DEPARTMENT
OF HEALTH

EARLY HEARING DETECTION AND INTERVENTION

GUIDELINES FOR PRIMARY CARE PROVIDERS

Original Publication Date: January 2014
Current Revision Approved: May 2025

Introduction

This document is intended to promote a standardized approach to hearing screening and diagnosis for infants and young children who receive a refer/did not pass result on their newborn hearing screen. The following recommendations will help guide primary care and medical home providers who see infants and young children in the following situations:

- During the evaluation of an infant after a refer/did not pass result on the newborn hearing screen.
- After a definitive identification of permanent or transient hearing loss.
- After diagnosis of congenital Cytomegalovirus (cCMV).
- Throughout childhood to monitor for late onset, or progressive hearing loss.

Respect for identities statement

The Minnesota Department of Health (MDH) recognizes that everyone has their own unique identity, and we respect the terms people want to use to identify themselves. People may self-identify as deaf, deafblind, hard of hearing, a person with hearing loss, Deaf Plus, a person with a hearing difference, Deaf Disabled, etc.

For the purpose of this guideline, MDH uses “deaf, deafblind, and hard of hearing (DHH/DB),” in an all-inclusive manner. The term “hearing loss” may be used when talking about a diagnosis.

Background

Without Early Hearing Detection and Intervention (EHDI), infants who are deaf or hard of hearing are immediately at risk of experiencing delays in a variety of developmental areas, including vocabulary, articulation, intelligibility, social adjustments, and behavior (Joint Committee on Infant Hearing [JCIH], 2007; Yoshinaga-Itano et al., 1998).

The goal of EHDI is to promote effective communication and access to language for all children through early identification of hearing loss and the initiation of appropriate intervention services as soon as possible. Newborn hearing screening and subsequent follow-up plays a critical role in the EHDI process by identifying newborns who are at risk for hearing loss and connecting them with diagnostic, support, and intervention services.

Minnesota Statute 144.966[1] requires a hearing screen to be performed on all newborns prior to discharge. The newborn period is a critical time for development and growth.

State and national standards specify that screening and all follow-up should be completed according to the 1-3-6 Hearing Screen Model.

- SCREEN before **1 MONTH** of age
- DIAGNOSE before **3 MONTHS** of age
- INTERVENTION before **6 MONTHS** of age

Early identification and intervention can substantially reduce or eliminate developmental delays that too often stem from a late detection of hearing levels outside the typical range. As indicated in the Joint Committee on Infant Hearing (JCIH) 2019 Position Statement, studies have shown that if hearing levels outside the typical range are identified before 3 months of age and intervention is initiated by 6 months of age, infants and children can be expected to achieve developmental milestones and reach their full potential.[2] The sooner hearing loss is identified, the sooner children can receive help and begin developing critical language skills.

Many different healthcare and educational professionals and organizations play a role in the hearing screening and follow-up process. Minnesota hospitals and out-of-hospital birth providers are responsible for screening the hearing of all infants and for reporting results to the family, primary care provider (PCP), and MDH. Ideally, infants that do not pass newborn hearing screening will be scheduled for audiology follow-up prior to leaving the hospital or before leaving an out-of-hospital birth provider's care.

The PCP is essential for overseeing the EHDI process and ensuring that the child receives necessary audiological follow-up. Without the active assistance of the PCP, the infant may become "lost to follow-up." At the first well-child visit, PCPs are expected to review newborn hearing screening results for all infants in their care and ensure that an outpatient follow-up visit with audiology is scheduled if the final screen is a refer/did not pass result. The American Academy of Pediatrics has many resources for PCP's guiding families through screening, diagnosis, and intervention.[3]

Audiologists provide timely audiological follow-up and definitive testing. This is an important step to distinguish between children with false positive screening results and children with hearing loss.

Otolaryngologists also play an important role in supporting timely and complete audiological assessment. Otolaryngologists often see newborns in conjunction with the infant's initial audiology outpatient rescreen, and they play an important role in emphasizing the importance of timely follow-up and definitive determination of hearing levels.

