TEST

LDL test

An LDL test measures cholesterol carried in low-density lipoprotein particles in your blood.

WHAT IT MEASURES
Cholesterol carried in low-density lipoprotein particles

SAMPLE
Blood

FASTING NEEDED?
Sometimes, for high triglycerides or specific laboratory instructions

HOW LONG IT TAKES
About five to ten minutes

RESULTS IN
Usually one to three days; timing varies by laboratory

USED FOR
Screening and monitoring cardiovascular risk and treatment

MAIN LIMITATION
High triglycerides can make calculated LDL unreliable

Overview

An LDL test measures the cholesterol carried by low-density lipoprotein particles in your blood. The result is often called LDL cholesterol, or LDL-C.

Cholesterol is a waxy substance your body needs for cell membranes and hormones. LDL particles transport cholesterol through the bloodstream. Over time, higher LDL levels can contribute to fatty deposits in artery walls. This is why LDL is sometimes called "bad cholesterol," although LDL particles also have normal functions.

LDL is usually reported as part of a lipid panel. This panel commonly includes total cholesterol, HDL cholesterol and triglycerides. HDL is another type of cholesterol-carrying particle. Triglycerides are a different form of blood fat.

Many laboratories calculate LDL from the other lipid results rather than measuring it directly. Your report may identify the result as "calculated LDL" or "direct LDL."

The test helps estimate future heart and blood vessel risk. It cannot show whether an artery is currently blocked, and an LDL result does not diagnose a heart attack or stroke.

Why the test is ordered

An LDL test may be ordered to:

LDL is only one part of cardiovascular risk. Your age, blood pressure, smoking history, diabetes status, family history and previous heart or blood vessel disease may also affect how the result is interpreted.

- Check cholesterol as part of routine cardiovascular risk assessment
- Help assess your risk of heart attack, stroke or peripheral artery disease
- Monitor lifestyle changes or cholesterol-lowering treatment
- Investigate a personal or family history of very high cholesterol
- Help assess conditions that can change cholesterol, such as thyroid, kidney or liver disease

Who should have the test

Cholesterol testing is commonly offered to adults as part of preventive care. How often it is repeated depends on your age, previous results, health history and whether you take cholesterol-lowering medicine.

Earlier or more frequent testing may be considered if you have diabetes, high blood pressure, kidney disease, known cardiovascular disease or a strong family history of early heart disease. It may also be used when a close relative has a genetic condition that causes very high cholesterol.

Some children and teenagers have lipid testing, particularly when there is a family history of inherited high cholesterol or early cardiovascular disease. Recommendations for childhood screening differ among health systems.

Pregnancy can change cholesterol levels, so routine cardiovascular interpretation may be postponed unless there is a specific reason for testing.

How to prepare

Many LDL tests can be done without fasting. A nonfasting sample is often suitable for routine screening because eating usually affects triglycerides more than LDL itself.

You may be asked to fast if your triglycerides have previously been high, a calculated LDL

result could not be reported, or the laboratory needs a fasting sample for other tests. If fasting is required, follow the instructions you receive. Water is generally allowed, but coffee, tea, alcohol and food may not be.

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

If possible, mention a recent serious illness, operation, major weight change or pregnancy. These can make the result less representative of your usual level.

What happens during the test

A healthcare professional usually takes blood from a vein in your arm. They clean the skin, insert a small needle and collect blood into one or more tubes.

You may feel a brief scratch or sting. The blood draw usually takes only a few minutes. A dressing is placed over the site afterward.

Home cholesterol kits and finger-prick testing are available in some places. These may be useful for screening, but an unexpected result may need confirmation with a venous blood sample from an accredited laboratory.

Understanding your results

LDL is usually reported in milligrams per decilitre, written as mg/dL, or millimoles per litre, written as mmol/L.

There is no single LDL value that has the same meaning for everyone. Reference ranges, treatment thresholds and goals vary by laboratory, age, sex, pregnancy status, medicines and clinical context. Your overall cardiovascular risk and health history matter more than whether the result is marked simply "high" or "normal."

A lower LDL level is generally linked with lower cardiovascular risk. However, the amount of LDL reduction considered useful depends on why you were tested. Someone with previous heart disease may have a different treatment goal from someone having a first routine check.

A very high result may raise the possibility of an inherited cholesterol condition, particularly when close relatives have similar results or early heart disease. One result alone does not confirm this. It may be repeated and considered alongside family history and other findings.

Results near a decision threshold can move from one side to the other because of normal day-to-day variation. A repeat test may provide a clearer picture.

What affects the results

Several factors can change LDL or make the reported number misleading without a laboratory error.

Testing under similar conditions each time can make trends easier to interpret. Do not delay medically necessary testing simply to create ideal conditions.

