Indiana State Department of Health
Early Hearing Detection and Intervention Program

Hospital/Birthing Facility Policy Manual

for

Universal Newborn Hearing Screening (UNHS)

Indiana Early Hearing Detection and Intervention (EHDI)
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INDIANA UNHS/EHDI

Why UNHS?

Hearing loss is one of the most common conditions present at birth, and can have long-lasting effects on a child's ability to develop speech and language if left undetected. Prior to universal newborn hearing screening (UNHS), the average age of identification of a child with hearing loss was 30 months. With UNHS, the age of identification has decreased to less than 6 months of age. Research has shown that earlier identification of hearing loss significantly improves speech and language outcomes for these children. Through the dedication and hard work of our birthing facilities and hospitals, we can continue to ensure that babies are identified with hearing loss at as early an age as possible.

Mission

It is the mission of the Indiana EHDI Program to:

- Screen all newborns with state-mandated physiologic screening prior to discharge;
- Monitor infants through the EHDI process;
- Provide surveillance on the incidence and prevalence of hearing loss in the state of Indiana;
- Promote public awareness and education about hearing loss.

Goals

- Screen all infants prior to discharge, preferably before ***one*** month of age;
- Complete a diagnostic assessment on infants who do not pass before ***three*** months of age;
- Enroll all infants identified with permanent hearing loss in appropriate early intervention before ***six*** months of age;
- Ensure that every infant with a hearing loss has a Medical Home.

Legal Mandate

- Indiana Code 16-41-17-2 states that "…every infant shall be given a physiologic hearing screening examination at the earliest feasible time for the detection of hearing loss."
- Under Public Law 91-1999, screening for hearing loss began on July 1, 2000.
- Birthing facilities and hospitals are required to report screening results and referral information to the Indiana State Department of Health (ISDH) each month.

What is the Indiana EHDI Program's Role?

The Indiana EHDI Program is responsible for providing resources to hospitals, birthing centers, audiologists, and primary care providers (PCPs) to assist in ensuring all infants born in Indiana receive hearing screening by 1 month of age, are identified by 3 months of age, and are enrolled in early intervention by 6 months of age. We also manage all of the hearing screening and follow-up data, as well as provide family support. How do we do this?

- Our program is funded through several sources. We receive some state funding, as well as funding from two federal grants: one from the Centers for Disease Control and Prevention (CDC), and one from the Health Resources and Services Administration (HRSA).
- When a Monthly Summary Report (MSR) exception is entered by the hospital, Indiana EHDI staff receives an alert.
- Letters are sent to parents and PCPs regarding the infant's results and remind them of the need for diagnostic testing.
- Parents of infants who did not pass receive a phone call from an Indiana EHDI Parent Consultant.
- Infants who did not pass UNHS and do not have a documented diagnosis are followed by the program until at least 1 year of age to ensure a diagnosis is achieved.
- We communicate with audiologists and PCPs regarding diagnostic status of infants.
- When an infant is identified as deaf or hard of hearing, a tool kit is sent to the parents and the PCP.
- Parents of infants identified as deaf or hard of hearing are contacted by the Guide By Your Side program. This program offers parent-to-parent support to help guide the family into early intervention that reflects their choices and desires for their child.

Note: References will be made throughout this document to "Hospital Handouts and TIPS." These are available in the Appendices section of this document, or may be obtained from your EHDI Regional Consultant, or the state EHDI office.

HOSPITAL AND BIRTHING FACILITY GUIDELINES

Hospital and Birthing Facility Responsibilities

- Identify a primary and alternate contact responsible for completing the Monthly Summary Report (MSR), and provide sufficient time for training and for completing the MSR.
- Educate parents about the screening and provide the handout, "The Who, What, and Why of Newborn Hearing Screening."
- Determine if any risk factors are present (see Hospital Handouts and TIPS).
- If parents have a religious objection to the screening, have them sign the Religious Objection form. A copy of this form must be faxed to ISDH after the baby is entered on the MSR.
- Perform the screening in both ears following hospital protocols.
- Document the results of the screening in the chart, including date, result, name of screener, and referrals made (if any).
- Re-screen prior to discharge any infant not passing the initial screen in one or both ears. **Both ears must be re-screened, even if one ear passed on the initial screen.**
- **For the test to be considered a "pass", BOTH ears must pass on the same screen.**
- Discuss the results of the screening with the parents (see Hospital Handouts and TIPS).
- Distribute the hearing screening results (on back of *"The Who, What, and Why"* brochure) to parents following the screening with the results and risk factors documented (see Hospital Handouts and TIPS).
- Provide the language and hearing developmental milestones to the parents so they can monitor their child's progress (see Hospital Handouts and TIPS).
- For any infant who did not pass the second screening, distribute the brochure, *"What if My Baby Needs More Hearing Testing?"*
- Complete the UNHS portion of the blood spot card. If hearing screening is delayed for any reason, pull out the pink copy and send the blood spot card promptly to IU Labs. When the hearing screening is completed, fill out the UNHS area on the pink copy and send to IU Labs for data entry.
- Document on the EHDI Alert Response System (EARS) all infants who:
    - Were not screened for any reason
    - Did not pass the second screening
    - Pass, but have risk factors for delayed-onset hearing loss
- Arrange for follow-up testing of babies who do not pass UNHS prior to discharge, in collaboration with the baby's Primary Care Provider (PCP). These babies should be reported to the EHDI Program within five business days of UNHS and to the child's PCP.
- Refer babies who pass UNHS but have ANY risk factors for delayed-onset hearing loss to the baby's PCP. Babies who pass UNHS but have any one of the four mandated risk factors should be reported to EHDI for follow-up at 9 – 12 months of age (see Hospital Handouts and TIPS).

