TEST

Lactic acid test

A lactic acid test measures lactate in blood to assess tissue stress and metabolism.

WHAT IT MEASURES
Lactate, a substance made as cells process glucose

SAMPLE
Blood

FASTING NEEDED?
No, unless required for other tests

HOW LONG IT TAKES
Usually less than five minutes

RESULTS IN
Minutes to hours, varying by laboratory

USED FOR
Diagnosis and monitoring

MAIN LIMITATION
Exercise and poor sample handling can falsely raise lactate

Overview

A lactic acid test measures the amount of lactate in your blood. Although the test is commonly called a "lactic acid" test, laboratories usually measure and report lactate.

Your cells continually make lactate while processing glucose for energy. The liver and kidneys remove much of it. Blood lactate rises when the body makes more than it can clear.

This can happen when tissues are not receiving enough blood or oxygen, such as during shock. Lactate may also rise for other reasons, including a seizure, intense exercise, liver disease, certain medicines, or problems with how cells use energy.

The result does not show the cause by itself. It is interpreted alongside your symptoms, examination, blood pressure, oxygen level, medical history, and other test results.

Why the test is ordered

The test is most often used during an acute illness. It may help assess how seriously the body is under stress and whether treatment is improving circulation.

It may be ordered when healthcare professionals are concerned about:

Repeat measurements may be used to follow a changing illness. A falling result can be reassuring in the right context, but the trend must be considered with your overall condition. A rising result can lead to further assessment, even if your blood pressure is not low.

A lactate test is not generally used to screen healthy people.

- Sepsis, which is the body's dangerous response to an infection
- Shock or reduced blood flow to tissues
- Severe breathing or heart problems
- A seizure, especially if the cause of collapse is uncertain
- Medicine or toxin effects
- A metabolic disorder affecting how cells produce energy

Who should have the test

You may have this test if you are seriously unwell or have symptoms suggesting reduced circulation, severe infection, or a metabolic problem. It is commonly performed in an emergency department, hospital ward, or intensive care unit.

Some people have planned testing when a specialist is investigating an inherited metabolic or mitochondrial condition. These conditions affect how cells produce energy.

Lactate testing is not automatically needed for every infection, episode of tiredness, or muscle pain. Whether it is useful depends on your symptoms and the question your healthcare team is trying to answer.

How to prepare

Most blood lactate tests do not require fasting. In an emergency, testing should not be delayed so that you can fast.

Avoid strenuous exercise beforehand if the test is planned. Exercise makes muscles produce more lactate and may temporarily increase the result. Sit quietly before collection if the laboratory asks you to rest.

Tell the person arranging the test about your medicines and supplements. Do not stop prescribed medicine unless you have been specifically told to do so.

Follow any separate instructions if other blood tests are being taken at the same time. Those

tests may require fasting even though lactate testing does not.

What happens during the test

Most samples are taken from a vein in your arm. A band may be placed around your upper arm, and a needle is inserted into the vein. The collection itself usually takes less than five minutes.

Try to keep your hand relaxed. Repeatedly making a fist can increase lactate in the sampled arm.

In some hospital situations, blood is taken from an artery, often at the wrist. Arterial blood collection can provide lactate together with information about oxygen, carbon dioxide, and blood acidity. It may be more uncomfortable than collection from a vein.

The sample must be handled promptly. Depending on the collection tube and testing equipment, it may need rapid transport, cooling, or immediate analysis near your bedside.

Understanding your results

Your report will show a lactate concentration and the laboratory's reference range. Do not compare your result with a range from another laboratory.

Ranges and interpretation vary by laboratory, sample type, age, sex, pregnancy status, medicines, and clinical context. Venous and arterial results may also differ slightly and are not always interchangeable.

A raised result means lactate is being produced faster than it is being cleared. Possible explanations include reduced blood flow, severe infection, intense muscle activity, a recent seizure, liver dysfunction, or medicine and toxin effects.

"Lactic acidosis" is not simply another name for a raised lactate result. It means lactate is raised alongside an abnormal increase in blood acidity. A blood gas and tests such as bicarbonate are usually needed to assess this.

One result rarely provides the full answer. The direction of change, your symptoms, and other measurements are often more useful than an isolated number.

