

What does Vitamin B12 do in the body?

It is necessary for red blood cell production, protein production, nerve function, and DNA synthesis. Unfortunately, it cannot be made in the body so it must be consumed and it is generally found only in animal proteins. Though it is a water soluble vitamin, it is stored in the liver which can stockpile it for 5-10 years so the deficiency can take years to show up. (Source- MayoClinic, NIH, AAFP- see details at end)

What are causes of B12 deficiency?

Chronic atrophic gastritis and other issues that prevent absorption of nutrients in the gut including gastric bypass surgery, celiac disease, and Crohn's disease are causes. In addition, vegetarian diets and medications for heartburn and ulcers such as Pepcid (famotidine), Zantac (ranitidine), Tagamet (cimetidine), Prilosec (omeprazole), Nexium, Protonix, Prevacid, Dexilant, and other proton pump inhibitors. Diabetics who take metformin are also at higher risk of B12 deficiency and it can occur amongst those who abuse alcohol, in the elderly, and other conditions. Other medications that can cause low vitamin B12 include ACE inhibitors, acetylsalicylic acid (aspirin), antibiotics, anticonvulsants, bile acid sequestrants, colchicine, neomycin, nicotine, nitrous oxide, oral contraceptives, para-aminosalicylic acid, potassium chloride, and zidovudine (AZT, Combivir®, Retrovir®). Additionally, vitamin C may cause the degradation of vitamin B12 in multivitamin supplements, and chloramphenicol may inhibit the biosynthesis of vitamin B12. (Source- NIH, Mayo, AAFP see details at end)

How common is B12 deficiency?

About 3.2 percent of adults over age 50 have levels that are considered low. Interestingly though, while the low level is set at about 150 to 200 pg per ml most of the time, symptoms from low B12 can start at levels as high as 350 pg per ml so many more people may be affected. (Source- NIH, Mayo, AAFP see details at end)

A word of caution about Folate or Folic acid.

If you are taking folic acid or getting it from your food sources at levels of 1000mcg or more daily it can actually cause low B12 levels and mask some issues from low B12. So make sure you keep a close eye on things especially if you are taking Folic acid as a supplement. (Source- NIH see details at end)

What foods are good sources of B12?

Generally it is found in animal protein, so vegetarians will have problems with low B12 levels without supplementation. Fish, meat, poultry, eggs, milk and milk products are good sources. (Source NIH- see details at end)

What symptoms can I have with low B12?

For years people have been convinced that B12 shots will give them strength and resolve issues with fatigue and if you have a deficiency that is true. It can affect the size and effectiveness to a degree, of red blood cells and cause symptoms like pale color, rapid heart beat, weakness, fatigue, constipation, numbness, palpitations, unstable walking, behavioral changes or even slowed or different thinking. It could also cause light spots on the skin or dark spots on the skin and even a yellow or jaundiced color and rarely could increase risks with bruising. With pregnant women it can increase the risk of neural tube defects. Breast fed children of women who are deficient in B12 can have symptoms such as poor weight gain, developmental delays, weakness, anemia and low muscle tone in babies. (Source- NIH, Mayo, AAFP see details at end)

Should I be tested for low B12 levels?

To date, there are no major medical organizations that have clear guidelines to recommend testing. For that reason, it may be difficult to justify the lab to your insurance company but if you would like to check levels let us know, we just can't be certain of your coverage. People who fall into any of the above criteria that put them at risk of deficiency may benefit from testing as well. Keep in mind that pregnancy, folic acid deficiency, and birth control can cause falsely lower B12 levels. (Source- AAFP details at end)

So will it give me energy?

The answer, sorry as I often give as an answer is (drum roll please)- maybe. If you have low normal levels taking Vitamin B12 can help but if you don't it likely won't make much difference.

Can I be harmed by taking Vitamin B12?

While Vitamin B12 is considered safe in recommended daily allowances, there have not been significant studies to support long term safety of taking higher levels than are usually consumed in your diet daily. Furthermore, with pregnancy there are no clear studies to support higher than daily recommended values. While it is not likely to cause significant problems at low doses we can't be certain without large studies. There should be caution in taking vitamin B12 if you have any of the following disorders and it would be best to discuss it with your medical provider before starting B12. First and foremost anyone who has had a heart attack, especially if they have stents should not take b12 unless directed by a physician as there are risks of the stents clogging up more rapidly. Other potential concerns include blood pressure elevation, heart issues, blood problems, GI symptoms like heartburn, urinary symptoms of any type, any types of rashes, those who have low potassium, and if you have a history of gout. People who are sensitive or allergic to cobalamin, cobalt, or any other vitamin B12 product ingredients should also be avoided. Known side effects include nausea, diarrhea, problems swallowing, urine discoloration, blood pressure elevation, and low potassium especially if you have a history of low potassium. (Source- Mayo- see details at the end)

Can it reduce my risk for heart attacks and prevent dementia?

While Vitamin B12 levels can reduce markers that are high in people with a high risk of heart attacks, there is no convincing evidence to recommend its use or folic acid's use to reduce the risk of heart attacks. As for dementia, it is a similar story where low B12 levels are seen more often in people with dementia but there is no proof that taking B12 will help prevent dementia. (Source- NIH, Mayo, AAFP see details at end)

How much and how should I take my B12?

This is another vitamin I wouldn't take unless you are deficient or you are over 50. It is not clear if you should take it if you are taking any metformin, prilosec and other proton pump inhibitors, pepcid, or zantac (see above for a full list). It is likely a good idea to take b12 if you drink alcohol regularly as well (especially at higher levels). For years, people were convinced that you needed a shot of b12 to get enough of it in the system. However, there have been multiple studies to support oral b12 for those who are b12 deficient and just taking 1 to 2mg daily. In fact, there are also b12 preparations that melt under the tongue but to date those haven't been proven to be any more effective than oral b12 either. For those who have low b12 levels but no symptoms, there are no clear recommendations to date but 1mg of oral b12 daily is likely adequate. Also those with gastric bypass surgery should take 1mg daily as they have issues with adequate absorption in their diet but adding that much orally should be ok as well. Those over 50 may benefit from a low dose of b12 daily as that is when all people start to become more susceptible to low levels or just make sure they are consuming b12 fortified foods regularly. But again for people over 50 or for those who just want to consider supplementing daily with b12 I would keep it at 100 mcg daily as the recommended daily intake of b12 from the Institute of Medicine is 2.4 mcg

daily but only around 2% of 500mcg of B12 is absorbed so a higher dose than you would think is recommended. Now all of this being said there are several studies looking at use of b12 at 0.4mg and 1m for up to 5 years with no signs of serious side effects. (Source- NIH, Mayo, AAFP see details at end)

Sources used include

NIH website - <http://ods.od.nih.gov/factsheets/vitaminb12>, Mayo Clinic website

http://www.mayoclinic.com/health/vitamin-B12/NS_patient-vitaminb12, Article from AAFP Journal- American Family Physician Volume 83, Number 12, June 15, 2011 pp. 1425-1429 "Vitamin B12 Deficiency."