If infant ***PASSES*** screening and has ***NO RISK FACTORS:***

- Inform parents of the results
- Give parents the completed UNHS results (on the back of the "*Who, What, and Why"* brochure), and provide a copy of the hearing and language milestones
- Complete the bloodspot card
- Document the results of the screening in the baby's chart, including date, result, name of screener
- Provide results to PCP

If infant ***PASSES*** screening, but ***HAS RISK FACTORS:***

- Risk factors that need to be reported in EARS include:
  - Family history of permanent childhood hearing loss
  - Exposure to in-utero infection
  - Hyperbilirubinemia that required an exchange transfusion
  - Cranio-facial anomalies (see "Special Circumstances" section for more information on ear anomalies)
- Inform parents and PCP of screening results
- Give parents the completed UNHS results (on the back of the "*Who, What, and Why"* brochure), and provide a copy of the hearing and language milestones
- Diagnostic testing should occur when the baby is 9 – 12 months of age or sooner if there is parental concern
- Explain to parents that a referral to ISDH and the PCP will be made for continued monitoring for late-onset or progressive hearing loss due to the presence of one or more risk factors.
- Inform PCP **if a risk factor other than the 4 mentioned above are present** so that the physician can monitor and refer for testing at 9-12 months of age. These may be documented on the discharge summary that goes to the child's PCP. These other risk factors include:
  - > 5 days in special care/NICU
  - Genetic syndrome associated with hearing loss
  - Bacterial meningitis
  - Parent/caregiver concern
  - Received potentially ototoxic medication (e.g., gentamicin)
- Document the results of the screening in the chart, including date, result, name of screener, and referrals made
- Complete the blood spot card
- Report these infants on the MSR through EARS
- See Risk Factor Referral sheet in Hospital Handouts and TIPS

If infant ***DOES NOT PASS*** screening (refers):

- If the infant does not pass the initial screening, a second screening must be completed prior to discharge.
- If the infant passes the second screening, proceed as outlined in the section titled, "If Infant Passes Screening and Has No Risk Factors"
- To be considered a "pass," the infant must pass the screening in both ears on the same test.
- If the infant does not pass the second screening, inform the parents verbally and in writing
- Give parents the completed UNHS results (on the back of the "*Who, What, and Why"* brochure)
- Give parents a copy of the brochure, "What if Your Baby Needs More Hearing Tests?"
- Emphasize that a referral does not necessarily mean the infant has permanent hearing loss, but that further evaluation is needed (see section on **Communicating Results to Parents**)
- Explain to parents that their baby will be scheduled for an appointment for diagnostic audiology follow-up at a Level 1 Audiology Center
- Note screening results and recommendation for diagnostic follow-up in infant's chart for PCP and hospital staff
- Schedule the follow-up appointment prior to the baby's discharge from the hospital and provide the appointment date to the family verbally and in writing on the Hearing Screening Results (on the back of "*Who, What, and Why"* brochure)
- Document the results of the screening in the chart, including date, result, name of screener, and referrals made
- Enter this infant into the MSR in EARS as soon as possible (within no more than 5 days) to alert ISDH EHDI staff of need for follow-up
- Enter the appointment date, time, and location in the comments section of EARS
- Include in comments section of MSR any information that will help ISDH when calling families
    - Location and date of follow-up testing
    - Primary language of the home if not English
    - Poor medical prognosis
    - Adoption or foster care (please identify adoptive or foster mother's information)
- Complete blood spot card

If infant ***DOES NOT PASS*** screening, and ***HAS RISK FACTORS:***

- Follow same procedures as listed in previous section (If Infant Does Not Pass Screening)
- Be sure and note in the infant's chart and discharge summary any known risk factors.
- If the infant has one of the 4 risk factors monitored by ISDH, note that risk factor on the infant's MSR entry.

COMMUNICATING RESULTS TO PARENTS

- Follow your hospital's policies regarding who discusses the results with the family.
- Parents need to be informed of results prior to discharge.
- For infants who pass, encourage parents to monitor hearing and language developmental milestones and contact their PCP if concerns arise.
- For infants who do not pass, give parents the brochure "What if Your Baby Needs More Hearing Tests?"
- See Appendices for additional information.
- ***Keep what you say simple:***
    - *Avoid using anxiety-provoking words like "failed" and "deaf".*
    - *Reassure the family there are several reasons why the baby might not pass and that diagnostic testing will clarify how the infant is hearing. Follow-up should be completed in a timely manner, ideally before 3 months of age.*
    - *Early detection of hearing loss is important for language development and minimizing the effects of hearing loss on the child's communication abilities.*
    - *Inform parents that the hospital will schedule their baby for follow-up testing prior to the baby's discharge. If this is not possible due to the baby being discharged on an evening or weekend, give the parents the audiology clinic's contact information and send the referral to the clinic.*
- If you are concerned that a parent has more questions than you are comfortable addressing, provide them with the name of the Regional Audiology Consultant for your area, *or contact the EHDI Program directly at 317-233-1264.*

If parents refuse screening:

- Explain that the hearing screening is mandated by state law.
- The only acceptable refusal is one based on religious objection.
- Provide family with written material on the importance of screening (see Appendices).
- Provide family with hearing and language developmental milestones so they can monitor the baby's development.
- Have parents sign the Religious Waiver form (if applicable) and fax a copy to ISDH.
- Document refusal of the screening in the chart.
- Inform the PCP of religious refusal.
- Ask the PCP for assistance in educating the family regarding the importance of screening.

