

Apolipoprotein E

Know your risk™ for lipid abnormalities.



What is ApoE?

Apolipoprotein E, or ApoE, is a protein found in the packages in your blood that carry lipids such as cholesterol and triglycerides. ApoE helps move lipids from your body's cells to the liver, where the lipids are removed from the blood and excreted. ApoE also affects the activity of enzymes that help remove lipids from the body.

There are three variants of the ApoE protein- e2, e3 and e4. The ApoE variants differ in their ability to clear lipids and therefore have different effects on blood cholesterol and triglyceride levels. Your ApoE genotype is the combination of ApoE variants you have. Each person has 2 copies of the ApoE gene, which can be the same or different. There are 6 possible genotypes: e2/e2, e2/e3, e2/e4, e3/e3, e3/e4, and e4/e4. The most common genotype is e3/e3.

How is ApoE involved in heart disease?

You probably know that your blood lipid levels affect your risk of developing heart disease. High levels of LDL cholesterol (the "bad" cholesterol) and triglycerides put you at higher risk. Because ApoE helps remove lipids from your body, researchers have looked to see if ApoE also affects the risk of developing heart disease.

If you have the e2/e4 or e3/e3 genotype, you are at normal risk for developing heart disease. People who have the e3/e4 or e4/e4 genotype are at greatest risk of developing heart disease, and have high LDL cholesterol and triglyceride levels. People with the e2/e2 or e2/e3 genotype are at an intermediate risk, and have higher levels of triglycerides but lower LDL cholesterol levels.

How does knowing my ApoE genotype help my doctor?

Your ApoE genotype can also affect how you respond to treatments or lifestyle changes. People with the e2/e2 or e2/e3 genotype respond well to treatment with the lipid-lowering drugs called statins, while people with the e3/e4 or e4/e4 genotype do not respond as well. People with the e3/e4 or e4/e4 genotype have the greatest reduction in LDL cholesterol levels when on a low fat diet. Smokers with the e3/e4 or e4/e4 genotype have a much greater risk of developing heart disease than either e3/e4 or e4/e4 non-smokers or smokers with the e2/e4 or e3/e3 genotype.

When should I be tested for my ApoE genotype?

Your doctor may order a test to identify your ApoE genotype at the same time they order other tests that can be used to determine your risk of developing heart disease, such as a cholesterol test. Also, your doctor may determine your ApoE genotype if your lipid levels have not changed even though you are on lipid-reducing medications or have changed your lifestyle and diet. The test may help your doctor develop a treatment plan that will provide the greatest risk reduction.

Can I do anything to change my ApoE genotype?

No, unlike your blood pressure or cholesterol levels, there is nothing you can do to change your ApoE genotype. However, knowing your ApoE genotype will allow your doctor to better tailor any treatment plan to work the best for you.

How should I prepare for the ApoE genotype test?

The ApoE test does not require any special preparations. You do not need to fast and you can take your medicines as you normally do.

Know your risk™

| ApoE genotype | Lipid levels | CVD Risk | Response to statins | Response to a very low fat diet |
|----------------|-----------------------------------|-----------|---------------------|---------------------------------|
| e2/e2 or e2/e3 | Triglycerides ▲ LDL Cholesterol ▼ | Reduced | Normal | Poor |
| e2/e4 or e3/e3 | Normal | Normal | Normal | Normal |
| e3/e4 or e4/e4 | Triglycerides ▲ LDL Cholesterol ▲ | Increased | Poor | Good |

