TEST

Ear drainage culture

An ear drainage culture checks fluid from the ear for bacteria or fungi.

WHAT IT MEASURES
Bacteria or fungi growing in fluid draining from the ear

SAMPLE
Ear drainage collected with a sterile swab

FASTING NEEDED?
No

HOW LONG IT TAKES
A few minutes

RESULTS IN
Usually 2-5 days; fungal cultures may take longer

USED FOR
Diagnosis and treatment selection

MAIN LIMITATION
Ear canal contamination or recent antimicrobial treatment

Overview

An ear drainage culture is a laboratory test of fluid, pus, or other material coming from the ear. It looks for bacteria or fungi that may be causing an infection.

The sample is usually collected with a sterile swab and placed in material that supports microbial growth. If an organism grows, the laboratory identifies it. For some bacterial infections, susceptibility testing checks which antibiotics like amoxicillin or doxycycline are likely to work, but it does not determine whether a medicine is safe or suitable for you.

A culture is not needed for every ear problem. It is most useful when drainage continues or returns, treatment has not worked, or an unusual or resistant organism is suspected.

Why the test is ordered

A healthcare professional may order a culture to:

Drainage may come from the outer canal or through a hole in the eardrum from the middle ear. The source matters because normal outer-ear organisms can contaminate a sample. The

culture also cannot show the full extent of an infection, so an ear examination remains important.

- Identify bacteria or fungi in ear drainage
- Help select an antibiotic when resistance is a concern
- Investigate persistent or recurrent drainage
- Assess infection after ear surgery or with an ear tube
- Clarify an infection with an unusual appearance

Who should have the test

A culture may be considered for persistent, recurrent, or severe drainage, particularly when previous treatment has not helped. It may also be useful after recent antibiotics or ear surgery, or if you have an eardrum perforation or ventilation tube.

Testing may be considered earlier for people at greater risk from infection, including those with diabetes or a weakened immune system.

Most uncomplicated outer-ear infections do not require culture before treatment. Testing a dry ear may collect normal skin organisms rather than the cause of symptoms.

How to prepare

You do not need to fast and may take your usual non-ear medicines unless instructed otherwise.

Tell the collector about antibiotic or antifungal drops, tablets, or creams you use or recently finished. These can suppress microbial growth and cause a negative result despite infection.

Do not stop prescribed ear treatment unless the healthcare professional arranging the test tells you to. Ask whether a scheduled dose should be used before or after collection.

Do not clean deep inside the ear or use cotton buds before the appointment. Avoid oil, peroxide, and non-prescribed drops. These may remove useful drainage, push material deeper, or introduce other organisms.

What happens during the test

You will usually sit with your head turned while the ear is examined with an otoscope.

A sterile swab is gently placed against the drainage. The collector tries to avoid nearby skin because skin organisms can affect the result. Sometimes fluid is collected with gentle suction or another small sterile instrument.

Collection takes a few minutes. The sealed sample is sent to a laboratory, where it may be examined under a microscope and placed in culture systems. Early bacterial growth may appear within a day, but identification and susceptibility testing usually take longer. Fungal cultures may require additional time.

Understanding your results

Results are generally reported as no growth, mixed growth, or growth of one or more named organisms.

No growth means no reportable bacterium or fungus grew. It does not rule out infection. Recent antimicrobial treatment, a small sample, transport delays, or organisms that do not grow in routine culture can cause a negative result.

Growth of a named organism means it was found in the sample. Your symptoms and examination help determine whether it is causing infection or represents normal canal microbes or contamination.

Mixed growth means several organisms grew. This may occur with long-standing infection but can also suggest contamination.

Susceptibility results may describe bacteria as susceptible, intermediate or increased-exposure, or resistant to particular antibiotics. These laboratory categories do not account for allergies, pregnancy, other medicines, health conditions, or whether a drug is appropriate for the ear.

There is no universal numerical reference range. Interpretation depends on the laboratory, sample source, recent treatment, and clinical context.

