Parent Education Handout: Number 1

Hearing Tests for Infants & Children

Diagnostic Audiology:

When children with hearing loss receive timely and appropriate diagnostic and intervention services, they can have positive language, listening and speech outcomes. The diagnostic hearing evaluation should be performed by a pediatric audiologist who has the technical expertise and desire to work with infants and children. They perform a series of tests to determine the type (part of the ear affected), degree (how much hearing loss exists) and configuration (frequency or pitches that are affected) of a child's hearing loss.

Otoacoustic Emissions (OAE):

A cochlea (the inner ear) that is functioning normally not only receives sound, it also produces low-intensity, measurable sounds called OAEs. This test measures the sound being sent out from the inner ear. A tiny, flexible microphone is placed in the ear canal and the return sounds are analyzed by a computer. It is important to note that middle ear fluid or wax buildup can affect the outcome of the test. The infant or child should be sleeping or resting quietly for the best test results.

Auditory Brainstem Response (ABR):

This test gives accurate and reliable information about the condition of the cochlea and the auditory nerve. While the baby is sleeping, electrodes (wires) are attached to the scalp and clicking sounds are made through tiny earphones in the baby's ears. A computer measures the very tiny electrical signals caused by nerves firing in the auditory nerve and brainstem. Generally, children under 6 months do not need sedation (medicine that will induce sleep) for this test. If your child does need to be sedated to ensure a deep sleep and an uninterrupted test, it must be done under hospital staff supervision.

Tympanometry (Tympanogram):

This test is used to assess the condition of the middle ear, movement of the eardrum (tympanic membrane) and the conduction of the middle ear bones by creating variations of air pressure in the ear canal. It does not measure hearing. A flat test result can mean there is fluid in the middle ear, indicating an ear infection, ear canal obstruction or a perforation of the ear drum. This test can be a challenge for younger children because they need to sit still and not be crying or talking. Sometimes, parents assist the audiologist by holding their child's head to keep them still.

How to have a successful ABR evaluation:

- Keep your baby awake until quite late the night before the test (sleep deprived) to ensure a sound sleep.
- Try to feed your baby just before the testing so baby is relaxed, happy and sleepy (this can often be done at the facility).
- Bring a blanket or stuffed toy that your baby is familiar with so they feel more comfortable during the test.
- Allow for a block of time that may go beyond your scheduled time slot (sometimes more time is needed to complete the testing).

If you are having a sedated ABR, remember to:

- Follow the audiologist instructions very carefully on what baby may eat before the testing.
- Do not give your baby any medication that will make them drowsy before arriving for the ABR, unless instructed by your doctor.
- Bring the completed family history form to the hospital when you check in.

References:

- Diagnostic Audiology
- Auditory Signal Processing Laboratory
- Newborn Hearing Screening Program
- Hearing Screening Tests for Newborns

Resources

- National Center for Hearing Assessment and Management at Utah State University
- Boys Town National Research Hospital: www.boystownhospital.org and www.babyhearing.org
- American Speech-Language-Hearing Association

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