TEST

Audiometry

Audiometry measures how softly you can hear sounds at different pitches

WHAT IT MEASURES
Hearing thresholds across different sound pitches

SAMPLE
None

FASTING NEEDED?
No

HOW LONG IT TAKES
Usually 20 to 60 minutes

RESULTS IN
Usually immediately, though clinic reporting times differ

USED FOR
Screening, diagnosis, and monitoring

MAIN LIMITATION
Results rely on attention and consistent responses

Overview

Audiometry is a group of hearing tests. The most common, pure-tone audiometry, finds the quietest sounds you can hear at different pitches, or frequencies.

Sounds are played through headphones or ear inserts, usually testing each ear separately. You signal whenever you hear a sound, even if it is very faint.

Results are recorded on an audiogram, which shows hearing level in decibels at frequencies measured in hertz. Testing may include:

Comparing air- and bone-conduction results helps indicate whether hearing difficulty involves the outer or middle ear, the inner ear, or both.

- Air-conduction testing , which checks the pathway through the outer, middle, and inner ear
- Bone-conduction testing , which sends vibrations through the skull to the inner ear
- Speech audiometry , which tests how softly you hear speech and how clearly you understand words

Why the test is ordered

Audiometry may be ordered for reduced or muffled hearing, difficulty following conversations, unequal hearing between the ears, or tinnitus.

It can investigate hearing changes linked with aging, repeated loud-noise exposure, ear disease, head injury, or medicines that may affect hearing. It may also be part of a dizziness assessment, although it does not test balance directly.

Other uses include:

A screening test gives a pass-or-refer result. Diagnostic audiometry provides more detail about the type and pattern of hearing loss.

- Monitoring established hearing loss or certain treatments
- Planning hearing aids or other support
- Assessing hearing after workplace noise exposure
- Checking whether hearing is stable or changing

Who should have the test

You may be offered audiometry if you report hearing difficulty or another hearing screen suggests further testing is needed. People exposed to substantial workplace noise may have regular occupational hearing tests.

Children may need assessment for concerns about speech, language, learning, responses to sound, or repeated middle-ear problems. Testing is adapted to their age and ability.

Babies and people unable to respond reliably may need objective tests such as otoacoustic emissions or auditory brainstem response testing.

A sudden hearing change in one or both ears needs urgent medical assessment rather than a routine appointment. Seek emergency help if hearing loss follows a serious head injury or occurs with facial weakness, severe new dizziness, difficulty speaking, or other stroke-like symptoms.

How to prepare

No fasting is needed. You can usually eat, drink, and take regular medicines normally. Do not stop a medicine unless the prescribing clinician tells you to.

Avoid loud sound before the appointment when practical. Loud music, machinery, power tools, or firearms can temporarily reduce hearing sensitivity. Use appropriate hearing protection, but do not insert anything deeply into your ears.

Bring details of your symptoms, previous ear surgery, significant noise exposure, and medicines that may affect hearing. Bring hearing aids or other devices, although they are normally removed for threshold testing.

Tell the audiologist about ear pain, discharge, blockage, a current infection, severe tinnitus, or difficulty understanding the instructions.

What happens during the test

The clinician may first examine your ear canals for wax, discharge, or another blockage.

For pure-tone audiometry, you sit in a quiet or sound-treated room wearing headphones or ear inserts. You press a button, raise a hand, or use another agreed signal whenever you hear a tone.

The sounds vary in pitch and loudness. The quietest level you hear consistently at each frequency is your hearing threshold.

For bone-conduction testing, a vibrating device is placed behind the ear or on the forehead. Noise may be played into the other ear so each ear can be measured separately; this is called masking.

During speech testing, you may repeat words played at different volumes. The appointment usually takes 20 to 60 minutes, depending on the tests required.

Understanding your results

An audiogram plots frequencies from low to high across the page and hearing levels down the page, using separate symbols for each ear. The audiologist considers the degree, shape, and symmetry of any hearing change.

