

Brainstem auditory evoked response (BAER)

Alternative Names

BAER test, auditory brain stem response, ABR, evoked response audiometry

Definition

The brainstem auditory evoked response test, or BAER, helps evaluate the following:

- hearing, or auditory, structures in the brain
- how well a person hears

During this test, clicking noises stimulate the hearing nerves that run between the ear and the brain. Electrodes are attached to the scalp and ear lobes to record tiny changes in brain waves from these sounds. These changes appear on a graph as peaks, or highs, and troughs, or lows.

Because the response to BAER is involuntary, this test is used to check hearing in those who cannot respond or cooperate, such as babies, young children, and individuals who are unconscious. It is also helpful in determining whether certain hearing problems are physical, psychological or due to malingering (someone who is faking a hearing loss).

Who is a candidate for the test?

The test may be done on newborns to check hearing. It may also be used when a person shows the following signs:

- a balance disorder, such as Meniere's disease
- a brain tumor that affects hearing
- certain conditions that attack the nerves, such as multiple sclerosis
- hearing impairments or deafness
- hearing due to nerve damage
- a stroke that affects hearing
- sudden hearing loss or hearing loss that is significantly different on one side compared to the other

How is the test performed?

Usually the test takes less than 30 minutes. A healthcare professional may perform the test in an office, clinic, or hospital. Often, a person sits up for this test. Dabs of ointment are applied at certain spots on the person's scalp and each ear lobe. Electrodes are placed on these spots. As earphones deliver clicks to each ear, brain waves sensed by the electrodes are graphed.

What is involved in preparation for the test?

A person may be asked to wash his or her hair the night before the test. However, preparation for tests can vary. It is best to check with the staff where the test will be done for specific instructions.

What do the test results mean?

The results of the test are compared to the results from people with normal hearing and brain function. Fewer peaks than normal on a person's graph suggest disorders or

damage to the hearing nerves. Longer than normal delays between clicks and brain wave response suggest hearing loss due to a problem in the ear itself.