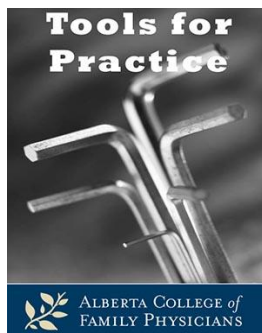


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Evidence Updated: No change (RCT added in 2013 update)
Bottom Line: No change
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Vitamin B12 Deficiency: Monthly shots or daily pills?

Clinical Question: In patients with Vitamin B12 deficiency, is oral Vitamin B12 as effective as intramuscular (IM) Vitamin B12?

Bottom-line: Oral Vitamin B12 is as effective as IM in most B12 deficient patients. A dose of 1000 mcg (1 mg) a day orally appears adequate and most commonly recommended.

Evidence:

- A Cochrane Review¹ summarizes two randomized control trials (RCTs):^{2,3}
 - The first study² randomized 38 outpatients to daily oral B12 at 2000 mcg/day or IM B12 1000 mcg at days 1, 3, 7, 10, 14, 21, 30, 60, 90.
 - The second study³ randomized 70 patients to 1000 mcg B12 oral or IM: Daily for 10 days, then weekly for one month and then monthly for three months.
 - Over 3-4 months of follow-up, both trials showed oral B12 as effective as IM therapy¹ in:
 - B12 levels and associated biochemical B12 markers (total homocysteine and serum methylmalonic acid)
 - Hematological and neurological responses.
 - A trial published since the meta-analysis also found similar efficacy between a novel B12 formulation and IM for B12 levels.⁴
 - All trials had important limitations: Small,²⁻⁴ short,²⁻⁴ unblinded,²⁻⁴ and lack of intention to treat analysis,^{2,3} and/or written/funded by the manufacturer.⁴

Context:

- 5-20% of elderly patients are B12 deficient.⁵
 - The majority of Canadian physicians use IM B12 in treating deficiency.⁶
- Switching from IM to oral B12 would reduce health care costs as well as the discomfort and inconvenience of intramuscular injections.⁷
- Oral B12 appears effective over a range of causes of B12 deficiency (dietary, pernicious anemia, gastric or ileal surgery, malabsorption syndromes) studied.^{2,3,8,9}
 - Celiac Disease and Inflammatory Bowel Disease are not well studied.

- Due to limitations in the evidence, patients switched to oral should likely have their B12 levels checked to confirm they are not declining.¹⁰
- Dosing recommendation varied between included RCTs, so a simple recommendation is difficult;^{2,3}
 - A well designed Canadian cohort study demonstrated that 1 mg/day is effective.⁸
 - However, first two RCTs used frequency over time so dosing frequency can be reduced with monitoring, if levels are normal and stable.

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Tools for Practice is a biweekly article summarizing medical evidence with a focus on topical issues and practice modifying information. It is coordinated by G. Michael Allan, MD, CCFP and the content is written by practising family physicians who are joined occasionally by a health professional from another medical specialty or health discipline. Each article is peer-reviewed, ensuring it maintains a high standard of quality, accuracy, and academic integrity. If you are not a member of the ACFP and would like to receive the TFP emails, please sign up for the distribution list at <http://bit.ly/signupfortfps>. Archived articles are available on the ACFP website.

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