**EVALUATION OF HEARING IMPAIRMENT**  
MED201.003  
BlueReview POSTED DATE: 3/23/2004  
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**COVERAGE:**

Tests identified as **standard battery** in the following table are considered medically necessary as part of the initial work-up of a patient with hearing impairment in the corresponding age group.

Tests identified in the following table as **specialized** would not be part of the initial work up of patients presenting with hearing impairment, but may be considered medically necessary when initial diagnostic tests are inconclusive.

<table>
<thead>
<tr>
<th>Adult</th>
<th>Child</th>
<th>Infant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Battery</strong></td>
<td><strong>Same as adults age dependent</strong></td>
<td><strong>Auditory Evoked or Auditory Brainstem Response (ABR)</strong></td>
</tr>
</tbody>
</table>
| Pure-Tone Audiometry  
air conduction  
bone conduction  
masking (if air-bone gap is present) | Pure Tone  
Audiometry,  
Speech Audiometry,  
Basic Immittance  
Select Picture  
Audiometry | Visual  
Reinforcement  
Audiometry (VRA) |
| Speech Audiometry  
speech recognition  
thresholds (SRT)  
word recognition (WR)  
ability | | Evoked  
Otoacoustic Emissions (OAE) |
| **Basic Immittance Test Battery** | | Acoustic Reflex  
Measurement |
| tympanometry  
acoustic reflex measurement | | *See legislative  
section for mandates  
regarding hearing screening for infants.* |

| Specialized Tests | | |
| **Auditory Evoked Potentials or Auditory Brainstem Response (ABR)** | Same as adult | |
| difficult-to-test patients, neurotologic assessment, retrocochlear pathology (e.g., acoustic neuromas or other lesions) | ABR  
EcochG  
Tone Decay  
Stenger Test | Auditory Evoked  
Otoacoustic Emissions (OAE) |
| **Electrocochleography (EcochG)** | Evoked  
Otoacoustic Emissions (OAE) | |
| diagnosis of endolymphatic hydrops | Sensorineural  
Acuity Level (SAL) | |
**Tone Decay Test**
diagnosis of cochlear vs. retrocochlear
(tone decay has been largely replaced by ABR but is still in use)

**Stenger Test, pure tone or speech**
diagnosis of pseudohypacusis

Audiometric studies are considered medically necessary in illnesses or injuries including, but not limited to, the following:

- Hearing loss;
- Otitis media;
- Ménière’s disease;
- Labyrinthitis;
- Vertigo;
- Tinnitus;
- Cochlear otosclerosis;
- Neoplasms of the auditory or central nervous system;
- Congenital anomalies;
- Surgery involving the auditory and/or central nervous system, e.g., skull-based tumors such as acoustic neuroma and meningioma;
- Facial nerve paralysis (Bell’s palsy);
- Bacterial meningitis;
- Exposure to intense noise;
- Ototoxic drugs; OR
- Fractures of the temporal bone or trauma affecting the central auditory pathways.

The following audiometric tests are considered obsolete and thus are considered not medically necessary:

- Lombard test (replaced by the Stenger test and auditory evoked potential);
- Alternate binaural loudness balance test;

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* Independent Licensees of the Blue Cross and Blue Shield Association
• Short increment sensitivity test (replaced by pure tone audiometry and auditory evoked potential); and

• Bekesy audiometry.

The following audiometric tests are considered experimental or investigational:

• Staggered spondaic word test;

• Synthetic sentence identification test;

Note: This policy no longer addresses tests of central auditory processing, since these tests do not evaluate hearing impairment. See Rationale section for further general discussion of tests of central auditory processing.

LEGISLATION:

Texas:

Texas law states "...this state shall offer and make available, under group policies, contracts, and plans providing hospital and medical coverage on an expense incurred, service or prepaid basis, benefits for the necessary care and treatment of loss or impairment of speech or hearing that are not less favorable than for physical illness generally, subject to the same durational limits, dollar limits, deductibles, and coinsurance factors. Such offer of benefits shall be subject to the right of the group policy or contract holder to reject the coverage or to select any alternative level of benefits if such right is offered by or negotiated with such insurer, service Plan Corporation, or health maintenance organization."

REQUIRED BENEFITS FOR SCREENING TEST FOR HEARING IMPAIRMENT

"A health benefit plan that provides benefits for a family member of the insured shall provide coverage for each covered child for:

• a screening test for hearing loss from birth through the date the child is 30 days old, as provided by Chapter 47, Health and Safety Code; and

• necessary diagnostic follow-up care related to the screening test from birth through the date the child is 24 months old.”
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Illinois:

Hearing Screening for Newborns Act (410 ILCS 213/)

“...By December 31, 2002, all hospitals performing delivery shall conduct hearing screening of all newborn infants prior to discharge...”

