

**Metformin Induced Vitamin B12 Deficiency among Type 2  
Diabetes Mellitus Patients**

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## ABSTRACT

Metformin is the most frequently prescribed medication in the management of Type 2 Diabetes Mellitus. It is widely approved that it suppresses hepatic glucose production and improves insulin signalling mainly in muscle, hepatic and adipose tissue. On long term use, metformin therapy leads to Vitamin B12 deficiency and anemia. Several studies shows that long term metformin use reduce the Vitamin B12 levels and particularly taken in a dose greater than 2000 mg/day and for a period exceeding 4 years. The prevalence is increased with increase in dose and duration of metformin use. Peripheral neuropathy may be the only clinical presentation of Vitamin B12 deficiency, without haematological signs and symptoms. The diagnostic tests like serum Vitamin B12 and holo -TC11 test measure the circulating part of Vitamin while homocysteine and MMA are the biomarkers of metabolic Vitamin B12 deficiency that show elevated levels when the Vitamin is deficient at the cellular level. Currently there are no guidelines for the supplementation and appropriate dose of Vitamin B12 for diabetic patients on metformin but the treatment of Vitamin B12 deficiency includes monthly injections of Vitamin B12 or large daily therapeutic doses (1000mcg) of Vitamin B12, prophylactically administered calcium carbonate (1.2gms daily). This study demonstrates that regular monitoring of Vitamin B12 should be done especially in patients receiving metformin therapy for longer duration at high dosage and Vitamin B12 supplementation prophylactically or at least annually to prevent the complications of Vitamin B12 deficiency.