Child and Family Centered Communication

In family centered care, families are recognized as the experts in determining what is best for their children and families. No one understands their child's needs more than the parents do. Family centered care is a crucial component of best clinical practice (American Academy of Pediatrics, 2022) and is beneficial to children and their families. Clinicians are encouraged to use a teach-back method[4] to ensure parental understanding of test results and recommendations. An awareness of cultural differences is important (world heritage and religious cultures as well as Deaf culture) when communicating a diagnosis of hearing loss to families. Sharing results and recommendations in an unbiased manner that recognizes each family's unique situation and background helps support parents to make the best choices for their child and family.

Professionals should deliver information in a positive manner with sensitivity to the emotional needs of the parent.

Determining Diagnosis After a Refer/Did Not Pass Hearing Screen Result

PCPs should review hearing screening results with the infant's parent/caregiver at the first clinic visit. If results have not arrived by the first visit, contact the birth hospital, neonatal intensive care unit (NICU), or midwife that cared for the newborn and request that the results be sent as soon as possible. MDH Newborn Screening Program can also be contacted for birth hearing screen results by calling 651-201-5467. For infants that have a missed hearing screen or refer/did not pass result, follow the steps below:

- Confirm that the infant has a hearing rescreen appointment within the next 2 weeks or assist the famlily with scheduling this appointment.
- For practices that perform hearing rescreening for newborns in their office, use the recommended outpatient rescreening protocol in the Guidelines for the Organization and Administration of Universal Newborn Hearing Screening Programs in the Well-Baby Nursery.[5] All rescreening must be completed before 1 month of age. Report results back to MDH's EHDI Program within 48 hours using the MDH Hearing Screening Outpatient Follow-up Report Form.[6]
- A NICU graduate who did not pass newborn hearing screening should ideally receive a full audiological assessment prior to discharge. If the full assessment did not occur before discharge, then the infant should be referred directly to an audiologist for outpatient assessment with AABR or diagnostic ABR technology. Routine outpatient rescreening with otoacoustic emissions (OAE) is not considered acceptable best practice for NICU infants.

  See the Guidelines for the Organizational and Administration of Universal Newborn Hearing Screening Programs in the Special Care Nursery and Neonatal Intensive Care Unit.[7]
- If the infant has had an otolaryngology evaluation but did not have an audiological evaluation, the infant should be scheduled with audiology as soon as possible.
- If the infant does not pass the outpatient hearing rescreen, ensure that a diagnostic audiology evaluation is scheduled as soon as possible, ideally no later than 3 months of age. Refer the infant to an audiologist who has experience with infants. Complete audiological diagnosis may take more than one visit. If the initial visit takes place between 4 to 6 weeks of age it is more likely that any subsequent audiology assessment can still be completed on time and without sedation.
  - See a directory of audiologists on EHDI PALS (www.ehdi-pals.org).[8]
- If families do not follow through on the recommended diagnostic testing, develop an active process for helping families reschedule missed or cancelled appointments.
- Definitive audiological diagnosis can and should be completed even when middle ear dysfunction is present. This is important to establish whether underlying sensorineural hearing loss is present in addition to any middle ear issues, which could further impact ongoing medical and audiological management.

After Diagnosis of Permanent Hearing Loss

As with any new, life-changing diagnosis, timely support from care professionals is critical. The infant's PCP is responsible for monitoring the general health, development, and well-being of the infant. The PCP ensures that the child with hearing loss is receiving audiological management, appropriate educational services (i.e. early intervention, speech/ language services, visual language instruction) and has been referred to otolaryngology if indicated.

The PCP, along with other essential members of the child's care team, also initiate referrals for genetics and ophthalmology evaluations in order to determine the cause of the hearing loss and identify any additional related conditions.

Because 30% to 40% of children with confirmed hearing loss will have developmental delays or other disabilities (Joint Committee on Infant Hearing, 2007), the PCP should closely monitor developmental milestones and initiate referrals related to suspected disabilities such as neurology, genetics, or developmental pediatrics.

Middle-ear status should be monitored because the presence of middle-ear effusion can further compromise hearing. Referrals to otolaryngology for early management of middle ear effusion is recommended.