A gap between air- and bone-conduction thresholds can suggest reduced sound transmission through the outer or middle ear, called conductive hearing loss. Similar air- and bone-conduction thresholds may indicate inner-ear or hearing-nerve involvement, called sensorineural hearing loss. Some results show both types.

Speech testing shows how well you detect and understand words and whether amplification may improve communication. Audiometry does not identify every cause of hearing loss, so

results are interpreted alongside your symptoms, examination, and medical history.

What affects the results

Pure-tone audiometry requires controlled conditions and reliable responses. Factors that may affect results include:

Some medicines can cause a real hearing change. Tell the clinician about prescription and non-prescription products, but do not stop anything on your own.

Age can affect expected hearing patterns, while pregnancy-related fluid or pressure changes may temporarily affect hearing. Meals, coffee, kidney function, and time of day do not usually have a meaningful direct effect.

- Background noise
- Poorly positioned headphones
- Earwax, ear-canal swelling, or a foreign object
- A cold, middle-ear fluid, or pressure problems
- Recent loud-noise exposure
- Tiredness, anxiety, poor concentration, or unclear instructions
- Tinnitus that resembles the test tones
- Language or communication barriers during speech testing
- Incorrect bone-vibrator placement
- Glasses, earrings, hair, or head coverings interfering with equipment

Accuracy and limitations

With calibrated equipment in a suitable room, pure-tone audiometry is the standard behavioral method for measuring hearing thresholds. Repeated tones help confirm that responses are consistent.

Results may appear worse if the room is noisy, equipment is poorly positioned, instructions are unclear, or responses are inconsistent. Testing may miss problems at frequencies or in listening situations not covered by routine testing.

A standard audiogram measures simple tones in quiet. It does not fully represent understanding conversations in restaurants, groups, or other noisy settings. Some people have

significant real-world difficulty despite no clearly abnormal thresholds.

Audiometry may not identify the exact medical cause. Tympanometry assesses eardrum movement and middle-ear pressure. Otoacoustic emissions or auditory brainstem response testing may be used when behavioral responses are unreliable. Imaging or specialist assessment may be recommended when symptoms or the hearing pattern warrant it.

Risks and complications

Audiometry is non-invasive and does not use radiation. Tell the clinician immediately if a sound feels uncomfortable.

Bone-conduction equipment may cause mild pressure where it rests against your head. This normally stops when the device is removed.

What happens next

Results are often discussed immediately, although a written report may follow later.

Normal or stable findings may need only routine monitoring. If hearing loss is found, next steps may include repeat testing, wax removal, treatment of a middle-ear problem, hearing aids, communication strategies, or referral to an ear, nose, and throat specialist.

An unexpected difference between the ears, rapidly changing hearing, or results that do not match your symptoms may require further testing. Contact a medical service urgently if you develop sudden hearing loss rather than waiting for routine follow-up.

Common questions

Can I drink coffee before audiometry?

Yes. Coffee does not usually affect hearing thresholds, and fasting is not required.

Does the time of day matter?

Usually not. Choose a time when you are likely to be alert and able to concentrate.

Can I exercise beforehand?

Yes. Ordinary exercise does not usually affect results. Avoid loud music or noisy machinery shortly before testing.

Should I wear my hearing aids to the appointment?

Bring them, but expect to remove them for standard threshold testing. They may be checked or adjusted afterward.

What if I press the button when there was no sound?

Occasional uncertain responses are expected. The clinician repeats and varies tones to identify the quietest level you hear consistently.

Can earwax affect the result?

Yes. Wax blocking the ear canal can reduce sound reaching the eardrum. Significant blockage may need treatment followed by repeat testing.

Sources

- American Speech-Language-Hearing Association. Hearing Loss in Adults: Assessment . Practice Portal
- British Society of Audiology. Recommended Procedure: Pure-Tone Air-Conduction and Bone-Conduction Threshold Audiometry With and Without Masking
- National Institute on Deafness and Other Communication Disorders. Hearing Tests
- National Institute for Health and Care Excellence. Hearing Loss in Adults: Assessment and Management . NICE Guideline NG98
- World Health Organization. Ear and Hearing Care: Technical Resources and Guidance