If infant is not screened prior to hospital discharge for any reason other than religious refusal:

- Contact family and have them return for the screening as soon as possible; preferably before 1 month of age.
- Have a standard letter ready and mail to the infant's family and the infant's physician stating the importance of the screening and the need for the family to return to the hospital for screening.
- If the family does not return for the screening, despite every possible effort by the hospital, the baby should be entered as an exception code 5 for Unauthorized Refusal.
- Have a back-up plan in place (first point of contact should be the equipment manufacturer) for equipment failure, to ensure that infants are screened promptly.

Sensitivity to Deaf Culture

Hospital personnel need to be aware of parents who may have a perspective from a cultural model, meaning they do not view being deaf as a disability. Members of the Deaf community, which may include individuals with family members who are Deaf, may not be concerned about the hearing status of their infant. In these cases, hospital personnel should be respectful of their view. Families with this perspective are fully capable of providing the child with language (i.e., American Sign Language, or ASL), and may not see a need to pursue intervention.

However, state law mandates newborn hearing screening. If the baby does not pass the screening, inform the parents of the result and refer as you would for any other baby for follow-up testing.

Transferred Babies

- The birthing hospital transfers the infant without a hearing screening.
- The receiving hospital screens hearing when infant is medically stable and nearing discharge.
- The receiving hospital updates their MSR with the results of the screening.
- The birthing hospital updates their MSR with the results of the screening.
- <u>This is a shared responsibility.</u>
- If the birthing hospital does not see an update on the baby within EARS, they should contact the receiving hospital to obtain screening results.
- Establish a contact with other hospitals in the area with which your hospital most often shares patients.
- If specific hospital contact information is needed, contact your Regional Consultant, or contact the EHDI program directly at 317.233.1264.

HOSPITAL GENERAL GUIDELINES

Screening Equipment

- Two different screening methods are acceptable. Some hospitals use a combination of both. Otoacoustic Emissions (OAEs) measure the sound waves generated in the inner ear (cochlea). Automated Auditory Brainstem Response (AABR) measures the response of the entire auditory system through the brainstem. Both tests are accurate and reliable when performed correctly. Each hospital selects a method based on resources, available personnel, cost, and the number of babies born.
- The Joint Committee on Infant Hearing (JCIH) recommends that all infants in the intensive care nursery (NICU) should be screened using AABR.
- Most AABR equipment protocols present stimuli at 35 dB nHL. Only an audiologist should determine if the presentation level should be changed.
- The hospital is responsible for ensuring that all calibration needs are met for the screening equipment used.

Quality Assurance

- Referral rates should be approximately 1.5 – 4%.
- Ensure infants with risk factors are identified and reported.
- Strive for appropriate and timely referrals.
- Follow hospital policies regarding infection control.
- Ensure documentation of results.
- Monitor screener competency in administration of screening. The National Center for Hearing Assessment and Management (NCHAM) Newborn Screening Training Curriculum (at www.infanthearing.org) is an excellent resource.
- Monitor hospital staff's competency in communicating results to parents.

Screener Responsibilities

- Evaluate infants to be screened based on established hospital protocol. Factors to consider include time of birth, estimated discharge date/time, need for second screen prior to discharge, and infant's activity level.
- Inform parents of the hearing screening and answer any questions.
- Perform the screening according to established protocols and procedures.
- Inform parents of the results of the screening.
- Provide parents with the hearing screening results on the back of the "The Who, What, and Why of Newborn Hearing Screening" brochure.
- Report any infants who do not pass as recommended.
- Report any infants who pass but have risk factors as recommended.

- Report any special cases to the on-site supervisor. If questions or problems persist, contact the EHDI Program directly at 317.233.1264.
- Document UNHS results and risk factors in the hospital's medical record, hearing screening log, and/or anywhere else indicated in the hospital's protocol.
- Complete hearing results section on blood spot card.
- Follow established infection control procedures.
- Use appropriate baby-handling skills.
- Recognize problems with screening equipment. Troubleshoot and report unresolved problems to the on-site supervisor immediately.
- Recognize potential problems with the infant that may interfere with the screening.
- Monitor inventory of supplies and report needs to program supervisor.

Birthing facilities have the responsibility to make certain all staff providing the newborn hearing screening are trained and competent to provide services. All screeners should have an annual review.

Documentation/EARS/MSR

Information from the EDHI Alert Response System (EARS) allows ISDH to provide follow-up for all infants who were referred for follow-up or who were not screened for any reason. The method of reporting this information to ISDH is via the web-based EARS application.

- Hospitals should assign one employee as the point of contact for reporting newborn hearing screening results. ISDH should always be made aware of any personnel changes.
- Hospitals should assign one employee as a back-up, in case the lead employee leaves the position, goes on extended leave, or is unable to complete the reporting for any other reason.
- Results of all newborn hearing screenings, attempts, and/or refusals must be documented in the hospital chart.
- If a religious waiver is signed, a copy should be kept in the hospital chart and a copy faxed to ISDH for documentation when using EARS.
- The hearing screening results section of the blood spot card should be completed and sent to the IU Lab.
- EARS Reporting:
    - When using the EARS system, ***daily*** entry of screening results is encouraged because it facilitates timely follow-up and makes data entry less cumbersome at the end of the month (a parent consultant with the EHDI program reaches out to parents of infants who do not pass newborn hearing screening soon after the infant's information is entered into the system).
    - Exceptions are ***required*** to be entered within 5 days of screening (if infant is in well-baby nursery) or discharge (if infant is in NICU or is not screened).
    - Include follow-up date and location in comments section of exception entry.

