Virginia Early Hearing Detection & Intervention Program

PROTOCOLS FOR HOSPITAL NEWBORN HEARING SCREENING

2018

VDH VIRGINIA DEPARTMENT OF HEALTH

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Protocols for Hospital Newborn Hearing Screening
Virginia Early Hearing Detection and Intervention Program
Virginia Department of Health

This document provides guidance and recommended procedures for how best to implement hospital requirements that are specified in the *Code of Virginia*, Section 32.1-64 12VAC5-80[1] and *Regulations for the Administration of the Virginia Hearing Impairment Identification and Monitoring System*[2].

These hospital protocols were first developed in 1999 and revised in 2004 and 2011. The 2018 revision represents the best practice that the Virginia Early Hearing Detection and Intervention Program (VEHDIP) Advisory Committee recommends based on the policy statement *Year 2007 Position Statement: Principles and Guidelines for Early Hearing Detection and Intervention Programs, Joint Committee on Infant Hearing*[3] and other relevant sources such as the Centers for Disease Control and Prevention (CDC), and the National Center on Birth Defects Developmental Disabilities and The American Academy of Pediatrics. The VEHDIP Advisory Committee, which consists of representatives from relevant groups including, but not limited to, physicians, otolaryngologists, audiologists, speech pathologists, nurses, parents and educators of the deaf and the hard of hearing, unanimously agreed that Virginia diagnostic hospital protocol standards have followed, and should continue to follow, an exceptional model of evidence-based practice and should reflect an excellence beyond minimal standards of care. This document reflects that philosophy.

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 target for newborn hearing screen referral rates is *less than 4% for infants in a well-child nursery and no greater than 10% for infants in neonatal intensive care services.* The process also requires follow-up diagnostic services, counseling, intervention programs, and parental education. This comprehensive process should be administered by a multidisciplinary team, including but not limited to, audiologists, physicians, educators, speech/language pathologists, nurses, parents and educators of deaf and hard of hearing.

VEHDIP goals are to identify congenital hearing loss by 3 months of age following the Centers for Disease Control and Prevention *1-3-6 methodology*:

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[1] To access the *Code of Virginia* citation, go to: https://law.lis.virginia.gov/admincode/title12/agency5/chapter191/section260/

[2] To access the *Regulations for the Administration of the Virginia Hearing Impairment Identification and Monitoring System*, go to http://leg1.state.va.us/000/reg/TOC12005.HTM#C0080

[3] To access the *Executive Summary for JCIH Year 2007 Position Statement: Principles & Guidelines for Early Hearing Detection and Intervention Programs* go to http://www.asha.org/policy/PS2007-00281.htm

1 – All newborns will be screened for hearing loss **before 1 month** of age.

3 – All newborns who have failed their hearing screening will receive a diagnostic evaluation **before 3 months** of age.

6 – All infants diagnosed with hearing loss will be enrolled in early intervention services **before 6 months** of age.

I. Hospital Responsibilities

1. Hospitals should designate a minimum of two hospital employees who are primarily responsible for the newborn hearing screening program in that facility. These individuals should act as the primary points of contact between the facility and VEHDIP and should gain access to the Virginia Infant Screening and Infant Tracking System (VISITS) database.
2. Hospitals should develop methods for collecting and recording all required data that assure data quality. Additionally, hospitals should ensure strict quality control standards for adhering to reporting requirements, especially in those hospitals where staff who perform the screening and/or record risk indicators are different from staff who enter and record the data. Information regarding screening status/results and risk indicators should be a permanent part of the patient's medical record.
3. Hearing screening equipment should be calibrated annually and documentation maintained at the hospital.
4. Training and quality assurance measures are vital components for the efficiency and overall effectiveness of screening programs. Hospitals should ensure that all screening personnel are appropriately trained to carry out the newborn hearing screening using appropriate technology. Hospitals should ensure training records are maintained.
5. Hospitals are required to:
   - provide written information to the parent that includes the benefits of newborn hearing screening, the procedures used for screening, and recommendations for further testing.
   - inform the parent in writing prior to discharge of the results of their child's newborn hearing screening, including the type of test and recommendations for follow up (per Regulation).
   - communicate screening results and recommendations to include the type of test performed, to the Primary Care Provider (PCP) from whom the infant will receive care after discharge (per Regulation). It is recommended this information be provided within seven days but no later than fourteen days from discharge.
   - The importance of medical, audiological, and developmental follow-up, the importance of contacting their child's PCP with any developmental concern, and the benefits of the early identification of hearing loss should be communicated to all parents.
6. Once a year, VDH will notify hospitals to complete and return to VDH an annual reporting form.

