TEST

Nasopharyngeal culture

A nasopharyngeal culture grows microorganisms from the back of the nose to identify selected infections

WHAT IT MEASURES
Living microorganisms grown from the back of the nose

SAMPLE
Nasopharyngeal swab or aspirate

FASTING NEEDED?
No

HOW LONG IT TAKES
Usually less than five minutes

RESULTS IN
Several days; timing varies by laboratory and suspected organism

USED FOR
Diagnosing selected infections; occasionally checking bacterial carriage

MAIN LIMITATION
Poor timing or collection can cause a false-negative result

Overview

A nasopharyngeal culture looks for microorganisms in the nasopharynx, the space behind your nose and above your throat. A healthcare professional collects mucus and cells using a thin swab passed through a nostril. Less often, mucus is collected by gentle suction.

The sample is placed in conditions that allow certain bacteria or other microorganisms to grow. The laboratory then identifies anything important that grows. Some cultures also test which antibiotics like amoxicillin or doxycycline are likely to work against a bacterium.

This is different from a PCR or other molecular test. A culture needs living organisms that can grow, so results take longer. PCR looks for genetic material and is often faster. For many respiratory infections, molecular tests are now preferred because they are more likely to detect small amounts of an organism.

A nasopharyngeal culture may still be useful for selected infections, particularly whooping cough, also called pertussis. It may also be used during certain outbreak or public health investigations. It is not the usual test for every cough, cold, sore throat, or sinus symptom.

Why the test is ordered

The test is ordered when identifying a particular organism could affect treatment, infection-control advice, or a public health investigation.

Common reasons include:

The laboratory usually needs to know which organism is suspected. Different organisms require different collection swabs, transport materials, temperatures, and growing conditions.

A nasopharyngeal culture is not the same as a throat culture. For example, a throat swab is generally used when testing for group A strep throat. A sample from the lungs may be more appropriate when an infection is thought to be lower in the respiratory tract.

- Testing for Bordetella pertussis , the bacterium that causes whooping cough
- Confirming a result when a culture is important for public health work
- Checking whether a specific bacterium is being carried in the nasopharynx during an investigation
- Obtaining a living organism for further laboratory testing

Who should have the test

You may be offered this test if your symptoms, exposure history, or connection to an outbreak suggests an infection that can be investigated with nasopharyngeal culture.

For suspected pertussis, timing matters. Culture is most useful early in the illness, generally during the first two weeks after coughing begins. After that, the bacteria may be harder to grow. A molecular test may be used instead of, or alongside, culture.

Testing may also be arranged by a public health team after close contact with a confirmed infection. It is not usually used to screen people without symptoms or a relevant exposure unless there is a specific public health reason.

The decision is based on your age, symptoms, how long you have been unwell, recent antibiotics, local testing options, and the organism being considered.

How to prepare

You do not need to fast. You can usually eat, drink water, and have coffee before the test.

Tell the person arranging the test about antibiotics you are taking or have recently finished.

Antibiotics can reduce the number of living bacteria and make a culture negative even when the organism was present earlier. Do not stop prescribed medicine unless the clinician responsible for it tells you to.

Ask whether you should avoid nasal sprays, drops, or rinses immediately before collection. Requirements can differ according to the organism and laboratory method.

If you have frequent nosebleeds, recent nasal surgery, a nasal injury, or a known blockage in one nostril, tell the person collecting the sample. They may choose the other nostril or another collection method.

What happens during the test

You will usually sit with your head supported and tilted slightly backward. The collector gently passes a narrow, flexible swab along the floor of one nostril until it reaches the nasopharynx.

The swab may be rotated or held there briefly to absorb mucus and cells. It is then removed and placed into a sterile transport container. Collection usually takes only a few seconds, although preparation and labelling take longer.

You may feel pressure, watering eyes, an urge to sneeze, coughing, or gagging. The sensation should ease quickly after the swab is removed.

Correct depth is important. A swab taken only from the front of the nose is not the same as a nasopharyngeal specimen and may miss the suspected organism.

Understanding your results

Culture results are usually reported with words rather than a numerical reference range.

A positive result means the laboratory grew and identified the organism named in the report. Whether this represents infection, harmless carriage, or an unexpected contaminant depends on the organism and why the sample was taken.

A negative result , sometimes reported as "not isolated" or "no growth," means the requested organism did not grow. It does not always rule out infection. There may have been too few living organisms in the sample, or they may have been affected by timing, antibiotics, collection, or transport.

