

## Vitamin B12 doses and the elderly

I want to comment further on the vitamin B12 (VB12) doses discussed in Kolber and Houle's article in the February issue of *Canadian Family Physician*.<sup>1</sup> I have treated most of my elderly patients with VB12 deficiency with oral VB12 for years. Many patients who use 1000 µg of VB12 daily end up with high or out-of-range VB12 levels within months. Most people need only 250 to 500 µg of VB12 daily to achieve normal VB12 levels.

Studies have shown that VB12 and folate supplementation might not be innocuous and might increase total mortality (20%) and cancer mortality (38%) when used to prevent cardiovascular disease.<sup>2</sup> Therefore, I believe that people can safely start taking 500 µg of VB12 daily, and that VB12 levels should be checked at 4 weeks to see if levels are normal and checked annually thereafter.

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### Competing interests

None declared

### References

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2. Ebbing MI, Bønaa KH, Nygård O, Arnesen E, Ueland PM, Nordrehaug JE, et al. Cancer incidence and mortality after treatment with folic acid and vitamin B12. *JAMA* 2009;302(19):2119-26.

## Elaboration on vitamin B12

Kolber and Houle's article "Oral vitamin B12: a cost-effective alternative"<sup>1</sup> requires elaboration. As reported, vitamin B12 (VB12) deficiency is prevalent in 5% of Canadian adults brought on by medications, diet, macrocytosis, peripheral neuropathy or atypical neurologic symptoms, and dementia. Successful treatment is achieved by raising VB12 serum levels to between 140 and 700 pmol/L. An initial VB12 intramuscular boost followed by an oral VB12 dose of 1000 µg daily is invariably sufficient. Consequently, there should be little need for continuing parenteral VB12.<sup>2</sup>

Unfortunately, there are some patients, free from the above ailments, with normal serum levels who benefit from parenteral VB12. With intramuscular injections, VB12 serum levels well above 700 pmol/L are reached. These patients report suffering from fatigue or "lack of energy" and state that the intramuscular VB12 gives them "increased energy." It cannot be entirely an injection-placebo effect because I have not seen this response from a fatigued patient who has been given any other type of injection to treat his or her ailment.

Perhaps VB12 has a binary effect. Serum levels between 140 and 700 pmol/L are required to treat the primary physiological conditions mentioned above. However, a much higher serum level—perhaps 800 pmol/L—might be required to treat the psychological (fatigue) component, and this serum level can only be obtained rapidly by parenteral VB12. For example, polymyalgia

rheumatica can be treated successfully with 15 to 20 mg of prednisone; however, the frequently accompanying condition of temporal arteritis (giant cell arteritis) requires 60 mg of prednisone for effective treatment.<sup>3</sup>

In 2009, Hsia and Howson-Jan, who researched VB12, answered the question of whether high-dose oral VB12 can replace injected VB12 as follows:

The short answer is no .... It is also interesting to note that many patients report increased energy after parenteral B12 administration, even in the absence of B12 deficiency. I have not yet noted very many patients reporting this with oral B12 replacement.<sup>4</sup>

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### Competing interests

None declared

### References

1. Kolber MR, Houle SKD. Oral vitamin B12: a cost-effective alternative. *Can Fam Physician* 2014;60:111-2 (Eng), 118-9 (Fr).
2. Butler CC, Vidal-Alaball J, Cannings-John R, McCaddon A, Hood K, Papaioannou A, et al. Oral vitamin B12 versus intramuscular vitamin B12: a systematic review of randomized controlled trials. *Fam Prac* 2006;23(3):279-85.
3. Vidal-Alaball J, Butler CC, Cannings-John R, Goringe A, Hood K, McCaddon A, et al. Oral vitamin B12 versus intramuscular vitamin B12 for vitamin B12 deficiency. *Cochrane Database Syst Rev* 2005;(3):CD004655.
4. Hsia C, Howson-Jan K. High dose vitamin B12 vs injected B12. *Can J CME* 2011;23(6):13.

## Age of complexity

We could not agree more that medicine is an art of translation and that a complexity approach is important, as described by Martin et al in "What would an Ian McWhinney health care system look like?"<sup>1</sup>

We have advocated for this for many years, suggesting complexity, the science for the 21st century according to Stephen Hawking, and chaos from which it arises, as a translation factor to the individual and to reality, and have proposed a complexity-based medicine to reflect this.<sup>2-5</sup>

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