1) understanding of hearing screening results, 2) the importance of follow-up testing, and 3) the receipt of appropriate follow-up and resource information
    - Facility requisites, such as confidentiality requirements, patient bill of rights, safety and infection control procedures, emergency procedures, risk management, and incident reporting procedures

Screener Assessment:

- Submit annual documentation of competency assessments for each individual screener to the EHDI Program.
- Submit a one-time certificate of completion for each individual screener of the interactive web-based Newborn Hearing Screening Training Curriculum[5] developed by the National Center for Hearing Assessment and Management (NCHAM). American Academy of Audiology (AAA) CEUs are available for this course, 3 hours (.3 CEUs).

Data Management:

- Participate in LA EHDI-Information System (LA EHDI-IS) training with LA EHDI staff.
- Ensure complete, accurate, timely reporting of hearing screening results or reason for no screen.
- Utilize LA EHDI-IS to oversee data management.
- Verify accuracy of newborn hearing screening results reported to LA EHDI monthly by comparing LA EHDI-IS hospital reports to NHSR forms.
- Provide for security and privacy of individual patient data.

[5] https://www.infanthearing.org/nhstc/index.html

NEWBORN HEARING SCREENING PROTOCOLS AND PROCEDURES

Informed Consent
Most facilities obtain blanket consent for treatment at admission, which includes consent for newborn hearing screening. It is important that parents are given information in advance (e.g., in pre-admission packet, at prenatal classes) about the hearing screening process. Brochures detailing What Families Need to Know are available in English[6] and Spanish[7] on the LA EHDI website.

Screening Refusal
Parents have the right to refuse a hearing screening. If a parent declines testing, the birthing facility should document "Reason Not Screened – Parents Declined Testing" on the Newborn Hearing Screening Report (NHSR) form. Parent signature is required on the NHSR form and a copy should be retained in the infant's medical record.

Screening Age
For efficient screening and accurate results, it is recommended that the initial screening take place **as close to discharge as possible.**

- Waiting until the newborn is at least 24 hours old on a vaginal delivery and 48 hours old on a C-section delivery is optimal. This time allows for any birthing debris in the ear canal to dry.
- For premature infants who are still in the neonatal intensive care unit (NICU) at 3 months of age, completion of a diagnostic audiologic evaluation prior to hospital discharge is recommended.
- There are no clinical indications to delay screening for eligible infants who have had aminoglycosides administered, including those infants who received 5 days or less, infants who received more than 5 days, and infants who may continue on aminoglycosides at the time of discharge. *Note: Those infants who pass the newborn hearing screening and receive aminoglycosides for* ***more than 5 days*** *should receive a diagnostic audiologic evaluation by 9 months of age.*

Facilities should screen all newborns including non-resident births, out of hospital births, and newborns transferred into the facility and being discharged into the care of a parent or guardian.

Inpatient Repeat Screening
If the newborn passes the first hearing screen in both ears, the screening process is complete. To reduce the refer rate at the time of discharge, babies who refer on the first screen should be screened a second time prior to discharge. While this is a viable means of reducing the false positive rate (referring babies with typical hearing), excessive rescreening is not beneficial.

No more than two good screening sessions should be completed. The screening sessions should be conducted several hours or 1 day apart, rather than back-to-back, and include repeat testing on both ears. A good screening session is one where the baby is quiet, the room is quiet, and you have acceptable probe/headphone placement.

Pass = Both ears pass during the same screening session

[6] https://ldh.la.gov/assets/oph/Center-PHCH/Center-PH/cshs/EHDI/EHDI_HearingScreeningForm_FINAL.pdf
[7] https://ldh.la.gov/assets/oph/Center-PHCH/Center-PH/cshs/EHDI/SPANISH_BW_EHDIHearingScreeningFormpg4_8_2020.pdf

SCREENING DOCUMENTATION

When screening is completed, record the results, document the physician the baby will see once discharged, the family's cell phone number, and risk factors on the Newborn Hearing Screening Report (NHSR) form. If an infant is not screened**: Indicate screening was not completed before discharge, and Reason Not Screened**. Copies of the NHSR form should be distributed to parents, the physician, Medical Records, and NHS Program Supervisor.

