

New Metformin Warning: Mandatory Supplementation with Vitamin B12

Metformin, one of the most popular medications in the world, has been shown to cause a vitamin B12 deficiency. A vitamin B12 deficiency may be especially high among elderly individuals, persons who take a high dose of metformin and/or with long term treatment. A vitamin B12 deficiency is serious as it can cause permanent damage to the brain and nervous system. Here's what you need to know to avoid a vitamin B12 deficiency if you take metformin.

About Metformin

Metformin is a medication that became available in the U.S. in 1995 for the treatment of type 2 diabetes. Metformin is the most widely used medication used to lower insulin levels in those with polycystic ovary syndrome. Other names for metformin include glucophage, glucophage XR, glumetza, and fortamet. Metformin lowers blood glucose levels in three ways:

1. It suppresses the liver's production of glucose.
2. It increases the sensitivity of your liver, muscle, fat, and cells to the insulin your body makes.
3. It decreases the absorption of carbohydrates you consume.

Metformin and B12 Deficiency

Metformin use may affect the absorption of vitamin B12 possibly through alterations in intestinal mobility, increased bacterial overgrowth, or alterations of the vitamin B12-intrinsic factor complex. While studies have shown that metformin lowers stores of vitamin B12 in persons with diabetes, only one study has examined metformin and B12 status among women with PCOS. In 2009, Kaya et al. found that vitamin B12 concentrations were significantly lower in obese PCOS women in comparison with obese control women. Women with PCOS tend to take higher amounts of metformin (average dose is 1,500-2,000 mg daily) than those with diabetes to help manage insulin resistance. Both long-term use and high dosage intake as seen in the PCOS population, are risk factors for vitamin B12 deficiency.

About Vitamin B12

Vitamin B12 is a water-soluble vitamin that is required for proper red blood cell formation, neurological function, and DNA synthesis. There's some evidence that vitamin B12 may help prevent heart disease and possibly even Alzheimer disease. This vitamin is found primarily in animal foods, such as beef, seafood, eggs, and dairy products, which is why some vegans are at risk for a B12 deficiency. Elderly people are often at risk for deficiency as well, due to problems with absorption from the gastrointestinal tract.

Symptoms of B12 deficiency include certain types of anemia, infertility, neuropathy (nerve damage), chronic fatigue, memory loss, confusion, and even dementia. Pernicious anemia, a severe form of long-term vitamin B12 deficiency is an autoimmune disease that affects the stomach. If pernicious anemia is left untreated, it causes permanent nerve and neurological damage. Symptoms of pernicious anemia are sometimes misdiagnosed as diabetic peripheral neuropathy and include: chronic fatigue, dizziness, loss of appetite, nerve pain, depression, confusion and difficulty concentrating. If you experience any of these symptoms, see your doctor immediately.

What you can do

Individuals who take metformin get B12 levels checked annually. A simple blood test can assess vitamin B12 status. Values below approximately 170-250 pg/mL (120-180 picomol/L) for adults indicate a vitamin B12 deficiency, yet, optimal ranges should be >`450 pg/mL. Elevated serum homocysteine and urinary methylmalonic acid (MMA) levels, the gold standard in assessing B12, also indicate a B12 deficiency.

All individuals age 14 or higher need 2.4 mcg B12 daily. Women who are pregnant or nursing will need slightly more. Mandatory supplementation with B12 has now been proposed for those taking metformin. Taking a daily multivitamin containing 100% of the daily value (DV) for vitamin B12 will do the trick.