II. In-Patient Screening

All infants must be given a hearing screening prior to hospital discharge (per Regulation). Only the hospital discharging the infant to home should report the infant's hearing screening results. Even if the infant was screened and passed at a previous facility, the discharge hospital should perform a hearing screening, as the infant's health status may have changed.

VDH recognizes that newborn hearing screenings can be performed by both medical and non-medical personnel. Recognizing the diversity in personnel, VDH recommends the use of automated instrumentation that provides a pass/fail outcome as the initial hearing screening device for hospitals. A variety of technologies are available to identify hearing loss in the first days of life. These techniques are physiological measures of the status of the peripheral auditory system that are highly correlated with hearing status. The two methodologies generally accepted as effective for universal newborn screening are:

1) **Auditory brainstem response (ABR) –** reflects the activity of the cochlea, auditory nerve, and auditory brainstem pathways. **For use in NICU and/or well baby nursery.**

2) **Otoacoustic emissions (OAE) –** reflects cochlear outer hair cell function. **For use in well baby nursery.**

Not all infants will pass the newborn hearing screening; no more than two in-patient screenings should be attempted before discharge. Only the final in-patient screening should be reported to the VEHDIP. Excessive re-screening can cause an increase in false negatives where infants with hearing loss pass. Both ears should be tested during all screenings.

Infants who fail hearing screening in one or both ears using ABR testing should not be re-screened using OAE testing. OAE is not sufficient to rule out Auditory Neuropathy. Due to the increased incidence of auditory neuropathy in the neonatal intensive care unit (NICU) patient population, newborns who receive this level of care should have both ears screened using ABR testing prior to discharge or transfer to a lower level of newborn services.

Infants receiving antibiotic therapy should have a hearing screening performed prior to discharge, and it is acceptable to screen the infant while receiving antibiotics. Hospital discharge should not be delayed pending hearing screening off of antibiotic therapy. Likewise, antibiotic therapy should not be a reason for a "missed" screening.

A licensed audiologist with appropriate training and experience should advise the hospital about all aspects of the newborn screening program, including screening, tracking, follow-up, and referral. For hospitals that do not have access to audiological personnel, the VEHDIP can provide the names of audiologists with experience in newborn hearing screening. The list of approved audiologists can be obtained from the VEHDIP website: http://www.vdh.virginia.gov/early-hearing-detection-and-intervention/ and/or EHDIPals.org.

An infant who **fails** the initial hearing screen should be referred for audiological follow-up at a hearing screening follow-up site or an audiologist. If referring to an audiologist, a list of diagnostic audiology providers can be accessed and printed from ehdipals.org. Prior to

discharge, the hospital should give written information to the parent as to where this hearing test can be obtained within one month of discharge.

Infants with incomplete screening results (due to uncooperative infant, atresia, microtia, debris in ear canal, or excess myogenic activity) should be entered as a **fail in VISITS**.

For infants who are missed (i.e., not screened), it is the responsibility of the hospital to inform the parent, prior to discharge, of the need for the hearing screening and to provide a mechanism by which that screening can occur at no additional cost to the family (per Regulation). This screening should occur within one month of discharge.
A VDH brochure was developed to inform parents about newborn hearing screening and medical, audiological, and developmental follow-up. It is recommended that hospitals give this brochure to the parent and review the information with them. The brochure can be printed from the VEHDIP website: newbornhearingtestva.com.

III. Out-Patient Screening

Hospitals that bring infants back for the initial screening (if **missed**) or for a re-screening (if **failed**) must report the results to VDH via the VISITS database (per Regulation) within two weeks of the out-patient screening date. For re-screening:

- testing of both ears is necessary, even if only one ear failed the initial screening.
- An infant should receive only one out-patient rescreening.
- An infant who **fails** the out-patient rescreening should be referred to an audiologist for a complete diagnostic evaluation.
- Infants who fail an OAE for their initial screening should be re-screened with an OAE or ABR
- Infants who fail an ABR for their initial screening should <u>not</u> be re-screened with an OAE, they should be rescreened with an ABR.
- Obtain and record specific results for each ear. Screening methodologies are the same as described under Inpatient Screening.