Birthing facilities must provide a copy of the NHSR form to the parent and the primary care physician (PCP).

Infants with Physical Anomalies
If screening is unable to be completed before discharge due to physical anomalies such as microtia or atresia, indicate Further Testing Needed for ear(s) unable to be screened.

Further Testing Needed
When results indicate further testing is needed, an outpatient follow-up hearing testing appointment should be scheduled prior to discharge and documented on the NHSR form.

Infants with Risk Factors
Documentation of risk factors for delayed-onset or progressive hearing loss is required on the NHSR form. Infants who pass the inpatient screening but have a risk factor should have a follow-up hearing test by 9 months of age. Testing sooner is suggested if the infant has a risk factor marked with ** on the NHSR form.

Missed Screenings
If screening is not completed prior to discharge, complete the NHSR form: **Indicate screening was not completed before discharge and Reason Not Screened.**

For infants with Reason Not Screened: equipment failure, infant missed, or birthing facility does not have hearing screening equipment, the birthing facility should:

- Schedule an outpatient appointment prior to discharge for the initial screening and document the appointment on the NHSR form.
- Provide the family's contact information to the outpatient facility.

Readmissions
For readmissions in the first month of life, when there are conditions associated with potential hearing loss, i.e.: hyperbilirubinemia requiring exchange transfusion or culture-positive sepsis, an additional auditory brainstem response (ABR) hearing screening is recommended before discharge. The results should be reported to LA EHDI via a Follow-up Services Report form[8].

[8] https://ldh.la.gov/assets/oph/Center-PHCH/Center-PH/cshs/EHDI/FollowUpServicesReport_2021.pdf

SCREENING TECHNOLOGY

Each birthing facility is responsible for selecting and securing appropriate hearing screening equipment per Louisiana Law: Auditory Brainstem Response (ABR) either automated or non-automated, and/or Otoacoustic Emissions (OAE). Both ABR and OAE technologies provide noninvasive screening of physiologic activity underlying normal auditory function, are easily performed on newborns and infants, have been successfully used in universal screening of newborns, and do not require interpretation by the screener.

- Well-Baby Nursery: Either OAE, ABR, or a combination of both (2-stage) is acceptable.
- NICU Nursery: **ABR** is the recommended technology for use with infants screened in the NICU. These infants are at greater risk for auditory neuropathy spectrum disorder, which cannot be detected with OAE.

ABR – Measurements are obtained from surface electrodes placed on the infant that record neural activity in response to acoustic stimuli delivered via an earpiece.

OAE – Measurements are obtained via a sound stimulus presented through a small probe placed in the infant's ear canal. There are two types of OAE technologies: Transient Evoked Otoacoustic Emissions (TEOAE), and Distortion Product Otoacoustic Emissions (DPOAE).

2-Stage – Screen first with OAE; if the infant does not pass, rescreen using ABR. Results of both test types should be recorded on the NHSR, but ABR results are considered final test results when OAE and ABR results are not in agreement.

Equipment Management and Calibration

Each facility should establish policies and procedures that include the care, use, and maintenance of each piece of equipment.

- Hearing screening equipment must be calibrated annually and documentation should be maintained at the site and submitted annually to LA EHDI by fax at 504-568-5854 or e-mail at LAEHDI@la.gov.
- Maintenance and service records should be documented and maintained as per facility policy.
- In the event of equipment malfunction, a backup plan should be in place.

SUGGESTIONS FOR LOWERING HOSPITAL REFER RATES

Excessively high screen refer rates can lead to over-referral for outpatient follow-up testing, causing unneeded stress to families. In addition, a high refer rate can increase a hospital's loss to follow-up rate. The most successful hearing screening programs identify as many children as possible who are deaf or hard of hearing while maintaining a low false positive rate (via passing most children with no hearing loss). Below are suggestions for reducing a high refer rate:

OAE Technology

- Massage the ear if you suspect birthing debris in the ear canal. Move your index finger in a circular motion just in front of the ear canal.
- Place the probe tip deeply and firmly into the baby's ear canal. Pull back on the ear with one hand while inserting the probe with the other hand.