The following elements outline the typical components of a complete work-up and plan of care among the medical care team, which may include the PCP, audiologist, otolaryngologist, etc. The PCP should ensure that all referrals and testing recommended by members of the medical care team have been scheduled and/or completed. The PCP should continue to follow-up with the family at subsequent office visits regarding these recommendations until all necessary elements of the work-up have been completed. Clinical work-up for permanent childhood hearing loss is discussed in the literature (Hazen & Cushing, 2021; Jerry & Oghalai, 2011; Kenna, 2022; Khela & Kenna, 2020; Kimberling et al., 2010; Li et al., 2022; Liming et al., 2016; Prosser et al., 2015; Rawlinson et al., 2017; Raymond et al., 2019; Robson et al., 2023; Shave et al., 2022; Shearer, 2024; Shekdar & Bilaniuk, 2019; Sindhar & Lieu, 2021).

The following outlines components of a complete work-up and plan of care:

1. History

☑ Prenatal history

  - Significant pregnancy complications
  - Positive fluorescent treponemal antibody absorption (FTA-ABS) test or other positive syphilis confirmation
  - Maternal drug use
  - Multiple miscarriages

☑ Perinatal history – Ototoxic medication exposure, TORCH infections (Toxoplasmosis, Other infections, Rubella, Cytomegalovirus, or Herpes simplex), prematurity, NICU stay, ECMO, high frequency (HF) ventilation, or risk factors for progressive hearing loss

☑ Family history of childhood hearing loss, syndromes, or other disorders associated with hearing loss

☑ Developmental history

☑ Review of prior audiologic testing

2. Physical exam

☑ Craniofacial abnormalities such as microcephaly, mandibular, or midface anomalies

☑ Shape and location of pinna, presence of pre-auricular or pits or sinuses, external ear canal stenosis, presence of middle ear fluid

☑ Growth trajectory

3. Review of diagnostic audiologic test battery

☑ ABR with air-and-bone-conducted clicks and frequency specific tone burst stimuli

☑ OAE (otoacoustic emissions)

☑ Age-appropriate immittance measures

☑ Behavioral testing when appropriate

4. Developmental and social emotional assessment

☑ Delays in speech and language, general development, social/emotional development

☑ Review of child's motor milestones (may point toward vestibilar dysfunction related to hearing loss

5. Laboratory studies

☑ Electrocardiogram (ECG) to check for prolonged Q-T syndrome or SA node dysfunctoin (refer to pediatric cardiology if identified), particularly in children with bilateral profound hearing loss

☑ Urinalysis to check kidney function (refer to pediatric nephrology as needed), based on family history

☑ Results of Cytomegalovirus (CMV) PCR testing through urine or saliva performed prior to 3 weeks of age, or universal congenital CMV (cCMV) screening

6. Imaging

☑ No universally accepted algorithm but consider:

- MRI – Can identify presence of cochlear nerve, some anatomic abnormalities (e.g., enlarged vestibular aqueduct and some cochleovestibular anomalies), and retrocochlear abnormalities
- CT – Can detect cochleovestibular anomalies and middle ear anomalies, but cannot identify the presence of cochlear nerves or retrocochlear abnormalities

7. Referrals

☑ Pediatric Audiology – Children who do not pass hearing screening evaluations and children with confirmed hearing loss need a referral to an audiologist to evaluate the child for candidacy for amplification and other sensory devices and assistive technology. Audiologists provide timely fitting and monitoring of amplification devices and also provide ongoing evaluation and management. In addition, the audiologist will work in collaboration with other professionals, such as otolaryngologists, educational audiologists, Teachers of the Deaf/Hard of Hearing, speech-language pathologists, and parent support organizations, to provide comprehensive parent education about communication opportunities.

- For a child with unilateral hearing outside the typical range: Unilateral hearing loss is a significant risk factor for emerging hearing loss in the previously normal ear. Audiological monitoring is recommended every 3 months during the first year of life, and every 6 to 12 months until age 3 or as clinically indicated due to possible progression to bilateral hearing loss. Amplification may have a role in facilitating language development. Use of amplification and role of intervention should be explored with the audiologist and otolaryngologist. It is important to note that almost half of children with unilateral heraing loss are at risk for declining hearing in one or both ears, usually within the first few years after initial diagnosis (Fitzpatrick et al, 2023).
- For a child with bilateral hearing outside the typical range: For families pursuing listening and spoken language and use of residual hearing, early and consistent intervention (typically including hearing aids) is the key to achieving spoken language development. Children who gain limited benefit from amplification should be advised about additional opportunities such as cochlear implantation and visual language instruction.

