

Vitamin B₁₂

Vitamin B₁₂ is a member of the Vitamin B complex of vitamins (“vital to health”), necessary for the manufacturing of red blood cells, for the maintenance of healthy nerve fibers, and for the growth and development of children. Its natural sources primarily consist of meat, eggs, and dairy products. Be cautious regarding claims for the source of this vitamin as coming from plant sources as while it might well be that it has been added, it is also likely it will not be available for absorption by humans. If shortage of the vitamin is of concern or is suspected, supplementation is necessary. Insufficient quantities of the vitamin causes anemia (a certain type that must be determined by your physician) and can ultimately lead to irreversible nerve damage.

Prevention of Vitamin B₁₂ deficiency can be augmented by incorporating some of the following into your lifestyle:

- Avoid long term over consumption of alcohol
- Daily Vitamin B₁₂ supplementation as directed by your doctor, particularly if you are a vegan or vegetarian
 - If you are a vegan or vegetarian and breast feeding, supplement your baby with Vitamin B₁₂ as directed by your doctor
- Screen for iron deficiency if anemia is suspected
- Screen for *H. pylori* (a stomach bacteria that often causes ulcers) if symptoms indicate
- If tapeworm infestation is a possibility, screen for the possibility of their presence
- The following medications can sometimes lead to Vitamin B₁₂ deficiency and should be monitored
 - Metformin
 - Aspirin
 - Colchicine
 - Neomycin
 - Cimetidine (Tagamet), Zantac
 - Proton Pump Inhibitors such as omeprazole and its various relatives
 - Questran (cholestyramine)

Vitamin B₁₂ is absorbed in the bowel and this absorption can be interfered with through various mechanisms:

- If certain cells in your stomach are lost, a disease called pernicious anemia can result (these cells are necessary for absorption of the vitamin)
- Using medications for heartburn and ulcers over a long period of time might cause problems with absorbing the vitamin
- Surgery on the stomach or bowel might cause problems with absorption

- Age over 50 years
- Various inflammatory bowel diseases

There are numerous complaints patients experience when deficient in Vitamin B₁₂. Unfortunately, none of these complaints are specific for the problem and many do not occur until the problem has existed for some time. Fortunately, there are rather simple screening evaluations that can be performed on the blood that will provide an answer should a problem exist. The simplest and very readily available test is a complete blood count (CBC) which not only screens for anemia in general but provides the doctor with readings called indices, a measurement of the size of the red blood cell and how much hemoglobin there is in these cells. Deficiency of this vitamin causes characteristic changes in the size of the red blood cell and the amount of hemoglobin in each cell providing the necessary clue there may be a problem. Best screening tests are methylmalonic acid (MMA) and homocysteine levels and, if shown to be necessary, measuring levels of Vitamin B₁₂ directly. Should it be necessary, other, more invasive, testing is available and may be ordered by the doctor.

Deficiency of the vitamin can be rather easily corrected. The time honored treatment and still very effective is Vitamin B₁₂ injections, usually starting out frequently until body stores are replenished and then maintained with monthly injections. Oral medications (pills) are now available but the dosage needs to be determined by the doctor and are much more potent than the over the counter versions. An intranasal version is also available now. Cost can be an issue and which version chosen to be used to correct a deficiency is best determined by doctor-patient discussion and the individual patient circumstances.

Current recommended daily intake of Vitamin B₁₂ for various ages (1000µg = 1mg):

- 0-6 months 0.3µg
- 7-12 months 0.4µg
- 1-3 years 0.5µg
- 4-6 years 0.8µg
- 7-10 years 1.0µg
- 11-14 years 1.2µg
- 15+ years 1.5µg
- Breast Feeding 2.0µg

Vitamin B₁₂ has very low toxicity and high intakes are not thought to be dangerous.