ABR Technology

- Prep the skin adequately, prior to electrode placement.
- Use adequate placement of the coupler.

Testing Environment

- Screening should be conducted in a quiet environment.
- Dim the lights in the testing area, as fluorescent lights can often interfere.

State of the Infant

- Screen while the baby is asleep.
- Swaddle the baby snugly on his/her side.
- Test when the baby is medically stable.
- Use a warm blanket to calm the baby.
- Test when ear canals are dry.

Timing of Infant Bathing

- Screen at least 8 hours after the infant is bathed.
- Refer rates increase for babies screened before bathing, or for babies screened immediately after bathing.

REPORTING TO LA EHDI THROUGH THE LOUISIANA ELECTRONIC EVENT REGISTRATION SYSTEM (LEERS)

Out of Hospital Births
The facility completing the birth certificate in LEERS shall complete the Hearing Screening tab. If the screening facility does not have access to the infant's birth record in LEERS, submit a copy of the NHSR form by fax at 504-568-5854 or e-mail at LAEHDI@la.gov.

Newborns Transferred to another Facility
If an infant is **transferred out** to another facility, the birthing facility must complete the NHSR tab in LEERS**: Indicate screening was not completed before discharge - Reason Not Screened – Transferred Out to (transfer hospital name).**

- If an infant is **transferred into** a facility, this facility does not have access to the infant's birth record in LEERS. The facility completing the hearing screening should submit a copy of the NHSR form by fax at 504-568-5854 or e-mail at LAEHDI@la.gov.

Expired Infants
For infants who expire prior to the inpatient screening, the birthing facility must complete the NHSR tab in LEERS: **Indicate screening was not completed before discharge - Reason Not Screened – Expired/Deceased.**

Still in NICU
For infants who are in NICU for more than 2 weeks, the birthing facility must complete the NHSR tab in LEERS: **Indicate screening was not completed before discharge - Reason Not Screened – Still in NICU.** Once the baby is screened, go back into the baby's record in LEERS and enter the screening results.

The *Hearing Tab* in LEERS must be completed for every occurrent birth.
Louisiana Legislation requires reporting within 14 days of an infant's discharge.

OUTPATIENT RESCREENING FOR INFANTS NEEDING FURTHER TESTING

The birthing facility is responsible for ensuring that a referral for an outpatient rescreening is made. The appointment should be scheduled prior to discharge, documented on the NHSR form, and provided to the parent.

Options for Outpatient Rescreening

- Audiologist providing infant rescreening
- Physician providing infant rescreening
- Birthing facility, when outpatient rescreening is available

Procedures for Outpatient Rescreening

1. Test both ears, **even if only 1 ear failed the inpatient screening**
2. Infants failing OAE or ABR in the well-baby nursery – rescreen with either OAE or ABR
3. Infants failing in the NICU - refer to a pediatric audiologist for rescreening

Report OUTPATIENT rescreening results to LA EHDI on a Follow-up Services Report (FSR). Do NOT change initial screening results in LEERS.

Ensuring Follow-Up for Infants Needing Further Testing

Facilities should implement the following strategies to help ensure that families are not lost to follow-up when further testing is needed:

- Schedule outpatient follow-up appointment at the time of discharge and document on the NHSR form.
- Schedule outpatient follow-up testing 2-4 weeks following discharge.
- Provide outpatient facility with complete contact information for the infant's family, including at least two contact phone numbers and an alternate contact person.
- Coordinate appointments with other well-baby visits when possible.
- Provide parents with details of when and where to go for follow-up.
- Give parents a contact number should they have further questions.
- Ask the parents the name of the doctor that their baby will see upon discharge. Document this as the infant's primary care physician (PCP) on the NHSR form and provide the PCP with a copy of the NHSR form.

Infants Who Do Not Pass the Outpatient Rescreen

For infants who fail the outpatient rescreen (one ear or both ears), an appointment should be scheduled with a pediatric audiologist for **diagnostic testing** as soon as possible. **Do not schedule another rescreen.**

COMMUNICATION WITH FAMILIES

Information at all stages of the hearing screening and follow-up process is to be communicated to the parents and/or guardians in written and verbal form in the primary language of the home and should be presented in a culturally competent manner.