☑ Otolaryngology – The PCP should ensure that children have an otolaryngology evaluation prior to or within 30 days after a hearing loss diagnosis to determine etiology and identify appropriate medical and surgical management.

In addition, the otolaryngologist should participate in the assessment of options for amplification, assistive listening devices, and cochlear implantation. If amplification is chosen, the otolaryngologist should provide medical clearance for the fitting of amplification. See Guidelines for Otolaryngologists.[9]

☑ Genetics – A genetics referral is recommended by the JCIH, AAP, and American College of Medical Genetics (ACMG) to determine the cause of hearing loss. Genetic testing can inform prognosis as well as medical management of children with hearing loss.

☑ Ophthalmology – The PCP should ensure that children have an ophthalmologic evaluation within 6 months of hearing loss diagnosis to document visual acuity and rule out concomitant or late-onset vision disorders such as Usher syndrome. This information may influence parents' decision-making regarding intervention options for their child. Connect families of children with combined vision and hearing loss to the Minnesota DeafBlind Project[10] so that families can access specialized assistance for dual sensory loss.

☑ Help Me Grow/Early intervention - Young children 0-5 years of age are referred to Minnesota's Part C Infant and Toddler Intervention Services/Preschool Special Education Services for an eligibility evaluation and possible services through Minnesota's Help Me Grow intake system. Referrals can be made online at www.helpmegrowmn.org[11] or using a toll-free phone number 1-866-693-4769.

8. Early intervention

☑ The Federal Individuals with Disabilities Education Act (IDEA) Part C Referral Procedures[12] require all medical professionals to refer every infant and toddler (birth through 2 years of age) who has a condition that has a high probability of resulting in developmental delay or disability to their state's Part C Infant and Toddler Intervention as soon as possible, but no later than 7 days after a concern or delay is noted.

- All young children with hearing loss should be referred through Help Me Grow Minnesota[11] or through a local referral to the child's school district or cooperative as soon as the hearing loss is identified.

☑ In Minnesota, local school districts and cooperatives provide free early intervention services to eligible infants, toddlers, and their families. Hearing loss is clarified in the Hearing Loss as an Established Condition: Eligibility under Developmental Delay in Part C[13] as any type/degree of permanent, sensorineural and/or neural, permanent conductive, and presumed non-premanent but persistent conductive loss in one or both ears as confirmed or documented by a liscensined audiologist. See mentioned document for more details. These services are individualized based the family's outcomes for their child and are required to be in the family's "natural environment." Specific services and supports are determined by the Individualized Family Service Plan (IFSP) and can occur in the family's home space as well as anywhere the child and family spend time. Services include family coaching and supports, can include consultation and information resources, and must include service coordination. Early intervention services through the districts and cooperatives are provided free of charge regardless of a family's income or immigration status.

☑ Children who are DHH/DB have diverse and unique needs requiring an individualized approach to services/early intervention to help each child reach their full potential. Access to highly qualified service providers who have specialized knowledge and skills in early childhood development, supporting families, and the communication opportunities chosen by each family is critical. To provide the highest quality of intervention, more than one provider may be required. Early intervention team members through the schools may include Teachers of the Deaf/Hard of Hearing, interveners, speech-language pathologists, and educational audiologists. Families may also choose to work with services and providers in addition to or instead of the school system, with cost for those services dependent on the provider and health coverage. The PCP should provide ongoing support and guidance to the family and the child's early intervention team (Rose, et al., 2014).

