

### What is homocysteine and how is it related to vein disease?

Homocysteine is a chemical found in the blood that is produced when the amino acid *methionine* (a building block for proteins) is broken down. High levels are linked to an increased risk of [peripheral artery disease](#) (PAD), [heart disease](#), and [stroke](#). High homocysteine levels may also make you more likely to develop blood clots in the veins ([deep vein thrombosis](#), or DVT) that can travel to the lungs (pulmonary embolism, or PE). However, it is not clear if homocysteine actually causes these blood clots, or if it is simply a sign of other problems.

### How does homocysteine affect my risk of vein disease?

Vein disease is more common in women with high homocysteine than in women with low homocysteine. Ten to twenty percent of women and men who suffer a DVT have high homocysteine levels, compared to about 5% of people who have not suffered a DVT.<sup>1,2</sup> The higher the homocysteine level, the higher the risk: one analysis of 24 studies found that each 50% increase in homocysteine raised the risk of DVT or PE by 60%.

3

Interestingly, the link between homocysteine and blood clots may actually be stronger in women than in men. In one study, women with the highest homocysteine levels had a 7-fold increased risk of DVT, while men had only 1.4-fold higher risk.<sup>4,5</sup> However, no studies have examined whether homocysteine measurements can predict future DVT risk in women, and lowering homocysteine levels has not been shown to reduce a woman's risk of DVT.

### How is homocysteine measured? Should I be tested?

Homocysteine is measured with a routine blood test. The homocysteine test is not widely available, costs about \$100, and is not currently covered by insurance. In rare cases, your healthcare provider may order a *methionine-load test*, a more precise test that measures homocysteine before and after you swallow 100 mg/kg of methionine (dissolved in orange juice).

Since it has not been proven that lowering homocysteine levels reduces your risk of blood clots in the veins and other problems, most women do not need to be tested. Your doctor may test your homocysteine level if you have a personal or [family history](#) of early heart or blood vessel disease, but you do not have any well-established risk factors (such as

[smoking](#)

, [high cholesterol](#)

, [high blood pressure](#)

, lack of exercise,

[obesity](#)

or

[diabetes](#)

).

### What do my homocysteine numbers mean?

Fasting Blood Homocysteine Levels <sup>6</sup>	
Normal	5 to 15
Moderately High	16 to 30
Intermediately High	31 to 100
Very High	More than 100

Levels are measured in micromoles of homocysteine per liter of blood ( $\mu\text{mol/L}$ )

### What causes high homocysteine levels?

Homocysteine levels are determined by your diet and genetic makeup. Folic acid and other B vitamins, such as B<sub>6</sub> and B<sub>12</sub>, break down homocysteine in the body. If you do not get enough of these vitamins, your homocysteine levels will go up.

7

Your age, hormonal status, and other conditions and medications can also affect your homocysteine levels. See [What causes high homocysteine levels?](#) to learn more.

### What can I do to maintain healthy homocysteine levels?

Although it has not been proven that lowering homocysteine levels reduces your risk of vein disease and its complications, all women are strongly advised to get enough folic acid in their diets. This means eating at least five servings of fruits and green, leafy vegetables daily. [Click here](#) to learn more about dietary changes you can make to maintain healthy homocysteine levels.

To learn more about how homocysteine levels can affect your health, see [Homocysteine & PAD Risk](#) and [Homocysteine & Heart Risk](#)

### References

1. Langman LJ, Ray JG, Evrovski J, Yeo E, Cole DE. Hyperhomocyst(e)inemia and the increased risk of venous thromboembolism: more evidence from a case-control study. *Arch Intern Med*. Apr 10 2000;160(7):961-964.
2. Ray JG. Meta-analysis of hyperhomocysteinemia as a risk factor for venous thromboembolic disease. *Arch Intern Med*. Oct 26 1998;158(19):2101-2106.
3. Den Heijer M, Lewington S, Clarke R. Homocysteine, MTHFR and risk of venous thrombosis: a meta-analysis of published epidemiological studies. *J Thromb Haemost*. Feb 2005;3(2):292-299.
4. den Heijer M, Koster T, Blom HJ, et al. Hyperhomocysteinemia as a risk factor for deep-vein thrombosis. *N Engl J Med*. Mar 21 1996;334(12):759-762.
5. Hainaut P, Jaumotte C, Verhelst D, et al. Hyperhomocysteinemia and venous

thromboembolism: a risk factor more prevalent in the elderly and in idiopathic cases. *Thromb Res*

. Apr 15 2002;106(2):121-125.

6. Malinow MR, Bostom AG, Krauss RM. Homocyst(e)ine, diet, and cardiovascular diseases: a statement for healthcare professionals from the Nutrition Committee, American Heart Association. *Circulation*. Jan 5-12 1999;99(1):178-182.

7. Robinson K, Arheart K, Refsum H, et al. Low circulating folate and vitamin B6 concentrations: risk factors for stroke, peripheral vascular disease, and coronary artery disease. European COMAC Group. *Circulation*. Feb 10 1998;97(5):437-443.

[SEO](#) by [AceSEF](#)