Early Hearing Detection, Diagnosis, and Intervention (EHDDI) Program Best Practices for Newborn Hearing Screening

2022

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Purpose of Guidelines

The purpose of this document is to provide best practice guidelines to support newborn hearing screening programs. This protocol includes guidance from the **Joint Committee on Infant Hearing (JCIH) 2019 Position Statement**.

Overview

The purpose of newborn hearing screening is to identify infants who need further testing to determine if they are deaf or hard of hearing. Early identification and early support services for children who are deaf or hard of hearing lead to better language and developmental outcomes for those children and their families. The Washington State Early Hearing Detection, Diagnosis and Intervention (EHDDI) program recommends all infants receive a newborn hearing screening before one month of age.

Well-Baby Nursery Protocol

Appropriate Equipment:

- Evoked Otoacoustic Emissions (Transient Evoked Otoacoustic Emissions (TEOAE), Distortion Product Otoacoustic Emissions (DPOAE)) equipment that has received audiometric calibration with the last 12 months and/or
- Auditory Brainstem Response (ABR, AABR, BAER, ABAER) equipment that has received audiometric calibration in the last 12 months

When to screen:

Infants should receive a newborn hearing screening as close to hospital discharge as possible to allow residual birthing debris to clear from the ear canal. In order to obtain accurate hearing screening results, the infant needs to be quiet, still, and in a quiet environment. Screening while an infant is sleeping is best. For suggested screening techniques, please see:

- Basic Steps for OAE Screening and
- Basic Steps for ABR Screening

Newborn hearing screening programs need protocols in place to ensure every baby is screened prior to discharge. If a baby is discharged without receiving a hearing screen, they need to be scheduled for an outpatient appointment for their initial hearing screening.

Refer results:

If a well-baby does not pass the first newborn hearing screening, perform a second screening, if time allows, before hospital discharge. However, no more than two high-quality screenings should occur prior to hospital discharge. Well-babies who do not pass the newborn hearing screening prior to hospital discharge should return to the screening facility in 1-2 weeks for an outpatient rescreen. Outpatient rescreen appointments should be scheduled prior to discharge. Rescreens should occur prior to one month of age.

Outpatient rescreening:

Well-babies may be rescreened with either OAE or ABR equipment, regardless of which test method was used for the initial screening. However, if an infant does not pass an initial newborn hearing screen with ABR equipment, ABR equipment is the preferred method for outpatient rescreening to detect possible auditory neuropathy spectrum disorder (ANSD). No more than one high-quality outpatient rescreen should occur. Multiple rescreens may result in false negative (passing) results or delay the diagnostic hearing evaluation.

Rescreen both ears even if only one ear did not pass the initial newborn hearing screening. A passing result only occurs when both ears pass simultaneously during the same screening session. If the infant does not pass the outpatient rescreening, immediately refer them to a pediatric audiologist for a diagnostic hearing evaluation. The referral may need to be completed by the infant's primary care provider.

The diagnostic hearing evaluation should be completed before the infant is three months of age. For a list of pediatric audiologists, please see **www.doh.wa.gov/infantaudiology**.

If rescreening occurs in the medical home or audiology clinic, primary care providers and audiologists are responsible for adhering to best practice protocols for outpatient rescreening and reporting the results to the Department of Health.

NICU Protocol

Appropriate Equipment:

- Auditory Brainstem Response (ABR, AABR, BAER, ABAER) equipment that has received audiometric calibration within the last 12 months. Infants admitted to a level III or greater neonatal intensive care unit (NICU) for more than five days need to have an automated ABR included as part of their hearing screening to avoid missing the detection of auditory neuropathy spectrum disorder (ANSD).

When to screen:

Infants should be well enough to discharge from the hospital and screening should occur as close to hospital discharge as possible. Programs are responsible for knowing and adhering to the age limitations for their automated ABR equipment, for example between 34 weeks gestation and six months of age. Consult your equipment manual for age limitations. Infants in the NICU who are not able to receive newborn hearing screening due to age limitations of automated ABR equipment or other reasons, should be referred to a pediatric audiologist. For a list of pediatric audiologists, please see **www.doh.wa.gov/infantaudiology**.

In order to obtain accurate hearing screening results, the infant needs to be quiet and still and in as quiet of an environment as possible. Screening while an infant is sleeping is best. For a suggested screening techniques, please see:

- Basic Steps for ABR Screening

Refer results:

Refer infants who do not pass automated ABR screening in the NICU directly to a pediatric audiologist for rescreening or a diagnostic hearing evaluation, rather than scheduling an outpatient rescreen. The referral may need to be completed by the infant's primary care provider. For a list of pediatric audiologists, please see **www.doh.wa.gov/infantaudiology**.

Risk Factors and Special Circumstances

Some infants will have risk factors that put them at higher risk for being deaf or hard of hearing or becoming deaf or hard of hearing during early childhood. During screening, assess for the risk factors indicated below and document them in the infant's medical record and on their Department of Health Hearing Screening Card.

Infants who pass newborn hearing screening but have the following risk factors should receive the recommended diagnostic follow up. See the table on the next page for risk factor classification and recommended diagnostic follow up.

