Overview

The purpose of a screening test is to identify infants at risk for hearing loss who need further testing. A screening test is not a diagnosis. The Washington State Early Hearing-loss Detection, Diagnosis and Intervention (EHDDI) program recommends screening all infants for hearing loss before one month of age. This protocol includes guidance from the Joint Committee on Infant Hearing (JCIH) 2007 position statement\(^1\). Initially a workgroup including audiologists, hospital nurses, and other health professionals from across Washington developed this protocol. EHDDI program staff then revised the protocol and asked audiologists and hospital screening staff to review it before finalizing the protocol.

1a. Initial Hearing Screening—Well Baby Nursery

- For the initial screening, use one of the following:
  - Evoked Otoacoustic Emissions (EOAE, OAE, TEOAE, DPOAE),
  - Auditory Brainstem Response (ABR, AABR, BAER, ABAER), or
  - A combination of both measures\(^1\)

- The birth hospital typically performs the initial screen while the baby is still an inpatient. Perform the screen as close to discharge as possible, preferably 12 hours or more after birth. The screening may be done sooner if needed; however, a higher referral rate may occur due to residual birthing debris in the ear canal.

- For OAE: If the infant does not pass on the first try, take the probe out of the ear and look at whether it is clogged with wax or debris. Wipe the probe tip if necessary, reinsert the probe and run the test again. Not all babies will pass so only make two attempts.

- For ABR: If the infant does not pass on the first try, check that electrodes are secure, positioning of the earphone or probe is correct, electrodes are oriented away from the top of the baby’s head, and wires are not crossed. Not all babies will pass so only make two attempts. These two attempts make up the “initial” hearing screen.

- If the infant does not pass the first screening then perform a second screening, if time allows, before hospital discharge. In each screening session, make only two attempts per ear. If the first screening used an OAE, use either an OAE or ABR for the second screening; if the first screening used an ABR, use an ABR for the second screening. Rescreen both ears even if only one ear did not pass initially.

- Refer the infant for an outpatient rescreen (step 2) if:
  - S/he does not pass the initial screening, or
  - Results cannot be obtained in one or both ears.
  ** If an outpatient rescreening is not utilized, then a referral to diagnostic evaluation is appropriate. Skip to step 3.
1b. Initial Hearing Screening—NICU

- Infants admitted to the neonatal intensive care unit (NICU) for more than 5 days need to have an automated ABR included as part of their hearing screening to avoid missing a neural hearing loss.

- Refer infants who do not pass automated ABR screening in the NICU directly to an audiologist for rescreening (rather than having an outpatient rescreen at the hospital) and, when indicated, comprehensive audiologic evaluation including ABR (steps 2 and/or 3).

2. Rescreening

- Rescreen infants who do not pass the initial hearing screen in one or both ears.

- Rescreen after discharge to allow sufficient time for the infant’s ears to clear of residual birthing debris.

- The rescreening should occur prior to one month of age.

- The birth hospital typically performs the rescreen on an outpatient basis.
  - If the initial test used an OAE, rescreen with Otoacoustic Emissions (EOAE, OAE, TEOAE, DPOAE), Auditory Brainstem Response (ABR, AABR, BAER, ABAER), or a combination of both measures.
  - If the initial test used ABR, rescreen with only ABR to avoid missing a neural hearing loss

- Rescreen both ears even if only one ear did not pass the initial screen.

- The rescreening should occur in a single visit, with two attempts maximum on each ear. These two attempts make up the “rescreen.”

- Refer an infant for a diagnostic audiological evaluation if:
  - S/he does not pass the rescreening, or
  - Results cannot be obtained in one or both ears.

3. Referrals for Diagnostic Audiological Evaluation

- Refer an infant for a diagnostic audiological evaluation after failure to pass the initial hearing screen and the rescreen in one or both ears. Do not continue to screen further.

