TEST

Bone marrow culture

A bone marrow culture checks a marrow sample for bacteria, fungi, or other microbes

WHAT IT MEASURES
Growth of bacteria, fungi, or other microbes from bone marrow

SAMPLE
Bone marrow aspirate, sometimes marrow tissue

FASTING NEEDED?
Sometimes, if sedation is planned

HOW LONG IT TAKES
About 20 to 30 minutes

RESULTS IN
Days; fungal and mycobacterial cultures may take weeks

USED FOR
Diagnosing suspected infection

MAIN LIMITATION
A negative culture does not rule out infection

Overview

A bone marrow culture looks for microbes in a sample of bone marrow. These may include bacteria, fungi, or mycobacteria, the group that includes the bacteria causing tuberculosis.

Bone marrow is the soft tissue inside certain bones where blood cells are made. A liquid sample, called a bone marrow aspirate, is usually collected from the back of the pelvic bone using a needle.

In the laboratory, the sample is placed in conditions that support microbial growth. If something grows, staff identify it when possible. Some bacteria may also be tested to see which antibiotics like amoxicillin or doxycycline are likely to work.

Culture looks for living microbes. A bone marrow biopsy examines a small solid piece of marrow for changes in cells and tissue. Both may be performed during the same appointment, but they produce separate results.

Why the test is ordered

Bone marrow culture is not a routine screening test. It may be ordered when an infection is thought to have spread through the body or entered the bone marrow.

It may be considered when:

Blood cultures, scans, antigen or molecular tests, and examination of marrow cells may also be needed.

- Blood cultures and other tests have not found the cause of an illness
- A fungal or mycobacterial infection is suspected
- Your immune system is weakened
- You have an ongoing unexplained fever
- Marrow aspiration or biopsy is already being performed

Who should have the test

Bone marrow culture is generally reserved for people whose symptoms, medical history, examination, or earlier results suggest a deeper or widespread infection.

It is most useful when a specific infection is suspected so the laboratory can use the correct growth conditions and incubation time. The healthcare team will also consider whether a less invasive sample, such as blood, sputum, urine, lymph node tissue, or other affected tissue, could provide the answer.

How to prepare

Ask whether you need to stop eating or drinking. Fasting is usually unnecessary with local anaesthetic alone. If you will receive sedation, you may need to fast for a set period.

Tell the healthcare team about:

Do not stop prescribed medicine unless the team responsible for the procedure tells you to. If sedation is planned, arrange for someone to take you home and follow instructions about driving, work, and alcohol afterward.

Wear comfortable clothing. You may be asked to change into a gown.

- Blood thinners like warfarin or apixaban , aspirin, and other medicines affecting clotting
- Bleeding conditions or low platelet counts
- Allergies to anaesthetics, dressings, or antiseptics

- Pregnancy or possible pregnancy
- Recent antibiotics or antifungal medicines
- Previous problems with sedation or procedures

What happens during the test

You usually lie on your side or stomach. The back of the pelvic bone is the most common collection site.

The skin is cleaned, and local anaesthetic is injected. This can sting briefly. A special needle is then passed through the numbed skin into the bone.

A syringe withdraws a small amount of liquid marrow. You may feel pressure and brief sharp or pulling pain. If a biopsy is also needed, a larger needle removes a small core of tissue.

Samples are placed in sterile containers or culture bottles. Separate samples may be needed for bacteria, fungi, and mycobacteria. Other samples may be sent for microscopy or molecular testing.

Pressure and a dressing are applied afterward. The collection is usually brief, although preparation and recovery lengthen the appointment. If you received sedation, you will be monitored before leaving.

Understanding your results

A positive culture means a microbe grew from the sample. The report should identify it when possible.

This does not always prove that the organism caused your illness because skin microbes can enter the sample during collection. The result is interpreted alongside your symptoms, immune status, scans, blood tests, and marrow findings.

For some bacteria, susceptibility results show which antibiotics slowed or stopped growth in the laboratory. Your healthcare team will decide which treatment is appropriate.

A negative result means no organism grew under the conditions used. It does not rule out infection. There may have been too few microbes, the sampled area may not be involved, or the organism may require another test.

Routine bacterial cultures may be reported sooner than fungal or mycobacterial cultures. Slow-growing organisms can take several weeks. Results are usually reported as growth or no

growth, with details about any organism found.

What affects the results

Antibiotics, antifungal medicines, or tuberculosis medicines taken before collection may reduce microbial growth. Tell the team about recent treatment, but do not delay or stop medicine without instructions.

Other factors include:

Age, pregnancy, exercise, and time of day do not usually change whether microbes grow, although they may affect procedure planning or the wider clinical assessment. A recent blood transfusion generally does not directly alter the culture.

- Too little marrow in the sample
- Patchy involvement of the marrow
- Delayed or unsuitable transport and storage
- Failure to request special media for fungi or mycobacteria
- Low numbers of microbes or organisms that are difficult to grow
- Contamination by skin microbes

Accuracy and limitations

Growing a disease-causing organism from a properly collected sample provides strong evidence of infection and may allow antibiotic susceptibility testing.

However, culture can miss infection, particularly after antimicrobial treatment, when few microbes are present, or when the sampled area is unaffected. Accuracy varies by organism, laboratory method, treatment history, and the population being tested.

Contamination can produce an apparently positive result. Repeated growth of the same organism, matching blood cultures, or compatible tissue findings make a true infection more likely.

Other tests may sometimes be more useful. Molecular tests can detect microbial genetic material, while antigen, antibody, or microscopic tests may identify infections even when culture is negative.

Risks and complications

The site is often sore for a few days. Minor bleeding, bruising, and temporary light-headedness can occur.

Significant bleeding and infection are uncommon. Risk may be higher with a bleeding disorder, very low platelet count, or medicines that reduce clotting. Sedation has separate risks that will be explained beforehand.

Contact the procedure team promptly if pain worsens, or if the site becomes increasingly red, swollen, warm, or starts draining fluid. Fever after the procedure also needs prompt medical advice.

Seek urgent or emergency help for bleeding that does not stop with firm pressure, fainting that does not quickly improve, severe breathing difficulty, or signs of a serious allergic reaction.

What happens next

Keep the dressing in place for the period stated in your aftercare instructions. Keep the site clean and dry at first. Use only pain relief recommended by your healthcare team.

The laboratory may issue an early alert if an important organism starts growing, followed later by identification and susceptibility results.

Follow-up usually reviews the culture alongside blood cultures, imaging, molecular tests, and the marrow aspiration or biopsy report. If the culture is negative but concern remains, you may need observation, another type of test, or sampling from a different site.

Common questions

Can I drink coffee before a bone marrow culture?

Usually, if only local anaesthetic is planned. Coffee may break a required fast before sedation, so follow the procedure unit's instructions.

Does the time of day matter?

No. Morning or afternoon collection does not normally affect microbial growth, although transport arrangements may influence timing.

Can I exercise beforehand?

Light activity is unlikely to affect the culture. Ask about restrictions if you have a bleeding condition or will receive sedation.

Can I take my usual medicines?

Often, but blood thinners and medicines affecting platelets require individual advice. Report antibiotics and antifungal medicines without stopping them yourself.

Will I be awake?

Most people remain awake with local anaesthetic. Some centres offer sedation. Aspiration may still cause brief pressure or sharp discomfort.

Why does the result take so long?

Microbes must multiply enough to be detected and identified. Routine bacteria may grow within days, while fungi and mycobacteria can take several weeks.

Sources

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