☑ For a more comprehensive list of educational resources, see Educational Resources, Schools and Programs.[14]

☑ **Spoken language and visual language services**

- Speech-language pathologists provide both evaluation and intervention services to young children (including language, aural habilitation, speech, and cognitive-communication development beginning in infancy). These services are available through local school districts and cooperatives and may be available through private clinics or other sources.
    - Referral to a speech-language pathologist in addition to school-based early intervention should be considered for all children with hearing loss, particularly those children whose families have chosen for them to learn to communicate through listening and spoken language.
- For families interested in learning visual communication, trained Deaf adult mentors provide instruction in American Sign Language (ASL), early visual communication methods, and Deaf Culture. See Deaf Mentor Family Program at Lutheran Social Service.[15] Many Teachers of the Deaf/Hard of Hearing through the local school districts and cooperatives also have ASL training and proficiency.
- Families have choices about language and communication for their young children. No one communication opportunity is the "right" or "best" way for all children with hearing differences or for their families as they support their child's language learning. For unbiased information on this topic, PCPs should encourage families to explore these options in Early Hearing Detection & Intervention - Exploring Communication Opportunities.[16]

☑ **Connect families to additional supports**

- Encourage active involvement in parent-to-parent support, advocacy and information networks such as Minnesota Hands & Voices.[17] See Minnesota Hands & Voices Secure online referral.[18]
- Children who are DHH/DB often benefit from a positive relationship with a trusted adult with similar lived experiences. Role Models can help children practice important age-appropriate self-advocacy skills and help develop their sense of identity. See MN Hands & Voices Deaf and Hard of Hearing Role Model Program.[19]

☑ Review the Guidelines for Referral to Early Intervention, Medical Specialties and Connection to parent-to-Parent and Family Support[20] for details on how to make referrals.

After Diagnosis of Transient Hearing Loss

Some infants with an initial refer/did not pass result may eventually be diagnosed with a transient hearing loss due to middle ear disfunction, sometimes as a result of otitis media with effusion. However, MDH data has shown between 12-15% of children with a diagnosis of transient hearing loss are later reported to have some type of permanent heraing loss component detected in addition to middle ear dysfunction. Therefore, it is imperative that the PCP continue to monitor the situation to ensure that the appropriate orders and/or referrals are in place for any recommended audiology follow-up. The PCP should continue to remind the family during subsequent clinic encounters until the recommended follow-up hearing assessment has been completed.

The Academy of Otolaryngology's 2016 Clinical Practice Guideline: Otitis Media with Effusion (Update)[21] recommends conducting additional hearing testing when otitis media with effusion (OME) lasts for more than 3 months or for OME of any duration for an at-risk child. A child may be considered at-risk for speech, language or learning problems from middle ear effusion because of baseline sensory, physical, cognitive, or behavioral factors. MDH Newborn Hearing Screening Follow-up and cCMV Hearing Follow-up Flowchart[22] protocol recommends rechecking hearing when ears are clear or by 6 months of age to assess final status. For infants with persistent conductive loss lasting more than 6 months, consider referral to early intervention and to audiology for possible amplification (temporary or long term) to ensure adequate auditory access.

After Diagnosis of Congenital Cytomegalovirus

In 2023, Minnesota became the first state in the nation to screen every newborn for cCMV. A standardized approach to hearing and balance related follow-up care for these children was developed to ensure consistency in care and help providers minimize possible loss to follow-up or parent confusion about ongoing care. For infants with a positive cCMV newborn screening, next steps include confirmatory urine testing. After confirmation of the cCMV diagnosis, MDH recommends a complete blood count with platelets, liver function tests, a cranial ultrasound, and referrals to audiology and ophthalmology. MDH recommendations are summarized on the web page *Congenital Cytomegalovirus Follow-up*.[23] A recommended clinical protocol for audiology follow-up care is detailed in the EHDI Guidelines for Audiologists – Section 4: Guidelines for Infants with Congenital Cytomegalovirus.[24]

Monitoring for Emerging Hearing Loss

The incidence of childhood hearing loss doubles by the time children are of school age. Therefore, all infants and children should be monitored for late-onset or progressive hearing loss per accepted national recommendations and as recommended by the MDH Guidelines for Hearing Screening After the Newborn Period to Kindergarten Age.[25] PCPs should obtain, document, and discuss all screening results and risk factors for early childhood hearing loss.[26] Any parental concerns about speech and language delays or risk factors associated with hearing loss should have a prompt timely referral for an audiologic evaluation, regardless of the child's age. Hearing testing can be performed at any age. School age children who have been identified with hearing loss may be referred for possible educational support services through connection with their local school district.

