

PENNSYLVANIA DEPARTMENT OF HEALTH NEWBORN HEARING SCREENING PROGRAM GUIDELINES

The purpose of this document is to provide guidance and recommended procedures for hospitals, physicians, and audiologists in conducting and administering universal newborn hearing screening programs. It is important to recognize that newborn hearing screening is only one component of a comprehensive approach to the management of childhood hearing loss. The process also requires follow-up diagnostic services, counseling, intervention programs, and parental educational programs. This comprehensive process must be administered by a multidisciplinary team consisting of individuals such as audiologists, physicians, educators, speech/language pathologists, nurses, and parents. Both otologic and genetic consultation are recommended in the management of childhood hearing loss.

Early and consistent screening specific to hearing loss and enrollment in early intervention services once infants have been diagnosed is key to achieving normal language development. Therefore, the goal of Pennsylvania's program is to achieve identification of hearing loss in children by three months of age and to assure enrollment in appropriate services by six months of age through the following steps:

- Appropriate follow-up by an audiologist with expertise in the evaluation of infants and young children;
- Medical evaluation of hearing loss; and
- Referral to local Part C Early Intervention as soon as a confirmed diagnosis of hearing loss is made.

I. DEFINITIONS

- *Audiologist:* A person who is licensed by the Commonwealth of Pennsylvania to provide audiological services.
- *Auditory brainstem response (ABR):* An objective electrophysiologic measurement of the peripheral and central auditory system to acoustic stimulation of the ear. This test can be automated auditory brainstem response (AABR), obtained with equipment that automatically provides a pass/refer outcome.
- *Department:* The Department of Health of the Commonwealth.
- *Diagnostic audiology evaluation:* An in-depth, age-appropriate evaluation of auditory function using behavioral, electrophysiologic and acoustic immittance measures to determine if a hearing loss exists and if a hearing loss is present, to determine the type, degree, and configuration of the hearing loss.
- *Discharge:* Release from the hospital after birth to care of the parent or legal guardian.
- *Early Intervention Services:* Services and supports designed to help families with children with developmental delays. Early intervention builds upon the natural learning occurring in those first few years.
- *Evoked Otoacoustic Emissions:* An objective physiologic response from the cochlea, used to determine preneural auditory function. The response may be elicited with the use of either click-evoked otoacoustic emission or distortion product otoacoustic emission test procedures. This test can be automated to provide a pass/refer outcome.
- *Follow-up:* Referral for appropriate services and procedures relating to the confirmation of hearing loss and appropriate referrals to an audiologist and primary care provider for infants who did not pass the follow-up rescreening.
- *Referral:* To direct an infant, who does not pass the initial hearing screening, and the follow-up rescreening, to an audiologist for appropriate diagnostic procedures to determine

- the existence and extent of a hearing loss, as well as appropriate habilitation of a hearing loss.
- *Hearing loss*: A dysfunction of the auditory system of any type or degree that is sufficient to interfere with the acquisition and development of speech and language skills.
 - *Hearing screening*: An objective physiological measure to be completed in order to determine the likelihood of hearing loss.
 - *Hearing Screening Facility*: A facility that performs Newborn Hearing Screenings as outlined in the body of this document.
 - *Initial hearing screening*: Procedure(s) employed for the purpose of screening hearing prior to discharge.
 - *Incomplete result*: Result of initial screening which does not yield either a conclusion of normality or possible abnormality. An incomplete result can be due to an uncooperative infant, debris in the ear canal and excess miogenic activity. In such cases, the infant should be referred for another screening within 30 days of birth.
 - *Newborn*: A child up to and including 29 days of age.
 - *Infant*: A child from 30 days of age up to 12 months of age.
 - *Parent*: A biological parent, stepparent, adoptive parent, legal guardian, or other legal custodian of a child.
 - *Primary Care Provider (PCP)*: The licensed caretaker to whom the infant will go for routine medical care following birth.

II. ASSESSMENT AND EDUCATION

A. Hearing Screening Facility Role:

Each hearing screening facility shall designate a person to be responsible for the newborn hearing screening program in that facility. This person will act as a single point of contact between the hearing screening facility and the Department's Newborn Hearing Screening Program. The hearing screening facility is responsible for ensuring that all screening personnel are appropriately trained to carry out the newborn hearing screening using appropriate technology. A licensed audiologist with appropriate training and experience shall advise the hospital about all aspects of the newborn hearing screening program, including screening and tracking. The Department can provide the names of audiologists with expertise in newborn hearing screening to hospitals that do not have access to audiological personnel.

1. Screening Technologies:

Although there are many technologies available to screen newborns, the Year 2000 Joint Committee on Infant Hearing of the American Academy of Pediatrics recommends two technologies: Auditory Brainstem Response and Otoacoustic Emissions. The Joint Committee on Infant Hearing recommends that screening programs achieve a refer rate to audiologists of less than four percent.

a. Auditory Brainstem Response (ABR)

ABR is an electrophysiological measure of the auditory system's response to sound. A click is presented to the ear via earphones, and electrodes record the response as the nerve impulse travels from the cochlea (inner ear) through the auditory nervous system to the brain. ABR requires a trained technician or audiologist to perform the evaluation and an audiologist to interpret the screening results. It is recommended that the screening level be no greater than 35 dBnHL.