- An audiologist trained in infant diagnostic audiological evaluation should perform the evaluation. See the Washington State Department of Health Diagnostic Audiology Best Practice Guidelines\textsuperscript{2} for details.

- The infant’s primary care physician may coordinate the referral for diagnostic evaluation.

- The diagnostic evaluation should occur prior to three months of age.
4. Assessment of Risk Factors for Late Onset Hearing loss

A passed newborn hearing screening means a significant hearing loss is unlikely. However, hearing loss can develop or worsen later in infancy and childhood for many reasons. It is important to assess for and report on the five risk factors for hearing loss listed on the pink and blue hearing screening cards as accurately as possible. Infants with these risk factors need appropriate follow up. The risk factors are:

1. Stay in neonatal intensive care unit (NICU) > 5 days
2. Stigmata or other findings associated with a syndrome known to include hearing loss
3. Family history of permanent childhood sensorineural hearing loss
4. Craniofacial anomalies
5. In-utero infections including toxoplasmosis, rubella, cytomegalovirus (CMV), herpes and syphilis

If a baby has one or more of these risk factors, mark the appropriate box(es) on the pink or blue hearing screening card. The EHDDI program will follow up with the primary care provider for risk factors 2 through 5. The Joint Committee on Infant Hearing 2007 Position Statement recommends a diagnostic audiologic evaluation by age 24-30 months for infants who pass their newborn hearing screen but have one or more risk factor(s) for late onset or progressive hearing loss.

5. Documentation and Communication of Screening Results

- Record screening results in the infant's medical record.
- Clearly communicate screening results to the infant’s parents verbally and in writing. Provide results and hearing screening information to families in their preferred language.
- Communicate screening results to the infant's primary care provider in writing.
- Report screening results to the Department of Health (DOH) on the newborn hearing screening cards. Send results to DOH every week. For more information on reporting screening results to DOH, please contact the program at 206-418-5613 or 1-888-WA-EHDDI.
- Give parents written information about risk factors for hearing loss and typical language development.

6. Quality Assurance

- Within three months of initiating a hearing screening program:
  o Maintain a referral rate no higher than 8% for the initial screening.
  o If the hospital performs outpatient rescreening, maintain a referral rate no higher than 4%.
- Within six months of program initiation, screen a minimum of 95% of infants prior to discharge or before one month of age.
- The benchmark for percent of infants lost after not passing the initial screen should be 10% or less.
- Institute a tracking system to monitor referral rates and to assist in the follow up of infants referred for a rescreen or diagnostic evaluation.
- For free technical assistance in newborn hearing screening program planning and development, contact the Seattle Children's Hospital Newborn Hearing Screening Project Team.
7. Screener Requirements

- Screeners should have adequate skills in soothing and calming newborns.
- An audiologist or someone similarly trained in screening techniques should train screeners.
- Train screeners how to communicate results to families in a sensitive and culturally competent manner. Keep laminated examples of proper hearing screening terminology and language with the screening equipment for immediate reference.
- Train screeners to answer parents’ questions about newborn hearing screening. When screeners do not know the answers, they should know where to refer the family for answers.

8. References


4. For free technical assistance in newborn hearing screening program planning and development, contact:

   Seattle Children’s Hospital
   Universal Newborn Hearing Screening Project
   4800 Sand Point Way NE, W-6640
   Seattle, WA 98105
   Phone: 206-987-2457
   Fax: 206-987-1004
   Email: UNHS@seattlechildrens.org

   For general information regarding newborn hearing screening or follow-up, contact:

   Early Hearing-loss Detection, Diagnosis and Intervention (EHDDI) Program
   1610 NE 150th Street
   Shoreline, WA 98155
   Phone: 206-418-5613
   Toll-free: 1-888-WA-EHDDI
   Fax: 206-364-0074
   Email: Ehddi2@doh.wa.gov
   [www.doh.wa.gov/earlyhearingloss/provider](http://www.doh.wa.gov/earlyhearingloss/provider)

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