	Risk Factor Classification	**Recommended Diagnostic Follow up**
1	NICU stay of great than 5 days • Hyperbilirubinemia requiring an exchange transfusion regardless of length of stay. • Aminoglycoside administration for more than 5 days • Asphyxia or Hypoxic Ischemic Encephalopathy	By 9 months
	• Extracorporeal membrane oxygenation (ECMO)	No later than 3 months after occurrence
2	Syndrome that may impact hearing such as; • Alport • Brachio-Oto-Renal (BOR) • Pendred • Waardenburg • Usher • Jervell Lang-Nielson • Charcot-Marie-Tooth • Trisomy 21	By 9 months
3	Family history of permanent childhood hearing loss not caused by illness or injury	By 9 months
4	Craniofacial anomalies • Outer ear malformations • Cleft palate • Ear pits or ear tags • Malformed eyes • Craniosynostosis • Hemifacial microsomia • Temporal bone abnormalities • Congenital microcephaly • Congenita or acquired hydrocephalus	By 9 months
5	In utero infections • Toxoplasmosis • Syphilis • Rubella • Herpes	By 9 months
	• Cytomegalovirus	By 3 months
	• Mother +Zika and infant with laboratory evidence of Zika and clinical findings	ABR by 4-6 months of age
	• Mother +Zika and infant with laboratory evidence of Zika and no clinical findings	ABR by 4-6 months of age or VRA by 9 months of age

Infants with congenital aural atresia (absence of an ear canal) in one or both ears and/or with other severe visible pinna/ear canal abnormalities should not be screened in either ear, even if only one ear is affected. Immediately refer these infants to a pediatric audiologist for a diagnostic hearing evaluation upon discharge. For a list of pediatric audiologists, please see **www.doh.wa.gov/infantaudiology**.

Documenting and Communicating Results

Document all newborn hearing screening results in the infant's medical record. Minimum documentation should include date of screening, test method, result for each ear (pass, refer, incomplete) and any risk factors for late onset and/or progressive hearing loss. Communicate screening results to the infant's primary care provider in writing and include final hearing screening result in the infant's discharge summary.

Report screening results to the Department of Health (DOH) on the newborn hearing screening cards every week. Initial screens can be reported on the pink hearing screening cards that come in the infant's initial dried blood spot (metabolic) screening kit. Initial screens can be reported on blue hearing screening cards if the infant's pink card cannot be found. Outpatient rescreens should be reported on blue hearing screening cards.

Newborn hearing screening results and follow-up recommendations must be clearly and neutrally communicated to families both verbally and in writing, and in their preferred language. For infant's who do not pass, inform families of the need for further testing in a culturally sensitive and understandable manner that will maximize the likelihood that follow up will occur, while also not causing undue stress to the family. This can be accomplished by using **scripts** developed by the National Center for Hearing Assessment and Management (NCHAM). For more information about communicating with families, see the Washington State EHDDI Learning Community's (WSELC) Best Practices: Family-center Care and Communication.

Quality Assurance

Newborn hearing screening programs should work with the Department of Health EHDDI program to achieve and maintain high quality newborn hearing screening and follow up services in their communities. Indicators of a high-quality newborn hearing screening program include;

- Maintaining a refer rate no higher than 5% for the initial screening.
- Screening more than 95% of infants prior to discharge or by 1 month of age.
- Ensuring no more than 10% of infants who do not pass initial screening are lost to follow-up.

Management of Newborn Hearing Screening Programs:

Teams of professionals should be responsible for hospital-based newborn hearing screening programs, including an audiologist who provides oversight of the development of policies and procedures, selection of hearing screening equipment, staff training, and monitoring of quality assurance.

Each program should designate a Newborn Hearing Screening Coordinator who is responsible for;

- Developing policies and procedures to ensure the newborn hearing screening program is meeting quality assurance measures.
- Ensuring staff performing newborn hearing screening have met initial training requirements and complete annually competencies.
- Ensuring screening equipment is functional and appropriately maintained including annual audiometric calibration and repairs when necessary.
- Ensuring newborn hearing screening supplies are available and reordered when supplies are low.
- Ensuring that newborn hearing screenings are completed and reported every week and responding to the Department of Health requests for information.
- Coordinating and collaborating with an audiologist to support the newborn hearing screening program.

Qualifications of Screening Staff:

Staff who perform newborn hearing screening should receive comprehensive training prior to screening and a re-certification training as part of annual competencies. Comprehensive training includes;

- Obtaining a Certificate of Completion from the **National Hearing Assessment and Managements (NCHAM) Newborn Hearing Screening Training Curriculum (NHSTC)** or similar training program.
- Hands-on, equipment specific training with newborns provided by an audiologist or experienced Newborn Hearing Screening Coordinator.
- An observation of screening skills by an audiologist or experienced Newborn Hearing Screening Coordinator.

References

Joint Committee on Infant Hearing 2019 Guidelines

National Hearing Assessment and Managements (NCHAM) Newborn Hearing Screening Training Curriculum (NHSTC)

National Center for Hearing Assessment and Management (NCHAM) Scripts

Washington State EHDDI Learning Community's (WSELC) Best Practices: Family-center Care and Communication.

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

Early Hearing 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/

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For persons with disabilities, this document is available on request in other formats.
To submit a request, please call 1-800-525-0127 (TDD/TTY call 711).

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