Families who are informed of the outcomes and recommended steps are more likely to follow up after discharge. It is unlikely that the family is knowledgeable about hearing screening procedures or what the test results may mean. There are several opportunities to ensure that families are informed before, during, and after the screening.

Before the Screening

Education prior to screening may take the form of information distributed in the birthing classes, brochures in the admission packets, or a video on the closed-circuit TV. The LA EHDI Program has brochures available for use in the birthing facilities which are available free of charge. Brochures may be ordered using the order form[9] available on our website.

During the Screening

During the screening, and immediately after, it is critical that the screeners know exactly what they should and should not say to the family. When reporting further testing needed, parents should be strongly encouraged to attend the follow-up appointment.

After the Screening

- To ensure that parents are aware of results and understand any follow-up necessary, birthing facilities must:
    1. Provide a verbal explanation of the results
    2. Obtain parent’s signature on the NHSR form
    3. Provide a copy of the NHSR form to the parent
- Offer translation/interpreter services for families whose primary language is not English/spoken English.
- Give the parent details of when and where to go for outpatient testing and a contact number should they have any questions (if further testing is needed).
- Give the parent information for What Families Need to Know[10] regarding the risk factors associated with delayed-onset or progressive hearing loss and the need for follow-up by 9 months of age (if the infant passes newborn hearing screening).

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[9] https://docs.google.com/forms/d/e/1FAIpQLSeFLD93609anULyRvajsSqYswNC6Fg-dbKc6hO47vPwMlhZrg/viewform

[10] https://ldh.la.gov/assets/oph/Center-PHCH/Center-PH/cshs/EHDI/EHDI_RiskFactors_FINAL.pdf

QUALITY ASSURANCE/QUALITY IMPROVEMENT

Quality assurance refers to the systematic monitoring and evaluation of the various aspects of a service, program, or facility to ensure that high standards of quality are being met. The LA EHDI program and birthing facilities across the state have collaborated to ensure and improve the quality of hearing screening programs, which is the first step in the EHDI process. Because there are many details that comprise a successful newborn hearing screening program, monitoring of specific data elements is essential to ensure appropriate and timely follow-up for children who are deaf or hard-of-hearing. Our goal is to assist birthing facilities in achieving optimal screening performance, by following best practice guidelines and complying with Louisiana Administrative Code[11].

In collaboration with representatives from national and state agencies, the Centers for Disease Control and Prevention (CDC) developed national EHDI program performance measures. The performance indicator for birthing facilities is **at least 98% of infants screened prior to discharge**. This is a minimum requirement for a quality hearing screening program.

Role of LA EHDI	Role of a Birthing Facility
Assist hospitals in evaluation of their performance via LA EHDI Best Practice and Quality Assurance Rating and Hospital Scorecard	Develop written policies and procedures for hearing screening based on standards of care described by Joint Committee on Infant Hearing (JCIH) |CDC |LA EHDI
Collect, monitor, and verify accuracy of screening data to determine program effectiveness	Report and monitor all required data to LA EHDI accurately and in a timely manner
Provide training and technical assistance on LA EHDI Information System (LA EHDI-IS)	Utilize LA EHDI-IS data reports for continuous quality improvement
Provide NHSR forms and parent information brochures	Distribute parent information brochures and provide parents a copy of the NHSR form
Post updated guidelines, protocols, and other related information on the LA EHDI website[12]	Keep up-to-date on policy changes, guideline changes, and state protocols
Develop improvement strategies based on evidence of tests of change	Review and monitor performance standards
Utilize the LA EHDI-IS to document all components of the EHDI 1-3-6 process	Schedule outpatient follow-up appointments prior to hospital discharge for infants who do not pass the newborn hearing screening

For any questions, please email LAEHDI@la.gov. To find additional resources for providers and families please visit ldh.la.gov/page/LouisianaEHDI.

[11] https://www.doa.la.gov/media/nddmoi1p/48v2.doc
[12] https://ldh.la.gov/page/LouisianaEHDI