A report may mention normal respiratory flora. "Flora" means microorganisms that commonly live in the nose and throat without causing illness. Their presence does not necessarily explain symptoms.

If antibiotic susceptibility testing was performed, the report may describe the bacterium as susceptible or resistant to particular antibiotics. These findings must be interpreted with your allergies, medicines, pregnancy status, age, symptoms, and the site of infection.

There is no universal normal range for this culture. Laboratory methods and reporting language differ. Interpretation also varies with age, sex, pregnancy, medicines, recent treatment, and the clinical context, although some of these factors do not directly change whether an organism grows.

What affects the results

A culture can be misleading even when the laboratory performs the test correctly.

Important influences include:

For pertussis, culture becomes less likely to detect the bacterium as the cough continues. Previous vaccination can also change how the illness appears, which may affect when testing is requested, though it does not by itself create a positive culture.

- Timing: Some organisms are easiest to recover early in the illness
- Recent antibiotics: Treatment can stop bacteria from growing in culture
- Collection depth: A shallow nasal swab may not sample the nasopharynx
- Amount collected: Too little mucus or too few cells can reduce detection
- Transport: Delays, unsuitable temperatures, or the wrong transport medium can damage organisms
- Organism requested: The laboratory may need special methods to grow a particular bacterium
- Nasal products: Recent rinses or antimicrobial products may temporarily reduce organisms
- Carriage: Some bacteria can be present without causing the current symptoms

Accuracy and limitations

A positive culture for a clearly identified disease-causing organism is usually strong evidence that the organism was present. Culture can also provide a living isolate for further testing, which PCR cannot do.

The main weakness is missed infections. Culture requires living organisms, and it may be

negative when only a small amount is present. Poor sampling, delayed transport, testing late in the illness, and antibiotics all increase the chance of a false-negative result.

For pertussis, culture is less likely than PCR to detect the bacterium, especially later in the illness. PCR is faster and can detect smaller amounts of genetic material. However, PCR can sometimes detect non-living organisms or become falsely positive through contamination, so the result still needs clinical interpretation.

False-positive cultures are less common when the laboratory identifies a specific organism accurately. However, bacteria that normally live in the upper airway may grow and be mistaken for the cause of symptoms if the result is viewed without context.

A different test may be better in some situations. Molecular respiratory panels are commonly used for viruses. A throat swab is more appropriate for suspected strep throat, and a sputum or other lower-airway sample may be needed when investigating certain lung infections.

Risks and complications

The swab can cause brief discomfort, watering eyes, sneezing, coughing, or gagging. A small nosebleed can occur, but serious complications are unusual.

Tell the collector promptly if you develop significant pain or bleeding that does not settle.

What happens next

Your result may appear in a patient portal or be discussed with you by the team that ordered it. Because cultures take time, decisions may sometimes be made before the final result, especially when symptoms or exposure suggest an infection that requires prompt action.

Routine follow-up may include reviewing whether the result fits your symptoms, considering a PCR or another sample after a negative culture, or adjusting treatment after the organism is identified. Public health staff may contact you if the result involves an infection that requires reporting or contact management.

Seek urgent medical advice if symptoms are worsening, you cannot keep fluids down, or a baby has difficulty feeding or repeated coughing spells.

Call emergency services for severe difficulty breathing, blue or grey lips or skin, pauses in breathing, collapse, or difficulty waking. Do not wait for a culture result when emergency symptoms are present.

Common questions

Can I drink coffee before a nasopharyngeal culture?

Yes. Fasting is not needed, and coffee does not usually affect a sample taken from behind the nose.

Does the time of day matter?

Usually not. How long you have been ill and whether you recently took antibiotics are more important than the time of day.

Can I exercise beforehand?

Yes. Exercise is not known to change the culture result. If exercise worsens your breathing or coughing, rest and tell the person arranging the test.

Does the swab hurt?

It can feel uncomfortable or make your eyes water, but collection usually lasts only a few seconds. Tell the collector if you have severe pain.

Is a culture the same as a PCR test?

No. Culture grows living organisms and usually takes several days. PCR detects genetic material and is generally faster, but it does not provide a living organism for additional testing.

Does a negative result mean I do not have an infection?

Not always. A negative culture can occur because of late testing, recent antibiotics, a shallow sample, transport problems, or an organism that is difficult to grow.

Sources

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- Centers for Disease Control and Prevention. Manual for the Surveillance of Vaccine-Preventable Diseases: Laboratory Support for Surveillance
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- MedlinePlus Medical Encyclopedia. Nasopharyngeal Culture