For additional information on eligibility for school aged children, see Minn. Rule 3525.1331.[27]

Selected Links

[1] Minnesota Statute 144.966 www.revisor.mn.gov/statutes/?id=144.966

[2] Joint Committee on Infant Hearing (JCIH) Year 2019 Position Statement https://doi.org/10.15142/fptk-b748

[3] American Academy of Pediatrics https://www.aap.org/en/patient-care/early-hearing-detection-and-intervention/early-hearing-and-detection-resources/?srsltid=AfmBOorTUuLgXmgC5L668i8Id-foKeTOPKcIv5hvMLhatzKtimAu3lxK

[4] Teach Back www.health.mn.gov/docs/people/childrenyouth/improveehdi/teachback.pdf

[5] Guidelines for the Organization and Administration of Universal Newborn Hearing Screening Programs in the Well-Baby Nursery www.health.state.mn.us/docs/people/childrenyouth/improveehdi/guidewbn.pdf

[6] Minnesota Department of Health Hearing Screening Outpatient Follow-up Report Form www.health.state.mn.us/people/newbornscreening/materials/clinichearingform.pdf

[7] Guidelines for the Organization and Administration of Universal Newborn Hearing Screening Programs in the Special Care Nursery and Neonatal Intensive Care Unit (NICU) www.health.state.mn.us/docs/people/childrenyouth/improveehdi/guidenicu.pdf

[8] Early Hearing Detection & Intervention - Pediatric Audiology Links to Services (EHDI-PALS) www.ehdi-pals.org

[9] Guidelines for Otolaryngologists www.health.state.mn.us/docs/people/childrenyouth/improveehdi/guideent.pdf

[10] Minnesota DeafBlind Project www.dbproject.mn.org/

[11] Minnesota Help Me Grow intake system www.helpmegrowmn.org

[12] The Federal Individuals with Disabilities Education Act (IDEA) Part C Guidelines https://www.ecfr.gov/current/title-34/subtitle-B/chapter-III/part-303/subpart-D/subject-group-ECFR1ed4257564f6445/section-303.303

[13] Hearing Loss as an Established Condition: Eligibility under Developmental Delay in Part C https://helpmegrowmn.org/cs/groups/communications/documents/document/ag1n/mdaw/~edisp/hmg000753.pdf

[14] Schools and programs serving deaf and hard of hearing children https://mn.gov/deaf-hard-of-hearing/hearing-loss/children/education/

[15] Deaf Mentor Family Services www.lssmn.org/services/families/deaf-hard-of-hearing/mentor-services

[16] Minnesota Low Incidence Projects: Early Hearing Detection & Intervention, Exploring Communication Opportunities https://mnlowincidenceprojects.org/Projects/ehdi/ehdiCommunicationOpp.html

[17] Minnesota Hands and Voices www.lssmn.org/mnhandsandvoices/

[18] Minnesota Hands and Voices Secure Online Referral www.lssmn.org/mnhandsandvoices/refer-family

[19] MN Hands & Voices Deaf and Hard of Hearing Guide Program www.lssmn.org/mnhandsandvoices/about-us/deaf-and-hard-hearing-guide-program

[20] EHDI Guidelines for Audiologists – Section 2: Guidelines for Referral to Early Intervention, Medical Specialties and Connection to Parent-to-Parent and Family Support www.health.state.mn.us/docs/people/childrenyouth/improveehdi/guidereferei.pdf

[21] Clinical Practice Guideline: Otitis Media with Effusion (Update) https://aao-hnsfjournals.onlinelibrary.wiley.com/doi/10.1177/0194599815623467

[22] Newborn Hearing Screening Follow-up and cCMV Hearing Follow-up Flowchart www.health.state.mn.us/docs/people/childrenyouth/improveehdi/hearscreenfuprocess.pdf

[23] Minnesota Department of Health CMV Screening Follow-up https://www.health.state.mn.us/people/newbornscreening/program/cmv/followup.html

[24] EHDI Guidelines for Audiologists – Section 4: Audiology Guidelines for Infants with Congenital Cytomegalovirus www.health.state.mn.us/docs/people/childrenyouth/improveehdi/audiogdlnccmv.pdf

[25] Guidelines for Hearing Screening After the Newborn Period to Kindergarten Age www.health.state.mn.us/docs/people/childrenyouth/improveehdi/guideafternb.pdf