IV. Testing Parameters

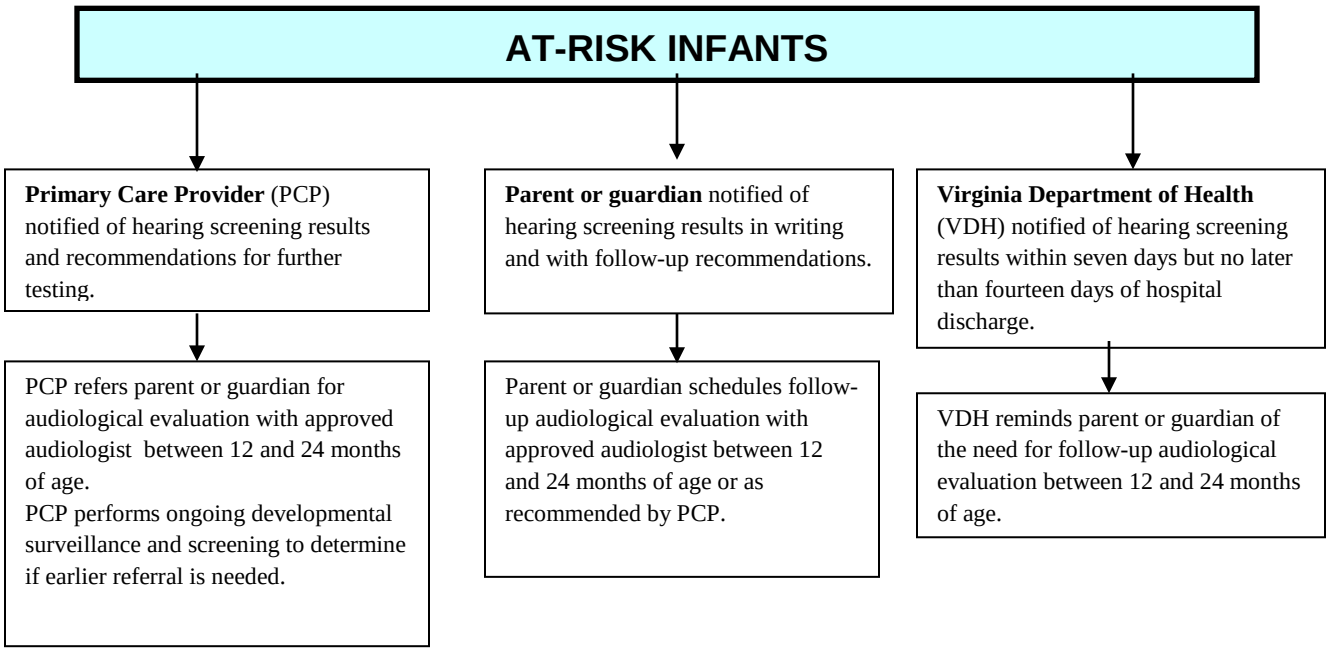
When non-automated screening devices are utilized, please refer to the testing parameters in the audiology protocols.

V. Risk Indicators

The *Code of Virginia* requires that hospitals determine the risk status for hearing loss on every newborn regardless of the results of the hearing screening. Risk-status data assist with monitoring for progressive, delayed-onset, and/or conductive hearing loss. VEHDIP uses the risk indicators identified by the *Year 2007 Position Statement: Principles and Guidelines for Early Hearing Detection and Intervention Programs, Joint Committee on Infant Hearing* and recommendations by the CDC (See Table I).

Some indicators may not be determined during the course of the hospital stay. Therefore, infants and young children who have late-onset or late-identified risk indicators should be monitored for speech, language, and hearing development milestones by the PCP during well-child visits.

The following diagram summarizes processes that should be followed to ensure infants and children who are at risk for hearing loss receive appropriate audiological follow-up:



VDH recommends that a medical professional obtain the risk information from the infant's and mother's charts; family history of permanent childhood hearing loss should be identified by a direct question to the parent(s). The parent should not simply be given the whole list of indicators to check off, as they may not know about or understand the meaning of all indicators. The parent should be advised of the risk indicators.

Some indicators are not present and/or would not be identified in the newborn period. These include parental concern and some neurodegenerative disorders or sensory motor neuropathies. These are included in the risk indicator list because parents and physicians should be informed about all indicators that can contribute to development of hearing loss beyond the newborn period.