- If baby has been adopted or placed in foster care, this should be noted clearly in the comments section, and the adoptive or foster mother's information should be used or included.
- Any other pertinent information should also be included in the comments section: primary language of home if not English, poor medical prognosis, etc.
- *If the infant is in the NICU, be sure the final screening is completed just prior to discharge. Do not report hearing screening results for infants in the NICU until discharge is imminent. This is to ensure the infant is screened <u>after</u> any treatments that may adversely affect hearing, as well as to prevent ISDH from contacting families of these infants (phone calls and letters) while the infant is still an inpatient.*
- The Monthly Summary Report must be completed by the 15th of the month following the end of the months the infants are screened (example: the MSR for infants born in February should be completed by March 15th).
- Delays in MSR reporting can result in delays in follow-up for infants and affect the EHDI timelines for 1-3-6. This can have a significantly adverse effect on the language development for these infants. Research has shown that early intervention greatly reduces the effects that hearing loss can have on an infant's development. ***An efficient hospital hearing screening program is the first line of defense against these adverse effects for infants identified as deaf or hard of hearing!***

FYI: What happens after the hospital refers a baby?

- Upon referral, a designated hospital representative will assist parents by scheduling an appointment, preferably at a Level 1 audiology facility.
- ISDH will call families to verify addresses and PCP information, and then send letters to the families.
- Infants who pass at risk will receive letters regarding the recommended follow-up from ISDH.
- Diagnostic audiologic testing should ideally be completed before the infant is 3 months of age. This can help prevent the need for sedation in order to complete the diagnostic evaluation.
- Results of the diagnostic evaluation are reported to ISDH and/or Indiana Birth Defect and Problem Registry by the audiologist and/or PCP.
- Infants identified as deaf or hard of hearing should have referrals to other medical professionals such as the pediatrician, an otolaryngologist (ENT), geneticist, and ophthalmologist.

REFERRAL PROCEDURES: Hospital Procedures for Follow-up of Infants from Newborn Hearing Screening

For infants who do not pass TWO newborn hearing screenings:

- Prior to discharge, hospital informs parent/guardian of screening results, need for diagnostic audiology testing, and location(s) of Level 1 Audiology center(s) both verbally and in writing.
- Hospital obtains physician referral (unless "standing order" exists).
- Hospital contacts audiology facility to schedule the diagnostic audiology testing.
- Hospital faxes physician's referral and hospital referral form to audiology facility.
- Hospital notifies mother of appointment date and time (both verbally and in writing), and documents this on the discharge summary.*
- Hospital enters child into EARS within 5 business days of final screening (well-baby nursery) or discharge (NICU), and indicates diagnostic audiology appointment location, date, and time in the comments section of the exception entry.
- ISDH will call the families to verify address and PCP information. Letters are then sent to the family and the PCP regarding the need for immediate follow-up (before 3 months of age).

*If a child is not scheduled for diagnostic audiology testing prior to discharge (e.g., the child is discharged on a weekend when audiology facility is not open), the hospital should contact the parent to schedule an appointment. If the hospital is unable to reach the family by phone and schedule the baby within 3 days of discharge, the facility should fax a referral form to the child's PCP indicating, "Need assistance in scheduling this child for audiology follow-up." The hospital should maintain a copy of the faxed document.

For infants who pass newborn hearing screening, but are at risk for delayed onset hearing loss because of an identified risk factor:

- Prior to discharge, hospital notifies parent/guardian of screening results, the identified risk factor, and the need for diagnostic audiology testing at the age of 9-12 months.
- Hospital enters infant data into EARS as an exception within 5 days of screening (well-baby nursery) or discharge (NICU).
- Hospital notifies PCP of risk factor and need for diagnostic audiology testing at age 9-12 months.
- ISDH will send letters to families about the need for diagnostic audiology testing at age 9-12 months.

MEDICAL HOME FOR CHILDREN IDENTIFIED AS DEAF OR HARD OF HEARING

One of the goals of the EHDI Program is that children identified as deaf or hard of hearing have a medical home where healthcare services are accessible, family-centered, continuous, comprehensive, coordinated, compassionate, and culturally-competent.

According to the American Academy of Pediatrics, a Medical Home is not a building, house, or hospital, but rather an approach to providing healthcare services in a high-quality and cost-effective manner. Children and their families who have a medical home receive the care that they need from a pediatrician or physician (pediatric health care professional) whom they trust. The pediatric health care professionals and parents act as partners in a medical home to identify and access all the medical and non-medical services needed to help children and their families achieve maximum potential.

