PUBLIC HEALTH – SEATTLE & KING COUNTY WINTER 2014

Child Health Notes

Promoting early identification and partnerships between families, primary health care providers & the community.

Distributed by Public Health-Seattle & King County–Children with Special Health Care Needs Program. This newsletter provides physicians, nurse practitioners, primary health care providers, public health centers and community partners with current information regarding identification and management of special health issues for children. Contributing agencies and programs include: Washington State Department of Health and UW – Center on Human Development & Disability

HEARING SCREENING IN INFANTS AND CHILDREN

IF UNSURE, REFER!

WHY SCREEN HEARING? The goal of hearing screening in childhood is to identify hearing loss as early as possible and intervene. Research has demonstrated that the outcomes for early identified children with hearing loss are substantially better than the outcomes of late identified children.

TYPES OF HEARING LOSS

Normal hearing occurs between –10 decibels and 20 decibels
Conductive Hearing Loss: Any dysfunction of the outer or middle ear causing hearing loss.
Sensorineural Hearing Loss: When the loss of hearing function is due to pathology in the inner ear, or along the nerve pathway from the inner ear to the brain stem.

NEWBORN HEARING SCREENING: All newborns in the state of Washington have their hearing screened prior to hospital discharge. Infants who are not born in a hospital should be screened as outpatients. Newborn hearing screening detects congenital hearing impairment, but hearing needs to be assessed throughout childhood, since hearing impairments can be acquired after the newborn period. The screening of newborns and infants involves use of non-invasive, objective physiologic measures that include **otoacoustic emissions (OAE or EOAE)** and/or **auditory brainstem response (ABR or BAER)**. Both procedures can be done painlessly while the infant is resting quietly. Infants who do not pass newborn hearing screening should have a re-screen within one month of discharge. Babies not passing a re-screen should be referred to an audiologist for a diagnostic evaluation before 3 months of age. Multiple re-screenings often result in a delay of the diagnosis of hearing loss and are not recommended.

RISK FACTORS FOR HEARING LOSS: Any **parental concern** about hearing loss should be taken seriously and followed up with hearing screening. Other risk factors include *language delay, inattention, and school or behavior problems*. Concerning *medical history* includes recurrent or persistent otitis media, family history of permanent hearing loss, NICU admission greater than 5 days, in utero infection, postnatal infections including meningitis, craniofacial anomalies and genetic syndromes or neurodegenerative disorders that include hearing loss. **Any child who fails a hearing screening in the provider's office should be referred for an evaluation by an audiologist.**

WHEN SHOULD ROUTINE HEARING SCREENING BE DONE? The American Academy of Pediatrics recommends newborn hearing screening and objective hearing screening at well-child visits at **4,5,6,8 and 10 years** of age for all children. Children identified as having a risk factor for hearing loss should be screened yearly.

METHODS OF HEARING SCREENING:

Evoked otoacoustic emissions (OAE or EOAE): OAEs are acoustic signals generated from the cochlea in response to an auditory stimulus. This test allows for individual ear assessment and the child can be either asleep or awake. This test will not pick up neural abnormalities. A failed test only implies that a hearing loss of more than 30-40 dB may exist or that the middle ear status is abnormal.

Automated auditory brainstem response/brainstem auditory evoked response (ABR or BAER): Electrodes are placed on the head, and brain wave activity is recorded in response to a broadband click stimulus in each ear. ABR can detect conductive hearing loss, sensorineual hearing loss and neural hearing loss (auditory neuropathy). It tests each ear individually and is best done on a sleeping infant or child. A "fail" report implies a hearing level of worse than 30 to 35 dB.

Conventional screening audiometry: Children 4 years and older are asked to raise a hand when a sound is heard. Testing is performed in a quiet environment using earphones. A "fail" implies a hearing level worse than 25 dB.

FOLLOW-UP AND DIAGNOSTIC TESTING: Any child who does not pass a hearing screening/re-screening or with hearing thresholds greater than 20 dB should be referred to an audiologist.

Behavioral Hearing Tests:	**Physiological Hearing Test:**
• **Visual reinforced audiometry (VRA):** VRA is appropriate for infants and toddlers,6-30 months old. The child is taught to give a head turn in response to sound and is then rewarded with a reinforcement stimulus, such as a lighted mechanical toy. • **Conditioned play audiometry (CPA):** Children 2-4 years of age are conditioned to respond to an auditory stimulus by engaging in a game such as placing a peg in a board, or a block in a bucket. • **Conventional audiometry**: Children 4 years of age and older are asked to raise a hand when a sound is heard.	• **Diagnostic ABR/BAER:** This can usually be done in natural sleep for infants under 6 months of age, and under sedation for older infants or children who cannot be tested behaviorally. It can be performed with bone conduction to separate conductive from sensorineural hearing loss. Diagnostic ABR provides information that is valid for determining type and degree of hearing loss and allows hearing aid fitting.

Tympanogram: Tympanometry measures movement of the tympanic membrane (eardrum) with changes in air pressure, giving information about the outer and middle ear and the presence of middle ear effusion or perforation of the eardrum. Tympanometry is not a measure of hearing, but is used in conjunction with other audiological tests to determine the type of hearing loss.

References:

Harlor, Bower, Hearing Assessment in Infants and Children: Recommendations Beyond Neonatal Screening. *Pediatrics.* 2009; 124; 1252-1263.

Recommendations for preventive pediatric health care. *Pediatrics.* 2007;120(6): 1376

Clinical practice guideline: otitis media with effusion. Pediatrics. 2004;113(5): 1412-1429

Joint Committee on Infant Hearing. (2007). *Year 2007 position statement: Principles and guidelines for early hearing detection and intervention.* Available from www.asha.org/policy.

COUNTY RESOURCES FOR EARLY INTERVENTION SERVICES

➢ For children under 36 months: Contact: Sandy Duncan	206-812-2453

SPECIAL NEEDS INFORMATION AND RESOURCES:

Local:	Children with Special Health Care Needs Program	206-296-4610
Regional:	WithinReach Family Health Hotline	1-800-322-2588, 1-800-833-6388 TTD www.withinreachwa.org
	Early Support for Infants and Toddlers (ESIT) (formerly ITEIP)	http://del.wa.gov/development/esit/Default.aspx
	Washington State Department of Early Learning	www.del.wa.gov/Default.aspx
	Parent to Parent Support Programs of Washington	(800) 821-5927 www.arcwa.org/parent_to_parent.htm
	Seattle Children's Hospital Health Professional Hotline (limited to health care providers)	(800) 293-2462
National/ Internet:	American Academy of Pediatrics	www.aap.org
	AAP Developmental and Behavioral Pediatrics	www.dbpeds.org
	American Academy of Family Physicians	www.aafp.org
	CDC Act Early	www.cdc.gov/ncbddd/actearly/index.html
	Family Village (Extensive family resources for CSHCN)	www.familyvillage.wisc.edu
	Family Voices (Links to national and state family support networks)	www.familyvoices.org

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Children with Special Health Care Needs

Washington State Department of Health

Public Health
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