New Mexico:

“By July 1, 2001 the department of health shall adopt rules to require that all infants born in health facilities licensed by the department shall be screened for hearing sensitivity prior to being discharged. The rules shall also require the testing of any newborns brought to licensed health facilities after birth who have not received a hearing sensitivity screening and notification to the parents of all screened infants of the results of the hearing sensitivity screening.”

DESCRIPTION:

Hearing impairment or hearing loss is a reduction in the ability to perceive sound. The loss may range from slight to complete deafness. Audiometric studies are diagnostic tests that evaluate sensorineural and conductive hearing loss. Conductive hearing loss is the result of disorders of the external or middle ear; sensory hearing loss is secondary to disturbance of the cochlea; neural hearing loss results from disease of the auditory (eighth) nerve or central auditory channel connections. Sensory and neural hearing losses are frequently included under the term "sensorineural hearing loss." Mixed or combined hearing loss involves disturbances of both conductive and sensorineural mechanisms. A variety of tests have been designed to evaluate central auditory processing, which is a higher order of cortical function that processes auditory information. Therefore, central auditory processing tests do not strictly evaluate hearing impairment, and thus are not formally considered in this policy. (See rationale section for further general discussion of central auditory processing.)

The various audiometric tests can be subdivided into standard batteries that are typically used as part of the initial work-up of patients presenting with hearing impairment, as well as specialized tests that are typically used in specific clinical situations. The standard batteries vary according to whether the patient is an adult, child, or infant. The tests are briefly defined as follows.
STANDARD BATTERY OF TESTS FOR ADULTS AND CHILDREN

1. Pure-tone audiometry, air and bone conduction

This test is a standard audiometric study that utilizes tones of various frequencies and intensities as auditory stimuli to measure hearing. As air conduction is the usual method of sound transmission, air audiometry utilizes the external and middle ear in the transmission of sound to the cochlea and beyond. Bone conduction audiometry involves the vibration of the skull by direct contact with an oscillating device which is thought to set the cochlear fluids into motion, bypassing the external and middle ear. When bone conduction thresholds are better than air conduction thresholds, the hearing loss is conductive. When bone conduction thresholds are the same as air conduction thresholds, the hearing loss is sensorineural. When bone conduction thresholds are reduced but are still better than air conduction, the loss is mixed or combined.

2. Speech audiometry

This test is a standard audiometric study that measures overall performance in hearing, understanding, and responding to speech for a general assessment of hearing and an estimate of degree of practical handicap. It may include a speech recognition test, where the patient repeats words back, and a speech reception threshold, which determines when the patient can first hear speech. It may also be used to reaffirm the findings of the pure-tone audiometry and to diagnose pseudohypacusis (a non-existent or false hearing loss).

3. Word recognition tests

This category includes filtered speech tests, and synthetic sentence identification. These tests specifically assess the patient's ability to discriminate spoken words.

4. Acoustic reflex test and acoustic reflex decay

These tests measure the changes in the ear's ability to conduct sound to the cochlea. Reflexes, called acoustic reflexes, involve middle ear function. Absence of the acoustic reflex may be indicative, among other things, of lesions of the middle ear, acoustic tumor, and otosclerosis, facial nerve involvement of the probe ear side, and surgical removal or congenital absence of the stapes. These tests may be used in assessing the hearing of neonates and other children too young to cooperate in the audiometric testing of functional hearing loss.
5. Tympanometry (impedance testing)

This is a standard series of tests to measure the ability of the middle ear to conduct sound. It is particularly useful in the identification of fluid in the middle ear and in the anatomic localization of facial nerve paralysis.

ADDITIONAL STANDARD BATTERY OF TESTS FOR CHILDREN ONLY

1. Select picture audiometry

This test is used to evaluate hearing-impaired children. It involves the use of pictures on cards and the child's ability to correctly identify objects based on audiologic direction.

2. Conditioning play audiometry

This is usually performed to test hearing impairment in children 2 to 4 years of age. The child is taught to put an object in a specific place, e.g., a marble in a box or a cow in the barnyard when a specific sound is heard.

STANDARD BATTERY OF TESTS FOR INFANTS ONLY

1. Auditory evoked potential (also called auditory brainstem response [ABR])

This is an electrophysiologic measure of auditory function that utilizes responses produced by the auditory nerve and the brainstem and helps differentiate sensory from neural hearing loss. The response is the waveform averaged over many auditory clicks. It may be helpful in the diagnosis of cerebellopontine angle tumors and acoustic neuromas, is used as a monitor in posterior fossa surgery, and may help to establish a hearing threshold for infants and difficult-to-test patients.

2. Visual reinforcement audiometry (VRA)

The VRA is part of a battery of tests used in the determination of infant hearing loss. The premise of the test is that the rate of patient response is increased by the use of reinforcement.