Automated ABR (AABR) refers to equipment that is fully automated for interpretation and elicits a pass/refer response. Consequently, the AABR allows for a variety of trained hospital personnel to perform the screen such as nurses, technicians, support staff, or volunteers.

- ABR and AABR may miss a small percentage of hearing losses, such as a low frequency or high frequency hearing loss.
- The refer rates at discharge for ABR are typically less than four percent.

b. Otoacoustic Emissions (OAE)

Otoacoustic emissions measures the integrity of the outer hair cells in the cochlea. A sound is presented and a small microphone, which is placed in the baby's ear canal, measures the response that is made from the baby's ear. The audiologist analyzes the response to determine how well the inner ear is working.

The test can be fully automated for interpretation. If automated equipment is used, trained hospital personnel such as audiologists, nurses, or technicians can perform this procedure.

There are two types of OAE technologies: Transient Evoked Otoacoustic Emissions (TEOAE) and Distortion Product Otoacoustic Emissions (DPOAE). Automated OAE technology is now available for both TEOAE and DPOAE.

- OAE does not identify a disorder called auditory neuropathy. Although this is rare, auditory neuropathy has been diagnosed more frequently in the Neonatal Intensive Care Unit population.
- The refer rates for OAE typically range between five and ten percent.

2. Initial Screening

Early detection of hearing loss in the newborn period is important to minimize its adverse impact on the infant's development. The Infant Hearing, Education, Assessment, Reporting and Referral Act—IHEARR (Act 89 of 2001; 11 P.S. §§876-1 – 876-9) recognizes the importance of completing hearing screening within 30 days of birth. Hearing screening facilities should provide families with written information regarding the importance of newborn hearing screening prior to testing and assure that follow-up rescreening is completed. Both the primary care provider and the Department shall be notified of those not passing hearing screening so that appropriate follow-up and/or tracking is conducted. Families have the right to refuse the hearing screening. Such refusal shall be documented in writing and be made a part of the medical records of the newborn or infant and reported to the Department in a manner described by the Department.

The hearing screening facilities are encouraged to make every effort to identify a primary care provider for each newborn prior to discharge. If one is not designated, the hearing screening facility is encouraged to provide the newborn's family with recommended options for designating a primary care provider able to provide culturally competent care.

The hearing screening facility shall notify the primary care provider with the following information:

- The newborn's screening results and the procedures used for hearing screening, and an explanation of the results of screening for each ear;

- If the initial screening was not completed, whether refused or not; and
- Information on milestones of normal auditory, speech and language development in children.

The hearing screening facility shall notify the newborn's family in writing of the results of their newborn's initial screening using a standard notification form prepared explicitly for the purpose. The notification form indicates whether the newborn passed or did not pass the screening. For newborns not passing the initial screening, the form explains the importance of obtaining follow-up rescreening as soon as possible. Information is conveyed in non-technical language that is both easily understood and culturally competent.

Hearing screening facilities shall provide data to the Department concerning the number of newborns screened in a manner to be determined by the Department (see attachment).

3. Follow-up Rescreening

Newborns who did not pass the initial screen shall be referred by the hearing screening facility to have a rescreening test performed. Parents may refuse the follow-up rescreening. Such refusal shall be documented in writing and be made a part of the medical records of the newborn or infant and reported to the Department in a manner described by the Department. Hearing screening facilities are responsible for the following events:

- Providing written notification to parents that an infant needs follow-up rescreening;
- Scheduling the follow-up rescreening appointment with parents prior to discharge;
- Notifying the newborn's primary care provider, via discharge summary sheet, letter, or other specific means, that the newborn did not pass the initial screening and informing the physician of the need for follow-up.

4. Data Reporting to the Department

- a. The IHEARR Act mandates that hearing screening facilities provide the following data to the Department:
 - *Newborn Hearing Screening Program Screening Reporting Form*—to be submitted weekly for each newborn not passing follow-up rescreening within 30 days of birth (see attached).
 - *Monthly Report*—to be submitted by the 15th of every month by fax, mail or e-mail, covering births and screenings for the preceding month (see attached). Birthing facilities should update any incomplete data submitted on previous Monthly Reports with the submission of each new Monthly Report.
- b. Audiologists shall send data to the Department concerning the results of diagnostic testing of infants, who did not pass two independent screens within 30 days of birth, in a manner to be prescribed by the Department.

B. Primary Care Provider Role

The primary care provider directs and coordinates the evaluation and referral process within the child's medical home by:

- Referring the newborn for audiologic diagnostic testing and evaluation.
- Providing referral to appropriate agencies capable of providing intervention services and to appropriate medical specialists (i.e., otolaryngologist and geneticist) as may be indicated by the diagnostic hearing evaluation.