Accessible

- Care is provided in the child's community
- All insurance, including Medicaid, is accepted and changes are accommodated

Family-Centered

- Recognition that the family is the principal caregiver and the center of strength and support for children
- Unbiased and complete information is shared on an ongoing basis

Continuous

- Same primary pediatric healthcare professionals are available from infancy through adolescence
- Assistance with transitions (to school, home, adult services)

Comprehensive

- Healthcare is available 24 hours a day, 7 days a week
- Preventive, primary, and tertiary care needs are addressed

Coordinated

- Families are linked to support, educational, and community-based services
- Information is centralized

Compassionate

- Concern for well-being of child and family is expressed and demonstrated

Culturally Effective

- Family's cultural background is recognized, valued, and respected

Indiana State Department of Health

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Early Hearing Detection and Intervention Program (EHDI)

Birthing Facility/Hospital Policy Manual for Universal Newborn Hearing Screening (UNHS)

APPENDICES

(Hospital TIPS and Handouts)

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Effective Screening Practices

****Do NOT screen repeatedly. Remember, your goal is not for every infant to pass. Infants with hearing loss may eventually and falsely pass with multiple screenings. Screening repeatedly is not cost-effective or time-efficient. Always rescreen both ears.****

WHEN TO SCREEN

- 12-18 hours after birth
- In the early morning or during the night when there are fewer people wanting access to the infant
- If a second screen is needed, wait at least 4-6 hours after the initial screen, and complete the second screen as close to discharge as possible

SCREENING ENVIRONMENT

- Keep conversation to a minimum
- Post signs to alert staff that a screening is taking place
- Screen away from noisy areas (if completing screening in the room with the family, ask extended family members, children, and visitors to step out of the room or sit quietly during the screening)
- Move away from noisy equipment

INSPECTION OF THE EAR

- Clear away any obvious debris
- Do not screen if there is no ear, or only a partial ear, or no ear canal. These infants should be referred directly for a diagnostic audiology evaluation, and reported on the MSR as "did not pass"

PREPARING INFANT FOR SCREENING

- Infant should be:
  - Sleeping or quiet
  - Well-fed
  - Comfortable
  - May be swaddled or sucking on a pacifier

OAE SCREENING TIPS

- Make sure the tip is the proper size, and is seated correctly on the probe
- The probe should be properly inserted into the ear, and should be stable without being held in place
- Environmental noise can significantly affect the results of OAE screening, so be sure and reduce environmental noise as much as possible

ABR SCREENING TIPS

- To improve impedance:
  - Place the electrode on the scrubbed area
  - Ensure the electrodes are secure and sticking
  - Apply electrode paste to reduce impedances if necessary
- To reduce myogenic noise:
  - Ensure the infant has been fed, is swaddled and comfortable
  - Use a neck roll, and if the infant is sucking on a pacifier, remove it

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Back-Up Equipment

It is the responsibility of each hospital/birthing center to maintain screening equipment that is functional for the purpose of newborn hearing screening. Therefore, each hospital is also responsible for establishing a plan in the event that the screening equipment malfunctions or breaks down. Infants who are discharged without a hearing screening due to equipment problems must be brought back for screening when the equipment is repaired or replaced. Being prepared for equipment problems will decrease the delays in screening all of the hospital/birthing center's newborns.

Suggestions for equipment failure protocols:

1) Many hospitals have "sister" facilities that may be able to loan equipment to each other.

2) Some manufacturers offer loaner equipment. Arrangements can be made for equipment to be sent immediately for loan until repairs are completed or the equipment is replaced. Check with your manufacturer's sales representative regarding this possibility.

3) Check with local audiologists or ENT practices to see if they have equipment that they could loan or contract the service with their practice for a fee.

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Blood Spot/Heel Stick Card

Every effort should be made to enter the UNHS results on the Heel Stick card before it is sent to the lab.

- To facilitate data entry, the UNHS screening should be completed and entered onto the Heel Stick card immediately upon completion. All information requested on the card should be filled in completely.

- ***Do not delay in sending the Heel Stick card if hearing screening is not yet completed***. All newborn screen blood samples must be sent within 24 hours of collection, even if the UNHS has not been completed. A delay in sending the Heel Stick card could result in a delay in diagnosis.

- If UNHS has not been completed (due to transfer, NICU, or another reason), retain the pink carbon sheet of the Heel Stick card and keep it until UNHS is completed. When the UNHS is completed, enter the information on the pink copy and forward it to the lab for data entry.

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Gentamicin as a Risk Factor for Hearing Loss

Aminoglycosides can damage hair cells in the inner ear (cochlea), resulting in sensorineural hearing loss. Some infants with mitochondrial DNA mutations may be more susceptible to these effects. Commonly used aminoglycosides include: streptomycin, neomycin, kanamycin, amikacin, viomycin, vancomycin, gentamicin, tobramycin.

Information to consider:

- The most commonly used aminoglycoside is gentamicin.
- Predisposition to hearing loss from aminoglycoside use is determined by the susceptibility gene to aminoglycosides.
- Because the toxicity is genetically related, it should not be affected by how many days the infant received the medicine. One single dose can cause hearing loss, depending on the dose level and weight of the infant.
- It is too expensive and time-consuming to screen all infants for the presence of the gene. Even if the gene is present, infants in NICU needing antibiotics will be given an aminoglycoside.
- Other unknown mutations may be present that cannot be identified by current technology. Infants that test negative for the genetic susceptibility may still be at risk for hearing loss.
- Therefore, any infant that receives an aminoglycoside should be considered at-risk for subsequent hearing loss, unless testing for the susceptibility gene is completed prior to birth and results are negative for at-risk mutations.

Recommended Guidelines:

1) All babies should be screened and reported as mandated by Indiana law.

2) If a screen or re-screen is ordered following administration of these drugs, it is best practice to wait 24 hours after the medication has been discontinued. Birthing facilities need to determine their own protocols for situations in which the infant will be discharged sooner than 24 hours after the last dose of the medication.

3) If an infant passes the hearing screening, provide the parents with developmental milestones and encourage them to monitor the infant closely. If concerns arise, they should seek a referral from their physician for a diagnostic audiology evaluation.

