

HOW IS HEARING TESTED?

Behavioral Tests of Hearing

Conventional Audiometry (most adults)

The patient wears earphones and responds to sounds heard by pressing a button or raising his hand.



Visual Reinforcement Audiometry (VRA) (age 6 months to 2 years)

A child sits on her parent's lap and the clinician conditions the child to respond to sound with a head turn. When the child turns, a lighted and animated toy is played for visual reinforcement. Children under age 6 months generally do not have the head control to perform this task.

Conditioned Play Audiometry (CPA) (age 2-4 years)

A child sits at a table or on his parent's lap. He listens to sounds presented through earphones and performs a play task (drop block in a bucket, put peg in a pegboard) when he hears the sound. Older children may play a "computer game" where they press a button and see pictures or puzzle pieces appear on the computer screen.



Central Auditory Processing Screen (age 7 years and up)

This is a one-hour appointment where some subtests require the patient to listen to sounds and words presented in noise or different words presented nearly simultaneously to both ears. It is used when parents or teachers remain concerned for a child's hearing, even when the child's hearing has been tested as normal. Patients interested in this screening must first fill out a questionnaire and be approved for the test by a BTNRH audiologist. Before scheduling this screening test, a child typically needs to have a traditional hearing test, speech-language evaluation, and other educational evaluations. Call 402-498-6520 for more information.

Objective Tests of Hearing

These are specialized electrophysiological tests can be used to help determine what part of the auditory system is damaged or to specify hearing status in patients who are not able to complete standard hearing tests. Objective tests do not require a behavioral response. These are commonly used for newborn hearing screening and follow-up testing for newborns that do not pass their hearing screen. Some are used with adults when physicians desire to know the status of the hearing nerve.

Otoacoustic Emissions (OAEs) assess the function of the hair cells (tiny sensory cells) in the inner ear. To measure OAEs, sounds are presented through an earphone and a response (emission) from the inner ear is recorded. Patients do not need to respond in any way; they simply need to remain still for approximately 1 ½ to 2 minutes. This is used commonly during newborn and early childhood hearing screenings. It does not require sedation.



With **Auditory Brainstem Response (ABR)**, the patient sleeps or rests quietly while sounds are played to the ear through a small earphone. Recording electrodes on the head send the brain wave response to a computer where it is analyzed by the clinician. Many children require light sedation. When hearing loss exists, the results from this test can be used to select and set hearing aid characteristics for children. The ABR is also used with adults, in order to screen for certain types of tumors that can occur within the auditory system.



Tympanometry is used to diagnose problems with the eardrum and middle ear space. Problems such as fluid in the middle ear, a tear or hole in the eardrum, or problems with the small bones in the middle ear can result in hearing loss that generally can be treated medically or surgically. To obtain a tympanogram, a small earphone is placed in the ear canal and eardrum movement is measured in response to air pressure changes.

Acoustic Reflexes check the function of a small muscle in the middle ear in response to loud sound. This provides information about the nerve pathway along the reflex arc and therefore is sometimes used as a screening test of auditory or facial nerve function.