3. Evoked otoacoustic emissions (OAE)

Otoacoustic emissions are sounds measured in the external ear canal that are a reflection of the working of the cochlea. A probe and click stimuli are utilized in the performance of this test. OAE is
used in the screening as well as the diagnosis of hearing impairment in neonates and young children.

4. Acoustic reflex test

See standard Battery of Tests for Adults and Children, Only, No.4.

SPECIALIZED TESTS FOR ADULTS AND CHILDREN

1. Auditory Evoked Potential

See, Standard battery of tests for infants Only, No.1.

2. Electrocochleography (EcochG)

This is a measure of the electrical potentials generated in the inner ear as a result of sound stimulation. This test may be used in the evaluation of endolymphatic hydrops or Ménière’s disease.

3. Tone decay test

This test involves the presentation of a continuous tone to determine whether the threshold for the tone has changed (becomes poorer) over time. The test helps differentiate sensory from neural hearing loss, and is used in the diagnosis of cochlear versus retrocochlear lesions and eighth nerve tumors. While this test is still in use, the auditory evoked potential test is largely used in place of the tone decay test.

4. Stenger test, pure tone or speech

This test utilizes a tone presented simultaneously to both ears and is based on the principle that the tone is perceived only in the ear that receives the greater intensity. The test is useful in the diagnosis of pseudohypacusis Hypacusis is a hearing impairment of a conductive or a neurosensory nature, and pseudohypacusis is a non-existent (false) hearing loss.

5. Sensorineural acuity level (SAL)

This test measures the extent of sensorineural hearing loss and is also utilized in the detection of pseudohypacusis among children. This is not a commonly performed test. There are several different tests in use, including one where a bone-conduction vibrator is placed at the center of the forehead and the threshold shift for a normal ear versus an ear with sensorineural hearing loss is analyzed.
6. Evoked otoacoustic emissions

While this test is considered part of the standard battery of tests in infants, it is considered a specialized test in adults and children. For a description, see Standard Battery of Test for Infants Only, No.3.

RATIONALE:

The hearing impairment tests listed in this policy are considered standard tests of hearing impairment and thus the specific diagnostic parameters of each of these tests will not be considered further. In 2000, the American Academy of Pediatrics, as a participant in the Joint Committee on Infant Hearing, published a position statement regarding early hearing detection. This statement recommended that all infants have access to hearing screening using a physiologic measure, with the goal that all infants who do not pass the birth admission screen and any subsequent re screening begin appropriate audiologic and medical evaluations to confirm the presence of hearing loss before 3 months of age. The position statement noted that OAE’s or ABR’s are physiologic techniques that have been successfully used for newborn screening. For example, hospitals may screen with otoacoustic emissions technology or auditory brainstem response technology and retest infants who “refer” with the same or other technology.

Central Auditory Processing

This policy previously addressed tests of central auditory processing (CAP) and considered this testing as investigational. These tests are no longer formally considered in the coverage statement, since tests of central auditory processing are not tests of hearing impairment, per se, but tests of how auditory information is processed by the brain. For example, central auditory processes are responsible for sound localization and lateralization, auditory discrimination, auditory pattern, recognition, and temporal aspects of audition. Tests of CAP are commonly recommended for children with dyslexia, attention deficit disorder, or other learning or behavioral disabilities. The results of the test may be used to tailor specific teaching or behavioral strategies, and thus depending on the contract or benefit design, may be considered part of the mental health benefits, or contractually excluded as an evaluation of a learning disability.

An overview of the literature reveals numerous articles describing various tests of central auditory processing. It would appear that the concept of such testing is widely accepted among the medical and
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audiology community. This acceptance challenges the determination that tests of CAP would still be considered investigational; however, an evidence-based approach to their evaluation is limited due to the multiple different batteries of tests that have been explored, the lack of a gold standard test for comparison, the heterogeneous nature of patients that have been tested (based both on age and symptoms), and the uncertain impact on the overall health of the patient. In 1996, the American Speech Language hearing Association published a task force report on CAP and noted that there was persistent controversy over CAP and its disorders, and how it should be defined, identified, and ameliorated through intervention. These same concerns were echoed in a subsequent 2002 consensus report.

PRICING:
None

REFERENCES:


DISCLAIMER:

State and federal law, as well as contract language, including definitions and specific inclusions/exclusions, takes precedence over Medical Policy and must be considered first in determining coverage. The member’s contract benefits in effect on the date that services are rendered must be used. Any benefits are subject to the payment of premiums for the date on which services are rendered. Medical
technology is constantly evolving, and we reserve the right to review and update Medical Policy periodically. HMO Blue Texas physicians who are contracted/affiliated with a capitated IPA/medical group must contact the IPA/medical group for information regarding HMO claims/reimbursement information and other general polices and procedures.