Infants who pass the screen but have an identified risk indicator for progressive or delayed-onset hearing loss (**pass with risk**) should have a complete diagnostic evaluation between 12 and 24 months of age.

VI. Reporting

Reporting should be done through the VISITS database as managed by VDH. The last in-patient screening prior to discharge, should be reported within seven days but no later than fourteen days.

All outpatient screenings completed by the hospital should be reported within seven days of screening but no later than fourteen days. Transfers to another facility are recommended to be entered within seven days. Hospitals should report the screening or re-screening that is performed at their facility only. Do not enter results from tests done by other facilities.

If a VISITS user is no longer employed by the hospital, please notify the VEHDIP immediately. For the reporting system to function optimally, use of Internet Explorer 10 or 11 or Google Chrome is required.

Reporting accuracy is crucial to families and to the program. A risk indicator identified incorrectly will cause unnecessary worry for parents as well as unnecessary time and expense spent in obtaining follow-up testing.

VII. Contacts

For more information or further assistance, families are encouraged to contact:

Virginia Department of Health
Office of Family Health Services
Virginia Early Hearing Detection and Intervention Program
109 Governor Street, 9th Floor
Richmond, Virginia 23219
Phone: Toll Free 1-866-493-1090 TTY 7-1-1
Fax: 804-864-7771
Website: newbornhearingtestva.com

If a VISITS user is locked out of VISITS, please call the help desk at (804) 864-7200 option 2 between 8:00 am – 5:00 pm or use the forgot password link at the login page to reset your password.

For technical and reporting issues, such as inability to locate a child, please contact the VEHDIP Staff.

Table I. Risk Indicators for Progressive or Delayed-Onset Hearing Loss
(For Use with Neonates and Infants Through 2 Years of Age)

Family history of permanent childhood hearing loss		
• Mother of child	• Grandmother of child	• 1st cousin of child
• Father of child	• Grandfather of child	• More than one relative of the same parent
• Sister of child	• Aunt of child	
• Brother of child	• Uncle of child	
Stigmata or other findings associated with a syndrome known to include a sensorineural or conductive hearing loss or Eustachian tube dysfunction		
• Branchio-oto-renal (BOR)	• Stickler	• Trisomy 21 – Down syndrome
• Noonan	• Williams	• Trisomy 18 – Edwards syndrome
• CHARGE association	• Zellweger	• Trisomy 13 – Patau syndrome
• Pierre Robin	• Goldenhar (oculo-auriculo-vertebral or OAV)	• Trisomy 9 – Mosaic syndrome
• Rubenstein-Taybi	• Trisomy 8 – Warkany syndrome	
Postnatal infections associated with sensorineural hearing loss		
• Confirmed bacterial meningitis	• Confirmed viral meningitis	
In utero infections		
• Cytomegalovirus	• Rubella	• Toxoplasmosis
• Herpes	• Syphilis	• Zika
Neonatal indicators		
• Intensive care greater than (>) 5 days	• Exposure to ototoxic medications: at risk aminoglycoside exposure	• Hyperbilirubinemia requiring exchange transfusion
• Extracorporeal membrane oxygenation (ECMO)	• Mechanical ventilation	
Syndromes associated with progressive hearing loss		
• Neurofibromatosis	• Jervell & Lange-Nielson	• Usher
• Osteopetrosis	• Waardenburg	
• Alport	• Pendred	
Neurodegenerative disorders, such as		
• Hunter syndrome	• Charcot-Marie-Tooth syndrome	• Friedreich's ataxia
Head trauma requiring hospitalization		
• Basal skull/temporal bone fracture	Other – specify if chosen	
Parental or caregiver concern regarding hearing, speech, language, and or developmental delay		
Craniofacial Anomalies		
• Pinna	• Atresia	• Choanal atresia
• Cleft palate	• Microtia	• Temporal bone anomalies
Chemotherapy		

Based on *Year 2007 Position Statement: Principles and Guidelines for Early Hearing Detection and Intervention Programs, Joint Committee on Infant Hearing.*

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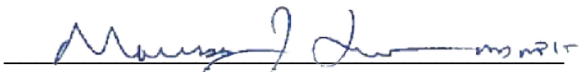
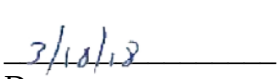
Approved by:



Marissa Levine, MD, MPH
State Health Commissioner



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