[26] Risk Factors for Early Childhood Hearing Loss www.health.state.mn.us/docs/improveehdi/riskindicators.pdf

[27] Minn. Rule 3525.1331. https://www.revisor.mn.gov/rules/3525.1331/

References

American Academy of Pediatrics EHDI Experts & Staff (2022). Chapter 8, Medical Home & EHDI: The importance of appropriate & timely screening, diagnosis, management, & follow-up. In L. Schmeltz (Ed.), T*he NCHAM eBook: A resource guide for Early Hearing Detection & Intervention (EHDI). National Center for Hearing Assessment and Management (NCHAM)*. https://www.infanthearing.org/ehdi-ebook/

Fitzpatrick, E. M., Nassrallah, F., Gaboury, I., Whittingham, J., Vos, B., Coyle, D., Durieux-Smith, A., Pigeon, M., & Olds, J. (2023). Trajectory of hearing loss in children with unilateral hearing loss. Frontiers in Pediatrics, 11, 1149477.

Hazen, M., & Cushing, S. L. (2021). Vestibular Evaluation and Management of Children with Sensorineural Hearing Loss. O*tolaryngologic Clinics of North America*, 54(6), 1241–1251 https://doi.org/10.1016/j.otc.2021.08.001

Hutchinson AK, Morse CL, Hercinovic A, Cruz OA, Sprunger DT, Repka MX, Lambert SR, Wallace DK; American Academy of Ophthalmology Preferred Practice Pattern Pediatric Ophthalmology/Strabismus Panel. Pediatric Eye Evaluations Preferred Practice Pattern. *Ophthalmology*. 2023 Mar;130(3):P222-P270. doi: 10.1016/j.ophtha.2022.10.030. Epub 2022 Dec 19. PMID: 36543602; PMCID: PMC10680450

Jerry, J., & Oghalai, J. S. (2011). Towards an etiologic diagnosis: assessing the patient with hearing loss. *Advances in Oto-rhino-laryngology*, 70, 28–36. https://doi.org/10.1159/000322468

Joint Committee on Infant Hearing (2007). Year 2007 position statement: Principles and guidelines for early hearing detection and intervention programs. *Pediatrics*, 120(4), 898–921. https://doi.org/10.1542/peds.2007-2333

Joint Committee on Infant Hearing (2019). Year 2019 Position Statement: Principles and Guidelines for Early Hearing Detection and Intervention Programs. Journal of Early Hearing Detection and Intervention, 4(2), 1-44. DOI: https://doi.org/10.15142/fptk-b748

Kenna M. A. (2022). Genetic testing for pediatric hearing loss: no time to waste. *Human Genetics*, 141(3-4), 315–317. https://doi.org/10.1007/s00439-021-02333-9

Khela, H., & Kenna, M. A. (2020). Genetics of pediatric hearing loss: A functional perspective. *Laryngoscope Investigative Otolaryngology*, 5(3), 511–519. https://doi.org/10.1002/lio2.390

Kimberling, W. J., Hildebrand, M. S., Shearer, A. E., Jensen, M. L., Halder, J. A., Trzupek, K., Cohn, E. S., Weleber, R. G., Stone, E. M., & Smith, R. J. (2010). Frequency of Usher syndrome in two pediatric populations: Implications for genetic screening of deaf and hard of hearing children. *Genetics in Medicine: official journal of the American College of Medical Genetics*, 12(8), 512–516. https://doi.org/10.1097/GIM.0b013e3181e5afb8

Li, M. M., Tayoun, A. A., DiStefano, M., Pandya, A., Rehm, H. L., Robin, N. H., Schaefer, A. M., Yoshinaga-Itano, C., & ACMG Professional Practice and Guidelines Committee. Electronic address: documents@acmg.net (2022). Clinical evaluation and etiologic diagnosis of hearing loss: A clinical practice resource of the American College of Medical Genetics and Genomics (ACMG). *Genetics in Medicine: official journal of the American College of Medical Genetics*, 24(7), 1392–1406. https://doi.org/10.1016/j.gim.2022.03.018