- High triglycerides: Common LDL equations become less reliable as triglycerides rise. At very high levels, the laboratory may not report calculated LDL.
- Eating before the test: A meal can raise triglycerides, which may affect a calculated LDL result even when LDL itself has changed little.
- Recent illness or inflammation: Infection, surgery, a heart attack and other major illnesses can temporarily alter blood fats.
- Pregnancy: LDL and triglycerides normally change during pregnancy and after birth.
- Weight change: Recent weight loss or gain can shift cholesterol levels before they settle.
- Exercise: Regular activity can affect long-term lipid levels. An unusually strenuous workout shortly before testing may cause a temporary change.
- Alcohol: Recent or heavy alcohol intake can raise triglycerides and interfere with LDL calculation.
- Medicines: Statins and other lipid-lowering medicines reduce LDL. Steroids like prednisone or hydrocortisone , some hormone treatments and some medicines for blood pressure, seizures, HIV or mental health conditions can also affect lipids.
- Other health conditions: Thyroid disease, diabetes, kidney disease and liver disease may change LDL or triglycerides.

Accuracy and limitations

Laboratory cholesterol measurements are generally reliable, but LDL is often estimated rather than directly measured. Common equations use total cholesterol, HDL and triglycerides to calculate LDL. The estimate may be wrong when triglycerides are high or when lipid patterns are unusual.

A direct LDL test avoids that specific calculation, but it is not automatically more accurate in every situation. Direct methods can also produce different results between laboratories, especially in people with abnormal lipoproteins.

A single LDL result can incorrectly suggest that you are above or below a treatment threshold

because cholesterol changes naturally from day to day. Repeating an unexpected or borderline result reduces the chance of acting on a temporary change.

LDL-C measures the amount of cholesterol inside LDL particles, not the number of particles. In some people, especially those with high triglycerides, diabetes or metabolic disorders, LDL-C may appear acceptable even though the number of potentially harmful particles is higher. Non-HDL cholesterol or apolipoprotein B may sometimes provide better information in this setting.

The test estimates risk; it cannot tell whether you currently have narrowed arteries. Symptoms that could represent an acute heart or circulation problem require clinical assessment rather than another routine LDL test.

Risks and complications

The risks are those of a routine blood draw. You may have brief discomfort, a small bruise or feel light-headed.

Serious complications are uncommon. Applying pressure after the needle is removed usually limits bleeding.

What happens next

A result that fits your expected range may simply be recorded and rechecked at a routine interval. The timing is based on your previous results, overall risk and whether you are receiving treatment.

If the result is unexpected, your healthcare professional may review whether you fasted, whether triglycerides were high, and whether illness, pregnancy or medicines affected the sample. They may repeat the lipid panel or request a direct LDL, non-HDL cholesterol or apolipoprotein B test.

Follow-up may include discussion of food choices, physical activity, smoking, blood pressure and medicines. Treatment decisions should be based on your overall cardiovascular risk rather than LDL alone.

An abnormal LDL result is not usually an emergency. Seek emergency help for new chest pressure or pain, severe shortness of breath, fainting, or sudden weakness, facial drooping or difficulty speaking. These symptoms need urgent assessment regardless of your cholesterol result.

Common questions

Can I drink coffee before an LDL test?

If you were told to fast, have only water unless your instructions say otherwise. Black coffee can affect fasting requirements, even without milk or sugar. If fasting was not requested, coffee is usually permitted.

Do I need to fast?

Often, no. Fasting may be requested when triglycerides are high, a previous calculated LDL was unreliable, or other blood tests require it.

Does the time of day matter?

LDL does not usually change enough during the day to require a specific testing time. If you are monitoring a trend, using similar timing and fasting conditions can make comparisons easier.

Can I exercise before the test?

Normal daily activity is generally reasonable. Avoid an unusually strenuous workout shortly beforehand if you want the result to reflect your typical routine or if your laboratory has given specific instructions.

Should I take my medicines before the test?

Take prescribed medicines as usual unless you have been told otherwise. Tell the healthcare professional what you take, including cholesterol medicines, hormones and supplements.

Why was my LDL not reported?

The laboratory may be unable to calculate it when triglycerides are very high or required values are missing. A fasting repeat test, direct LDL measurement or another lipid marker may be considered.

Sources

- National Heart, Lung, and Blood Institute. Blood Cholesterol: Diagnosis .
- MedlinePlus. Cholesterol Levels: Medical Test . U.S. National Library of Medicine.
- Grundy SM, Stone NJ, Bailey AL, et al. 2018 AHA/ACC Guideline on the Management of Blood Cholesterol . Circulation. 2019;139:e1082-e1143.
- Nordestgaard BG, Langsted A, Mora S, et al. Fasting Is Not Routinely Required for Determination of a Lipid Profile . European Heart Journal. 2016;37:1944-1958.



- Sampson M, Ling C, Sun Q, et al. A New Equation for Calculation of Low-Density Lipoprotein Cholesterol . JAMA Cardiology. 2020;5:540-548.
- Mach F, Baigent C, Catapano AL, et al. 2019 ESC/EAS Guidelines for the Management of Dyslipidaemias . European Heart Journal. 2020;41:111-188.