What affects the results

Antibiotic or antifungal treatment, including ear drops, can suppress organisms. A sample collected after treatment starts may miss the cause.

Cleaning the ear shortly before collection may leave too little drainage. A dry or small sample also lowers the chance of detecting an organism.

Contact between the swab and the outer ear, nearby skin, or a non-sterile surface can

introduce unrelated microbes. Even a carefully collected canal sample may contain organisms that normally live there.

A canal swab may not represent infection deeper in the middle ear. Drainage from the middle ear can also collect additional organisms as it passes through the canal.

Transport delays or unsuitable storage may reduce organism survival. Routine cultures do not detect viruses, and uncommon bacteria or fungi may require special methods.

Accuracy and limitations

A positive result is most convincing when one likely disease-causing organism grows strongly and matches the examination. Results are less clear when several common skin or canal organisms grow from a superficial swab.

Culture may detect contamination or colonization-organisms living in the ear without invading tissue. It may also miss infection because of recent treatment, limited drainage, poor sampling, or organisms requiring special conditions.

Susceptibility testing predicts bacterial response under laboratory conditions but cannot guarantee treatment success. Drug delivery, blocked drainage, damaged tissue, and biofilms may affect the outcome.

Other tests may be more useful for some problems. Examination can identify wax, a foreign object, eczema, eardrum injury, or fluid behind an intact eardrum. Imaging may be needed if deeper infection or a complication is suspected, while persistent abnormal tissue may require sampling.

Risks and complications

Collection may cause brief discomfort if the canal is inflamed. Minor spotting can occur, but significant bleeding or injury is uncommon.

Tell the collector immediately if touching the ear causes severe pain or dizziness.

What happens next

Your healthcare professional will interpret the culture with your examination and treatment history. The result may support continuing or changing treatment, arranging ear cleaning or further assessment, or deciding that antimicrobial treatment is unnecessary.

Some reports are preliminary. Do not change treatment based only on an early result unless the person managing your care advises it.

Arrange follow-up if drainage does not improve, returns after treatment, or affects hearing. Seek prompt medical assessment for worsening pain, fever, spreading redness, marked swelling, swelling behind the ear, or an ear that begins to stick outward.

Seek urgent or emergency care for new facial weakness, severe dizziness with difficulty walking, confusion, or clear watery drainage after a head injury. People with diabetes or a weakened immune system should seek prompt assessment for severe or worsening ear pain or drainage.

Common questions

Can I drink coffee before an ear drainage culture?

Yes. Food and drinks do not affect the culture.

Does the time of day matter?

Usually not. The main issue is collecting enough drainage, ideally before a scheduled dose of ear medicine if you were specifically told to wait.

Can I exercise beforehand?

Yes, but avoid swimming and try not to get water or sweat into the affected ear.

Should I stop my ear drops before the test?

Do not stop prescribed drops without instructions. Tell the healthcare professional what you use and when you last used it.

Can I clean my ear first?

Do not clean inside the canal or use cotton buds. You may gently wipe drainage from the outside, but avoid removing material from within the canal.

Will the swab hurt?

It may be uncomfortable if the canal is swollen or tender, but collection is brief. Tell the collector immediately about sharp pain or dizziness.

Sources

- Public Health England. UK Standards for Microbiology Investigations: Investigation of Ear Infections and Associated Specimens (B 1). Issue 3.1, 2014.
- Rosenfeld RM, Schwartz SR, Cannon CR, et al. Clinical Practice Guideline: Acute Otitis Externa. Otolaryngology-Head and Neck Surgery. 2014;150(1 Suppl):S1-S24.
- Merck Manual Professional Edition. External Otitis (Acute).
- Merck Manual Professional Edition. Otitis Media (Chronic Suppurative).
- MedlinePlus. Bacteria Culture Test. U.S. National Library of Medicine.
- MedlinePlus. Antibiotic Sensitivity Test. U.S. National Library of Medicine.