

Homocysteine

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What is homocysteine?

Homocysteine (say: "ho-mo-sist-een") is an amino acid (a building block of protein) that is produced in the human body. Homocysteine may irritate blood vessels, leading to blockages in the arteries (called atherosclerosis).

How is a high homocysteine level harmful?

High homocysteine levels in the blood can also cause cholesterol to change to something called oxidized low-density lipoprotein, which is more damaging to the arteries. In addition, high homocysteine levels can make blood clot more easily than it should, increasing the risk of blood vessel blockages. A blockage might cause you to have a stroke or a problem with blood flow. Up to 20% of people with heart disease have high homocysteine levels.

What causes a high homocysteine level?

Homocysteine is normally changed into other amino acids for use by the body. If your homocysteine level is too high, you may not have enough B vitamins to help this process. Or you may not have enough of the chemicals (enzymes) to process homocysteine. Most people with a high homocysteine level don't get enough folate (also called folic acid), vitamin B₆ or vitamin B₁₂ in their diet. Replacing these vitamins helps return the homocysteine level to normal. Other possible causes of a high homocysteine level include low levels of thyroid hormone, kidney disease, psoriasis, some medicines, or inherited deficiencies in the enzymes used to process homocysteine in the body.

How is the homocysteine level measured, and what do the results mean?

Homocysteine is measured using a simple blood test. It can be measured at any time of day. It is not necessary to prepare in any special way for the blood test (such as fasting). Most hospital labs can measure homocysteine, or a blood sample can be sent out to a special lab.

A healthy homocysteine level is less than 12 μmol per L. A level greater than 12 μmol per L is considered high. If your homocysteine level is 12 to 15 μmol per L and you have blockages in any blood vessel, you need to lower your homocysteine to less than 12 μmol per L. If you have no other major risk factors for cardiovascular disease and you do not have atherosclerosis, it may be okay for you to have a modestly high level of homocysteine (12 to 15 μmol per L).

While no studies have proved that lowering homocysteine levels ultimately helps reduce strokes, heart attacks and other cardiovascular events, it is a good idea to lower a high homocysteine level because it is a risk for heart disease

How can I lower a high homocysteine level?

Eating more fruits and vegetables (especially leafy green vegetables) can help lower your homocysteine level by increasing how much folate you get in your diet. Good sources of folate include many breakfast cereals, lentils, chickpeas, asparagus, spinach and most beans. Folate is sometimes called "folic acid."

If adjusting your diet is not enough to lower your homocysteine, you will also need to take specific vitamins. You may need to take a fairly large amount of folate (about 1 milligram per day). Additional vitamin B₆ and vitamin B₁₂ also help the body process homocysteine. Vitamin B supplements generally have no side effects.

The usual recommended vitamin and folate doses for lowering homocysteine levels are as follows:

- A daily multivitamin containing 400 µg of folate and less than 5 mEq of iron
- An additional 800 µg of folate per day for 8 weeks

If taking these vitamins doesn't lower your homocysteine level, your doctor may have you try a higher dose. Or you may need to have some tests to see if you have a health condition that causes high homocysteine levels.

What happens next?

It is important to get your homocysteine level rechecked after you have been taking the multivitamin and folate for 8 weeks. If your homocysteine level remains high, your doctor may change your treatment. You may need to take more folate (2 mg per day). If you have had a high homocysteine level, you will probably need to have your level checked regularly - maybe 2 or 3 times a year.