4) All infants in the NICU for more than 5 days should be referred to their PCP for diagnostic audiology testing at age 9-12 months.

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Speech and Language Developmental Milestones (English)

All infants develop skills that help them learn to communicate and/or talk. Some infants develop these skills earlier, and some will develop these skills later. Talk to your doctor if you have any questions about your child's speech and language development.

If your baby is this old…	….he or she should:	
Birth – 3 months	Be startled by loud noises Be soothed by familiar voices (such as Mom's voice) Make vowel sounds (ooh, ahh)	Squeal or coo Laugh or giggle
3 – 6 months	Make lots of sounds (ba-ba, ga-ga) Enjoy babbling Make high and low sounds	Like toys that make noise or sing Turn his or her eyes and head to follow sounds (such as a parent's voice)
6 – 9 months	Respond to his or her name Play with sound by repeating (la-la-la) Understand "no" and "bye-bye"	Say "da-da" or "ma-ma" Listen to music or singing
9 – 12 months	Respond differently to happy/angry talking Babble in response to voices	Have 2 – 3 new words Stop when he/she hears "no"
12 – 18 months	Be able to identify people, parts of the body (head, foot), and toys Name what he/she wants Talk in sentences with a few words that people can understand	Use gestures (such as hand waving) with speech Bounce to music Repeat some words
18 – 24 months	Follow simple directions Speak in two-word phrases Have a vocabulary of about 20 words	Recognize other sounds (such as cars, dogs, vacuum, doorbell)

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Speech and Language Developmental Milestones (Spanish)

Si su bebé es esto viejo…	…él o ella deberían:	
0 – 6 meses	Llorar para obtener atención Vocalizar para expresar dicha Reírse Balbucear Demostrar juego de sonidos	Voltear su cabeza siguiendo sonidos Responder a voces familiares
6 – 12 meses	Empezar a responder a “No” Responder a sonidos cuando la fuente original no es visible Ondular su mano para decir adiós Vocalizar cuatro silabas diferentes	Decir una o dos palabras espontaneas Imitar sonidos Empezar a decir “mama” o “papa” Seguir ocasionalmente direcciones simples
12 – 18 meses	Identificar tres partes de su cuerpo o en una muñeca Sacudir su cabeza señalando “no” Usar 5-15 palabras espontaneas	Imitar sonidos de animales o del ambiente Pedir mas Nombrar objetos familiares Encontrar artículos familiares no a la vista
18 – 24 meses	Entender direcciones básicas Señalar dibujos nombrados Usar frases de dos palabras Referirse a sí mismo por su nombre Usar palabras nuevas regularmente	

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Risk Factors for Hearing Loss

Infants who pass UNHS but have one of the following risk factors need to be reported to ISDH, and referred for diagnostic audiology testing at age 9-12 months. These include:

1. **A family history of permanent childhood hearing loss**
   - Family member(s) born with hearing loss in one or both ears
   - Family member(s) with a hearing loss (not caused by a medical condition such as ear infections) identified in childhood
   - Does not include family member(s) with known causes of hearing loss like rubella, meningitis, noise exposure, advanced age, etc.
2. **Exposure to in-utero infection (for this pregnancy)**
   - **Toxoplasmosis:** infected during or just before pregnancy, especially 1st trimester
   - **Group B Strep (GBS):** sick infant with positive GBS culture
   - **Syphilis:** infected during pregnancy, infant can be treated prior to delivery
   - **Rubella:** infected primarily during the 1st trimester
   - **Cytomegalovirus (CMV):** can be transmitted through placenta, birth canal, or post-natally through breast milk
   - **Herpes Simplex Virus (HSV):**

     Yes if: Infant is diagnosed with neonatal Herpes
     Active infection during vaginal delivery
     Active infection during cesarean delivery with premature membrane rupture

     No if: Mother had a cesarean delivery with no membrane rupture
     No active infection was present at birth
3. **Hyperbilirubinemia requiring exchange transfusion**
4. **Ear malformations/Craniofacial anomalies**
   - Infants who pass UNHS, but have some form of ear malformation or other craniofacial anomaly should be referred to the PCP as having a risk factor for hearing loss
   - Infants that are born with a congenital ear anomaly that does not allow for UNHS to be completed should be reported as "Did not pass" on the MSR and referred for diagnostic audiology evaluation

There are other risk indicators for hearing loss not mentioned above. These infants do not need to be reported to ISDH on the MSR, but should be referred to the PCP:

- Syndromes commonly associated with hearing loss (Down, Usher, Waardenburg, and Neurofibromatosis Type 2)
- NICU stay with any of the following, regardless of length of stay: ECMO, assisted ventilation, exposure to ototoxic medications such as aminoglycosides (gentamicin and tobramycin) or loop diuretics (furosemide, lasix). If uncertain about the risk, consult the neonatologist.
- Parental concern, bacterial meningitis, chemotherapy, or neurodegenerative disorder

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Improving Referral Rates

Low Referral Rates (<1.5%)

- When final screening refer rates drop below 1.5%, the risk of missing an infant with hearing loss increases.
- Screeners should receive adequate training on using screening equipment, infant preparation, and screening procedures.
- Over-screening during any given session can result in passing a baby who actually has a hearing loss. A well-meaning screener who repeats the screening multiple times to "try for a pass" may increase the odds of a false pass. This is a disservice to the deaf or hard of hearing infant and his/her family.