Liming, B. J., Carter, J., Cheng, A., Choo, D., Curotta, J., Carvalho, D., Germiller, J. A., Hone, S., Kenna, M. A., Loundon, N., Preciado, D., Schilder, A., Reilly, B. J., Roman, S., Strychowsky, J., Triglia, J. M., Young, N., & Smith, R. J. (2016). International Pediatric Otolaryngology Group (IPOG) consensus recommendations: Hearing loss in the pediatric patient. *International Journal of Pediatric Otorhinolaryngology*, 90, 251–258. https://doi.org/10.1016/j.ijporl.2016.09.016

Minnesota Statute 144.966. Early Hearing Detection and Intervention Program. Retrieved from https://www.revisor.mn.gov/statutes/cite/144.966

Prosser, J. D., Cohen, A. P., & Greinwald, J. H. (2015). Diagnostic Evaluation of Children with Sensorineural Hearing Loss. *Otolaryngologic Clinics of North America*, 48(6), 975–982. https://doi.org/10.1016/j.otc.2015.07.004

Rawlinson, W. D., Boppana, S. B., Fowler, K. B., Kimberlin, D. W., Lazzarotto, T., Alain, S., Daly, K., Doutré, S., Gibson, L., Giles, M. L., Greenlee, J., Hamilton, S. T., Harrison, G. J., Hui, L., Jones, C. A., Palasanthiran, P., Schleiss, M. R., Shand, A. W., & van Zuylen, W. J. (2017). Congenital cytomegalovirus infection in pregnancy and the neonate: consensus recommendations for prevention, diagnosis, and therapy. *The Lancet. Infectious Diseases*, 17(6), e177–e188. https://doi.org/10.1016/S1473-3099(17)30143-3

Raymond, M., Walker, E., Dave, I., & Dedhia, K. (2019). Genetic testing for congenital non-syndromic sensorineural hearing loss. *International Journal of Pediatric Otorhinolaryngology*, 124, 68–75. https://doi.org/10.1016/j.ijporl.2019.05.038

Robson, C. D., Lewis, M., & D'Arco, F. (2023). Non-Syndromic Sensorineural Hearing Loss in Children. *Neuroimaging Clinics of North America*, 33(4), 531–542. https://doi.org/10.1016/j.nic.2023.05.005

Rose, L., Herzig, L. D., & Hussey-Gardner, B. (2014). Early intervention and the role of pediatricians. *Pediatrics in review*, 35(1), e1–e10. https://doi.org/10.1542/pir.35-1-e1

Rosenfeld, R. M., Shin, J. J., Schwartz, S. R., Coggins, R., Gagnon, L., Hackell, J. M., Hoelting, D., Hunter, L. L., Kummer, A. W., Payne, S. C., Poe, D. S., Veling, M., Vila, P. M., Walsh, S. A., & Corrigan, M. D. (2016). Clinical Practice Guideline: Otitis Media with Effusion (Update). *Otolaryngology--Head and Neck Surgery: official journal of American Academy of Otolaryngology-Head and Neck Surgery*, 154(1 Suppl), S1–S41. https://doi.org/10.1177/0194599815623467

Shave, S., Botti, C., & Kwong, K. (2022). Congenital Sensorineural Hearing Loss. *Pediatric Clinics of North America*, 69(2), 221–234. https://doi.org/10.1016/j.pcl.2021.12.006

Shearer A. E. (2024). Genetic testing for pediatric sensorineural hearing loss in the era of gene therapy. *Current Opinion in Otolaryngology & Head and Neck Surgery*, 32(5), 352–356. https://doi.org/10.1097/MOO.0000000000001005

Shekdar, K. V., & Bilaniuk, L. T. (2019). Imaging of Pediatric Hearing Loss. *Neuroimaging Clinics of North America*, 29(1), 103–115. https://doi.org/10.1016/j.nic.2018.09.011

Sindhar, S., & Lieu, J. E. C. (2021). Overview of Medical Evaluation of Unilateral and Bilateral Hearing Loss in Children. *Otolaryngologic Clinics of North America*, 54(6), 1155–1169. https://doi.org/10.1016/j.otc.2021.07.005

Yoshinaga-Itano, C., Sedey, A. L., Coulter, D. K., & Mehl, A. L. (1998). Language of early- and later-identified children with hearing loss. *Pediatrics*, 102(5), 1161–1171. https://doi.org/10.1542/peds.102.5.1161