

Patient information from BMJ

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Vitamin B12 deficiency

Not getting enough vitamin B12 can make you anaemic. This means your blood isn't able to carry oxygen around your body as well as it should. And if you go for a long time without getting enough B12 you can get permanent damage to your nervous system. However, vitamin B12 deficiency can be easily treated with vitamin pills or injections.

We've brought together the research about vitamin B12 deficiency and talked to experts about the best way to treat it. You can use our information to talk to your doctor and decide which treatments are best for you.

What is vitamin B12 deficiency?

Vitamin B12 is a vitamin that you need to stay healthy. It's mainly found in animal products such as meat, fish, milk, cheese, and eggs. It's also found in some fortified foods, such as breakfast cereals and yeast extract.

Some people don't get enough vitamin B12 in the foods they eat, or they get plenty but their body doesn't absorb it properly. This causes vitamin B12 deficiency. You may be at risk if you:

- are vegan or vegetarian
- have had surgery on your stomach or bowels
- have had a condition called atrophic gastritis, which causes inflammation in your stomach
- have a condition such as Crohn's disease or coeliac disease that causes inflammation in your bowel
- are taking medicines that stop your body absorbing vitamin B12, such as anticonvulsants, acid blockers, proton-pump inhibitors, or metformin.

Some people don't get enough vitamin B12 because of a condition called pernicious anaemia. If you have this condition, your immune system attacks the cells in your body that produce a chemical called intrinsic factor. Without intrinsic factor your body can't absorb as much vitamin B12 from food.

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You can have a blood test to check your level of vitamin B12.

What are the symptoms?

Vitamin B12 is used by your body to produce red blood cells. These are the cells in your blood that carry oxygen around your body. Without enough vitamin B12 you may become anaemic. The signs are:

- feeling tired
- being short of breath
- being very aware of your heartbeat (getting palpitations).

If vitamin B12 deficiency goes on for a long time it can affect your nervous system. You might:

- no longer notice feelings of vibration through your lower legs
- have difficulty walking, or the way you walk could change
- get numbness or tingling (pins and needles) in your fingers or toes.

What treatments work?

Preventing vitamin B12 deficiency

Recommendations for healthy B12 levels vary in different countries. For example, in the UK recommendations say that 1.5 micrograms of vitamin B12 per day is enough for most adults, although breastfeeding women need 2 micrograms. Most people will get this amount from the foods they eat.

For vegans and vegetarians, experts recommend taking daily **vitamin B12 supplements**, or eating **foods fortified with vitamin B12**. Fortified foods include yeast extract, textured vegetable protein, soya milks, vegetable and sunflower margarines, and breakfast cereals.

If you've had surgery on your bowels or stomach (for example, weight-loss surgery), you'll need to take vitamin B12 supplements. Your doctor may suggest regular blood tests to keep track of your vitamin B12 levels.

Treating vitamin B12 deficiency

The treatment for low levels of vitamin B12 is, as you might expect, vitamin B12. You might hear your treatment called **hydroxocobalamin**. It's a form of vitamin B12. Another form of vitamin B12 is called **cyanocobalamin**.

How you take vitamin B12 will depend on the symptoms you're getting and how bad they are.

If you have severe anaemia or nerve problems you'll need vitamin B12 injections. You'll have these around three times a week for two weeks or so. The injections will build up a store of vitamin B12 in your body. After that, you'll need injections every few months to stop the problem coming back.

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Your doctor might also recommend taking folic acid supplements as tablets, as these can help with anaemia.

If your symptoms aren't severe, or if a blood test shows you're low on vitamin B12 before you've started getting any symptoms, your doctor may suggest taking vitamin B12 supplements as pills. If the pills don't help after two months you'll need to switch to injections.

Some people with severe stomach or bowel problems, and some people who've had stomach surgery, can't absorb vitamin B12 from pills. They'll need injections instead.

What will happen to me?

Anaemia caused by vitamin B12 deficiency can be treated easily with vitamin pills or injections. However, if you already have nerve damage there's no guarantee that it will get any better after treatment. You may need to see a doctor specialising in the nervous system (a neurologist). Vitamin treatment should stop your symptoms getting any worse.

Vitamin B12 deficiency can cause serious problems, so if your doctor has recommended treatment to prevent vitamin B12 deficiency it's important to stick with it.

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