High Referral Rates (>4%)

- Refer rates that are too high place an added burden on the system for follow-up and tracking.
- When screening is targeted and fewer infants are referred, it is more likely that identified infants will be followed more closely.
- False positive rates that are too high may lead to a lack of concern from physicians and families regarding the importance of the screening and need for diagnostic testing.

Suggestions to Improve Referral Rates

- Check that equipment is calibrated and working correctly. Make any necessary repairs, and replace equipment if necessary.
- Make sure screening staff are properly trained. Review Screener Guidelines and Checklist, and review Effective Screening Practices.
- Review policies and procedures, and ensure they are being implemented appropriately. Ensure infants are being screened twice – no more, and no less (unless they pass).
- If all policies are being followed and refer rate is still too high or low, provide rationale to the EHDI program regarding suspected reasons for a low/high refer rate.

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UNHS Screener Evaluation Form

Screener:_____ Date:_____

General:

- ☐ Demonstrates knowledge of UNHS
- ☐ Demonstrates competency in hospital infection control procedures
- ☐ Demonstrates competency in patient confidentiality procedures
- ☐ Demonstrates good (calming) baby handling skills
- ☐ Demonstrates ability to explain the screening test to parents and answers commonly asked questions
- ☐ Demonstrates competency in entering information into the screening equipment
- ☐ Demonstrates competency in setting up equipment
- ☐ Demonstrates competency in administering the screening test, storing results, printing results, and logging results
- ☐ Demonstrates ability to communicate results to parents in a sensitive manner
- ☐ Demonstrates ability to address common questions asked by parents and knowledge of where to refer if unable to answer questions
- ☐ Demonstrates competency in prioritizing infants to be screened based on age, estimated discharge time, and infant's activity level
- ☐ Demonstrates basic trouble-shooting ability with the screening equipment

Communication:

- ☐ Demonstrates understanding of and importance of newborn hearing screening
- ☐ Explains how the screening equipment works using proper terminology (OAE and/or AABR)
- ☐ Demonstrates knowledge of and ability to explain results
- ☐ Can list common reasons an infant might not pass the screen
- ☐ Can list common risk factors for hearing loss
- ☐ Demonstrates knowledge of proper terminology when giving results to parents (pass or refer/did not pass)
- ☐ Demonstrates ability to address the need for further testing without alarming parents
- ☐ Demonstrates ability to answer questions frequently asked by parents or physicians

(Adapted from materials from Seattle Children's Hospital)

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Parents' Frequently Asked Questions (English)

1. Why screen my baby's hearing?

Hearing loss is one of the most common conditions present at birth. It is easy to miss hearing loss because you usually can't see anything different. Without screening, hearing loss is often not detected until the baby is 2 years old and not talking. Early identification and intervention means that your baby won't fall behind other children in speech and language development.

2. How do you check my baby's hearing?

OAE: Soft sounds are made into the baby's ear. If the ear is working normally, it will send back sounds that the computer can pick up and analyze. Your baby doesn't have to do anything other than be quiet.
ABR: Soft sounds are made into the baby's ear and electrodes or little sensors pick up the brain's response to the sounds.

3. What does Pass or Refer mean?

Pass means that your baby's ears are working normally today. However, some babies develop hearing loss later so if you are concerned, you should always talk to your baby's medical provider about getting a hearing test.
Refer means that your baby did not pass the hearing screening and needs additional testing.

4. What happens if my baby Refers?

If your baby refers a second time, it is very important that you make an appointment with a pediatric audiologist as soon as possible to have a complete hearing test called an Auditory Brainstem Response test or an ABR.

5. How long does the hearing screen take?

Usually it takes 10 to 15 minutes depending on how quiet your baby is during the screening.

6. Will hearing screening hurt my baby?

No. Most babies sleep through the screen.

7. What can be done if hearing loss is detected?

Hearing loss cannot be determined by screening. Screening tells us if further testing by a pediatric audiologist is needed. If an audiologist finds that your baby has a hearing loss he or she will talk with you about what happens next.

8. What if I choose not to allow the hearing screen?

You will be asked to sign a refusal form and your baby's doctor will be advised of your decision. We recommend that you think about the screening. Please ask questions about your concerns. Finding a hearing loss as early as possible is critical in order for children to develop normal speech and language.

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Parents' Frequently Asked Questions (Spanish)

1. ¿Por qué hacerle una prueba auditiva a mi hijo?

La pérdida auditiva es una de las condiciones más comunes que se presentan en los recién nacidos. Es fácil no percatarse de su existencia porque uno no puede ver nada diferente en el bebé. Sin la prueba auditiva, es frecuente que la pérdida auditiva no se detecte hasta que el niño tiene 2 años y no habla. La identificación e intervención temprana hacen que su bebé no tenga un retrazo en su habla y desarrollo del lenguaje.

2. ¿Cómo le hace la prueba auditiva a mi hijo?

OAE: Por medio de una sonda se introducen sonidos suaves en el oído del bebé. Si el oído funciona normalmente, éste producirá sonidos que son detectados y analizados por la computadora. Su bebé no tiene que hacer nada solamente permanecer callado.

ABR: Por medio de una sonda se introducen sonidos suaves en el oído de su bebé. Electrodos localizados en la frente y en los lóbulos de las orejas detectan la respuesta del cerebro a estos sonidos.

3. ¿Qué significa cuando mi bebé pasa/no pasa la prueba?

Si su bebé pasa la prueba, esto significa que los oídos de su bebé funcionan bien. Sin embargo, algunos bebés pueden desarrollar una pérdida auditiva después de la primera prueba. Si usted está preocupado debe hablar con la persona que provee los servicios de salud a su hijo sobre la posibilidad de hacerle otra prueba auditiva. Si su bebé no pasa la prueba esto significa que necesita exámenes adicionales.

