TEST

Blood culture

A blood culture checks a blood sample for bacteria or fungi that may be causing a bloodstream infection.

WHAT IT MEASURES
Living bacteria or fungi growing from a blood sample

SAMPLE
Blood

FASTING NEEDED?
No

HOW LONG IT TAKES
Usually 10 to 20 minutes

RESULTS IN
Hours for positives; final results often five days, varying by laboratory

USED FOR
Diagnosing bloodstream infection and checking whether it has cleared

MAIN LIMITATION
Skin contamination can falsely suggest a bloodstream infection

Overview

A blood culture looks for bacteria or fungi living in your blood, which normally does not contain these organisms.

The test is mainly used when a bloodstream infection is possible. It may also help diagnose sepsis, the body's harmful response to infection, or endocarditis, an infection of the heart's inner lining or valves.

Blood is placed into special bottles that support microbial growth and are monitored in a laboratory. If something grows, further tests can identify it and show which antimicrobial medicines may work.

Unlike a routine blood count or inflammation test, a blood culture looks for the organism itself rather than your body's response to it.

Why the test is ordered

A blood culture can help determine:

It may be ordered if symptoms or other findings suggest a bloodstream infection. Possible clues include fever, chills, very low body temperature, low blood pressure, confusion, or a rapid decline in health.

Cultures may also be repeated during treatment to check whether an infection has cleared, particularly with certain organisms, endocarditis, or infections involving medical devices.

- Whether bacteria or fungi are present in the blood
- Which organism is present
- Which antibiotics or antifungal medicines are likely to work

Who should have the test

Blood cultures are not routine screening tests for people who feel well. They are usually ordered when there is a specific concern about infection in the blood.

You may be offered the test if you are seriously unwell with a possible infection, have suspected endocarditis, or may have an infection involving a central line or another internal device. Testing may also be appropriate for unexplained fever in someone at higher risk because of chemotherapy, a transplant, or a weakened immune system.

The decision depends on your symptoms, medical history, medicines, examination, and other test results.

How to prepare

You can usually eat and drink normally. Fasting is not needed, and coffee does not directly interfere with the culture.

Tell the healthcare team about antibiotics or antifungal medicines you are taking or recently received. These can reduce the number of organisms in the blood and cause a negative culture even when infection is present.

When possible, cultures are collected before the first antimicrobial dose. However, testing must not delay urgent treatment if you are seriously unwell. Do not stop prescribed medicine unless instructed.

Wear clothing that allows access to your arms. Drinking water beforehand may make veins easier to find unless you have been told to limit fluids.

What happens during the test

A healthcare professional usually takes blood from a vein in your arm. They carefully clean the skin with antiseptic to prevent harmless skin organisms from entering the sample.

Blood is normally divided between bottles designed to grow organisms with or without oxygen. Together, these bottles form one culture set.

More than one set is often collected from separate needle sites. This improves detection and helps distinguish a true bloodstream infection from contamination, in which skin organisms enter the bottle during collection.

The amount of blood collected affects detection. Smaller amounts are used for babies and children.

If a central-line infection is suspected, samples may be taken from both the line and a separate vein. Comparing the results can help identify the source.

Understanding your results

Blood cultures do not have a universal numerical reference range. Results depend on the laboratory and your clinical circumstances.

A negative or no growth result means no bacteria or fungi grew during the observation period. This makes a bloodstream infection less likely but does not completely exclude one.

A positive result means an organism grew in at least one bottle. An early report may describe its appearance under a microscope, such as "Gram-positive cocci." Exact identification and testing of which medicines may work usually follow.

Not every positive culture represents a bloodstream infection. The healthcare team considers:

Common skin organisms may indicate contamination if found in only one bottle. However, they can cause genuine infection, especially in people with medical devices or weakened immune systems.

- Which organism grew
- How many bottles and sets were positive
- How quickly they became positive
- Your symptoms and other results
- Whether blood came from a vein or a line

What affects the results

Antibiotics and antifungal medicines may stop organisms from growing and are a major cause of falsely negative results.

Blood volume matters because too little blood can miss the small number of organisms circulating.

The number and timing of samples affect detection. Organisms may enter the blood intermittently, so multiple sets are often more reliable than one sample.

Skin contamination can cause a falsely positive result. Careful cleaning and separate collection sites reduce this risk.

Central-line collection may detect organisms living in the line rather than throughout the bloodstream. A sample from a separate vein helps with interpretation.

Transport and handling also matter. Bottles must reach the monitoring system promptly and be stored appropriately.

Some organisms grow slowly or need special methods. The laboratory may need advance notice if an unusual or hard-to-grow organism is suspected.

Exercise, coffee, kidney function, and recent blood transfusion do not usually affect whether an organism grows.

Accuracy and limitations

Blood culture is an important method for finding living bacteria or fungi, but it does not detect every bloodstream infection.

It may miss infection if antimicrobial treatment was given first, too little blood was collected, organisms were only briefly present, or the organism grows poorly in standard bottles. Results must therefore be considered alongside symptoms and other findings.

The main cause of an incorrect positive result is contamination. The same organism growing in multiple sets is generally more convincing than growth in only one bottle, although exceptions occur.

Rapid molecular tests may identify genetic material sooner, but they do not always show whether an organism is alive or provide complete medicine-susceptibility information.

If infection is limited to one area, a sample such as urine, spinal fluid, joint fluid, or material from an abscess may be more useful than blood culture alone.

Risks and complications

A blood draw can cause brief pain, minor bleeding, or a small bruise. Some people feel light-headed or faint. Serious complications are uncommon.

What happens next

Some cultures become positive within hours; others take one or more days. A final negative result is often available after about five days, although selected organisms may require longer.

If a culture becomes positive, the laboratory usually alerts the healthcare team. Treatment may be started or adjusted before exact identification and medicine-susceptibility results are complete. Repeat cultures may be needed to confirm the finding or check that the infection has cleared.

A final negative result is reviewed with your symptoms and other tests. Further investigation may be needed if concern about infection remains.

Do not wait for a culture result if you develop severe difficulty breathing, new confusion, blue or grey skin, fainting, very little urine, or rapidly worsening illness. Seek emergency medical help. For persistent fever or symptoms that are not improving but are not severe, contact your healthcare service promptly.

Common questions

Can I drink coffee before a blood culture?

Yes. Coffee does not affect microbial growth. Follow any separate fasting instructions for other tests being collected.

Does the time of day matter?

Usually not. Cultures should be collected when clinically needed. Several samples may sometimes be timed separately because organisms can appear intermittently.

Can I exercise beforehand?

Yes. Exercise does not usually affect the result, but follow your healthcare team's activity advice if you are unwell.

Why are several bottles needed?

Different bottles support different organisms. Multiple sets also improve detection and help

distinguish infection from contamination.

Can antibiotics like amoxicillin or doxycycline make the result negative?

Yes. Tell the team when you last took them, but do not stop prescribed medicine unless instructed.

Why is the result taking several days?

Organisms need time to grow. Positive bottles may be reported early, while exact identification and medicine-susceptibility testing take longer.

Sources

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