

# Otoacoustic Emissions Testing

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Otoacoustic emission testing, often abbreviated as OAE, DPOAE (distortion product otoacoustic emission), or TEOAE (transient evoked otoacoustic emission), is a very helpful tool in the evaluation of hearing. OAEs are faint acoustical signals that emit from the outer hair cells located in the cochlea of the inner ear, in response to presented stimuli. This test is a measure of cochlear function; it is not a threshold test such as a hearing test. It measures an acoustic response from the inner ear to an external sound stimulus. This test is ideal as part of a test battery when trying to determine auditory function in infants, small children, and patients who otherwise cannot or do not respond to the behavioral tests typically employed.

A small ear tip is placed at the opening of the patients' ear canal. This tip contains one or two speakers, depending on the type of test done, and a microphone for recording the acoustic emission. The emissions themselves are extremely soft; therefore it is important for the patient to remain as quiet and still as possible to obtain accurate measurements. Excessive environmental and patient noise can interfere with the test. The audiologist reviews the results in graph form at the end of the test to determine if there is cochlear function.

This test can take as little as 5-10 minutes or much longer depending on patient cooperation. This test does not stand alone in the measure of auditory function; thus, it should be included as part of a test battery.

OAEs in children with a normally functioning cochlea will be robust, noticeably larger than in adults. Adults with normally functioning cochlea will have similar results, but not quite as robust as children.

Absent or small OAEs could indicate the following:

- Conductive hearing loss
- Fluid behind the ear
- Damage to parts of the cochlea (inner ear)

Shena Martin, MA.,  
CCC-A

Jasmit Bal, AuD, CCC-A

D. Krystin Farrell, AuD,  
CCC-A

Mark G. Smith, AuD,  
CCC-A

Cynthia L. Martzen,  
AuD, CCC-A



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1351 E Spruce, Fresno, CA 93720  
559-432-5973