4. ¿Qué pasa si mi bebé no pasa la prueba auditiva por segunda vez?

Si su bebé no pasa la prueba por segunda vez, es importante que haga una cita con un audiólogo pediatra lo más pronto posible para que realicen un examen que se llama ABR (por sus siglas en ingles).

5. ¿Cuánto tiempo toma hacer el examen?

Usualmente de 10 a 15 minutos dependiendo de que tan callado esté el niño durante la prueba.

6. ¿Le dolerá a mi bebé?

No. La mayoría de los bebés duermen durante la prueba.

7. ¿Cuál es el siguiente paso si se sospecha la existencia de una pérdida auditiva?

Una pérdida auditiva no puede ser confirmada por la prueba auditiva, esta indica que un audiólogo pediatra necesita realizar más pruebas. Si un audiólogo diagnostica una pérdida auditiva, él o ella le dirán cual es el siguiente paso a seguir.

8. ¿Qué pasa si tomo la decisión de no permitir que se le haga a mi bebé la prueba auditiva?

Se le pedirá que firme un documento y se le comunicará al doctor de su bebé su decisión. Le recomendamos que piense su decisión. Por favor haga preguntas sobre sus preocupaciones. El diagnóstico de una pérdida auditiva los más temprano posibles es importante para que los niños desarrollen un habla y lenguaje normal.

Adapted from NCHAM materials

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Screener Scripts (English and Spanish)

Informing Parents of the Screen:
Hi! Congratulations on the birth of your baby. You have received information that we provide hearing screening to all babies born. We are going to screen your baby now.

Informing Parents of the Screen (Spanish):
¡Hola! Felicitaciones por el nacimiento de su bebé. Usted recibió información sobre la prueba auditiva que le hacemos a todos los recién nacidos. Ahora vamos a hacerle la prueba auditiva a su bebé.

Passing:
Congratulations on the birth of your baby. We just completed the hearing screen; the results are a pass. Here is a brochure that talks about development of speech and language. It is always important to monitor the progress of your baby's development, especially their speech and language because your baby's hearing can change any time. If you are ever worried that your baby can't hear, talk to your baby's doctor right away and ask for a referral to an audiologist that is skilled at testing infants and young children.

Passing (Spanish) Pasó:
Felicitaciones por el nacimiento de su bebé. Acabamos de finalizar la prueba auditiva de su bebé y él/ella la pasó. Este es un folleto que trata sobre el desarrollo del habla y del lenguaje. Es importante observar el desarrollo de su bebé especialmente de su habla y lenguaje ya que la audición de su bebé puede cambiar en cualquier momento. Si usted está preocupado de que su bebé no pueda oír, hable con el médico pediatra inmediatamente y pídale que lo envíe a donde un audiólogo especializado en hacer pruebas a bebés y niños pequeños.

Pass with Risk Factors:

Congratulations on the birth of your baby. We just finished screening your baby's hearing. Your baby passed the screening today, but has a risk factor that could cause a hearing loss to develop over time. Here is a brochure that talks about development of speech and language. It is always important to check the progress of your baby's development, especially their speech and language because your baby's hearing can change any time. It is recommended that your baby be tested again by an audiologist who is skilled at testing infants and young children at about 9-12 months of age. If you are worried before this time that your baby can't hear, talk to your baby's doctor right away and ask for a referral to an audiologist immediately.

Pass with Risk Factors (Spanish) Pasó con Factores de Riesgo:

Felicitaciones por el nacimiento de su bebé. Acabamos de finalizar la prueba auditiva de su bebé. Su bebé pasó la prueba hoy, pero tiene un factor de riesgo que podría causar con el tiempo que se le desarrolle pérdida del oído. Este es un folleto que trata sobre el desarrollo del habla y del lenguaje. Siempre es importante observar el desarrollo de su bebé especialmente de su habla y lenguaje ya que la audición de su bebé puede cambiar en cualquier momento. Es recomendable que su bebé sea examinado otra vez a los 9-12 meses de edad por un audiólogo especializado en hacer pruebas a bebés y niños pequeños. Si antes de este tiempo usted está preocupado de que su bebé no pueda oír, hable lo más pronto posible con el médico pediatra y pídale que lo envíe inmediatamente a donde un audiólogo especializado en hacer pruebas a bebés y niños pequeños.

Not Passing:

Congratulations on the birth of your baby. We just finished screening your baby's hearing. Your baby did not pass the second screen today. This does not necessarily mean that your baby has a permanent hearing loss, but without additional testing we can't be sure. The screening results will be provided to your baby's doctor and your child will be scheduled with an audiologist to complete follow-up testing. Please be sure you make or keep (depending on your hospital's protocol) the appointment for further hearing testing.

Not Passing (Spanish) No Pasó:

Felicitaciones por el nacimiento de su bebé. Acabamos de finalizar la prueba auditiva de su bebé. Los resultados de la segunda prueba auditiva que le hicimos hoy a su bebé indican que él/ella no la pasó. Esto no necesariamente significa que su bebé tenga una pérdida auditiva permanente, pero sin hacer pruebas adicionales no podemos estar seguros. Los resultados de la prueba le serán enviados al médico de su bebé, además su niño será referido al audiólogo para programar una prueba auditiva de seguimiento. Por favor asegúrese de hacer o mantener la cita para hacer más exámenes auditivos (dependiendo del protocolo de su hospital).