Laboratories have their own thresholds for urgently notifying the healthcare team. There is no single lactate value that has the same meaning for every person or condition.

What affects the results

Collection and handling have an unusually important effect on lactate testing.

A result can be misleadingly high if:

Recent seizures, shivering, struggling, or prolonged muscle activity can cause a genuine temporary rise. These are not laboratory errors, but they may make the result less representative of your usual level.

Medicines can also affect interpretation. Examples include adrenaline, some inhaled medicines used to open the airways, metformin in particular high-risk clinical circumstances, linezolid, and some HIV medicines. This does not mean these medicines usually cause dangerous lactate levels. Your kidney function, dose, illness, and other factors matter.

Liver disease may reduce lactate clearance. The kidneys also help process and remove lactate, so kidney function can matter. Alcohol and some toxic exposures can alter lactate production or clearance.

Pregnancy alone does not necessarily cause a major rise, but labor and intense muscle activity can affect the result. In babies and young children, crying or struggling during collection may also increase lactate.

- You exercised shortly before the test
- You repeatedly clenched your fist during collection
- A tight tourniquet remained in place for too long
- The sample was not processed within the required time
- Blood cells continued producing lactate before analysis
- Blood was drawn from a limb with severely reduced circulation

Accuracy and limitations

When blood is collected and processed correctly, the test measures lactate reliably. Its main limitations concern what the number means, rather than whether the analyzer can detect lactate.

A normal result does not completely rule out sepsis, reduced tissue blood flow, or another serious illness. Lactate may remain normal early in an illness, and not every dangerous condition produces a rise. The test can therefore miss illness when used alone.

A raised result does not prove sepsis, shock, or oxygen shortage. Exercise, seizures, medicines, liver dysfunction, and collection problems can produce a positive result when the suspected condition is not present.

There is no single reliable missed-case or false-alarm rate. Accuracy depends on the condition being investigated, the cutoff used, when the sample was taken, and whether lactate is interpreted with other findings.

Standard tests mainly measure L-lactate , the form usually produced by human cells. They may miss D-lactate , which can accumulate in some people with short bowel syndrome. A specific D-lactate test is more appropriate when that condition is suspected.

A blood gas is better for determining whether your blood is too acidic. Other tests may be needed to find the cause, including blood cultures, glucose and ketone tests, liver and kidney tests, heart tests, or imaging.

Risks and complications

A venous blood draw may cause brief discomfort, a small bruise, or light-headedness. Serious complications are uncommon.

An arterial sample is often more painful and may cause bruising or bleeding. Pressure is usually held over the site for longer, especially if you take medicine that reduces blood clotting.

What happens next

If your lactate is raised during an acute illness, the healthcare team may repeat the test and investigate the cause. Treatment is directed at the underlying problem, not at the laboratory number alone.

Routine follow-up may include reviewing medicines, kidney and liver function, or planned specialist testing. Mild or temporary changes may only need repeat testing when you are rested and the sample can be collected carefully.

Seek emergency help for severe trouble breathing, new confusion, fainting, blue or grey lips, cold and clammy skin, or rapidly worsening illness. These symptoms require urgent assessment regardless of a previous lactate result.

For a non-urgent unexpected result, arrange follow-up with the healthcare professional who ordered the test. They can interpret it using the laboratory range and the reason it was measured.

Common questions

Can I drink coffee before a lactic acid test?

Usually, yes. Lactate testing itself does not normally require fasting. If other tests are being taken, follow their food and drink instructions.

Can I exercise beforehand?

Avoid strenuous exercise before a planned test. Exercise can raise lactate for a period afterward. Emergency testing should not be delayed because you have been active.

Does the time of day matter?

There is no standard time of day required. For repeat planned tests, similar resting and collection conditions can make results easier to compare.

Why was my test repeated?

Lactate can change quickly. Repeat testing shows whether it is rising, falling, or staying stable after treatment or as an illness develops.

Is venous lactate the same as arterial lactate?

They are closely related but not identical. Venous blood is easier to collect and is often suitable for initial testing, while arterial blood may be preferred when a blood gas is also needed.

Does a high result mean I have sepsis?

No. Sepsis is one possible cause, but many other conditions can raise lactate. Sepsis is assessed using your symptoms, examination, vital signs, and other tests.

Sources

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