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Vitamin B_{12} injections for the elderly

In their article on the use of vitamin B_{12} injections for elderly patients by primary care practitioners in Ontario, Carl van Walraven and David Naylor acknowledge that a major problem with their study is that overutilization is identified but underutilization is not.[1] Patients with cobalamin deficiency, but with normal serum vitamin B_{12} levels according to current definitions, may present with neuropsychiatric symptoms ranging from innocuous paresthesias and fatigue to dementia and psychosis.[2,3] Practitioners cognizant of the serious morbidity possible with cobalamin deficiency might opt to risk overutilizing this safe, inexpensive therapy: serum vitamin B_{12} determinations cost the system approximately $20 and vitamin B_{12} therapy is relatively inexpensive. Although functional biochemical testing of methylmalonic acid and homocysteine levels prior to commencing therapy would reduce overutilization (and underutilization), these tests, which cost $160 in total, are currently not covered by the Ontario Health Insurance Plan. This is an unacceptable financial burden for the elderly population.

Metabolic evidence from the Framingham study showed that cobalamin deficiency is present in 1 in 8 or 1 in 5 elderly people.[4] Yao and colleagues suggested that serum cobalamin screening be done for every person aged 65 and older and that the normal range be increased to 250–300 pg/mL.[5] Screening for cobalamin deficiency at our southwestern Ontario community health clinic yielded a 20% prevalence in the elderly.

Dementia and impaired cognitive functioning may result from vitamin B_{12} deficiency, although most of the evidence is from observational studies.[4-6] The costs of misdiagnosing a potentially reversible dementia resulting from cobalamin deficiency may justify erring on the side of overutilization until more studies are done on the utility of vitamin B_{12} treatment. Fewer interventions in primary care are as simple, safe and satisfying to both practitioner and patient as the detection and appropriate treatment of symptomatic cobalamin deficiency.

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[The authors respond:]

We agree that treatment of true cobalamin (vitamin B_{12}) deficiency is very important and should continue. We also agree that one might reasonably err on the side of overtreatment.

However, 2 issues regarding vitamin B_{12} deficiency must be considered when framing the problem of variations in utilization. First, as indicated by Francesco Anello, many of the symptoms of vitamin B_{12} deficiency are extremely nonspecific. Second, measurements of serum vitamin B_{12} levels do not discriminate between those patients with true vitamin B_{12} deficiency and those with low serum levels.[1] We believe that the combination of nonspecific symptoms with a nonspecific laboratory test helps explain the large variations in parenteral vitamin B_{12} utilization between practices that we reported in our article.[2]

Anello raises several interesting points on which we would like to comment. First, the prevalence of biochemical evidence of vitamin B_{12} deficiency in the Framingham cohort was low.[3] Review of Fig. 2 in the report by Lindenbaum and colleagues[3] shows that 14 elderly patients with low serum levels of vitamin B_{12} had elevated serum methylmalonic acid levels. Since the cohort involved 548 elderly people, 2.5% showed biochemical evidence of vitamin B_{12} deficiency.

Second, the data reported by Yao and colleagues[4] do not justify screening for vitamin B_{12} deficiency.[5,6] Since 8% of the study participants had symptoms or signs of vitamin B_{12} deficiency prior to testing and would therefore have been tested on a case-finding basis, it does not appear that this was a general inception cohort. More generally, evidence for screening is lacking and is not recommended by others.[7]

Finally, the cost of vitamin B_{12} injections could be considerable at the population level. We used the database of the Ontario Drug Benefit program to identify all 34 264 elderly people who were prescribed parenteral vitamin B_{12} in 1996. Using claims in the Ontario Health Insurance Plan database, we calculated the direct cost of all physician visits associated with vitamin B_{12} injections in the year following the prescription date to be $4.2 million. This would pay for approximately 250 uncomplicated coronary artery bypass graft surgeries in elderly patients.[8]

Where should we go from here? First, we need further research using appropriate methodologies[9,10] to find methods of determining true vitamin B_{12} deficiency. Second, the role of high-dose oral vitamin B_{12} supplementation needs elucidation.[11–13] Finally, since low serum levels do not necessarily equate with vitamin B_{12} deficiency, we need natural history studies and rigorous intervention trials to determine the most effective and efficient way to manage patients with nonspecific symptoms and

low serum vitamin B_{12} levels.

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Nothing to declare?

At the bottom of Susan Phillips' commentary entitled "Parenting, puppies and practice: juggling and gender in medicine"[1] there is a note that states "Competing interests: None declared."

Curious — I thought that was what the article was all about.

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Out of province, out of sight

Linda D. Van Til and Lamont E. Sweet have written an interesting paper on blood recipient notification for hepatitis C in Prince Edward Island.[1] However, their simple yet complete provincial analysis says more, perhaps, about Canada's national health care system than they initially intended. The statement that 91.2% of blood recipients in PEI "were identified as tested, *dead or moved out of province*" [italics mine] is ominous in the setting of the Canada Health Act of 1984,[2] which mandates portability and universality as 2 of its 5 basic tenets.

The "out of province" group constituted 469 of 2977 (15.8%) live recipients during the look-back period of 1984 to 1990. "Dead or moved out of province" strikes one as a poor way to definitively identify Canadians with universal health care coverage who may have been exposed to hepatitis C through blood products. The authors state that information was forwarded to the appropriate non-PEI provincial health authority but no data on follow-up are given and no data on new patients with hepatitis C who might have moved to PEI are given, implying a further lack of provincial notification reciprocity.

Therefore, while the paper is laudable as a provincial monitoring report, the basic recommendations of the National Task Force on Health Information in 1991[3] and the final report of the National Forum on Health[4] in 1997, calling for comprehensive national databases to track health indices such as the one described in this article, have not been achieved. One would hope that in the near future the descriptor "dead or moved out of province" will not appear in Canadian health surveillance studies.

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[The authors respond:]

The 3 major outcomes measured by the PEI blood notification program were identification of patients as tested for the hepatitis C virus, dead or "out of province." The most reliable and widely used outcome available in all health information systems is death. However, John Tallon makes a good point that "out of province" is not a desirable health outcome, and certainly not part of the vision of a comprehensive national health information system. The "out of province" outcome is the result of using provincial information systems established for administration, not for health outcomes. PEI requested follow-up from 8 provinces; there was no record of blood recipients moving to Saskatchewan or the territories. Only British Columbia was able to respond (the 2 recipients had died). In most provinces, notification for hepatitis C virus testing is just beginning, with completion expected by 2004.

The imperfect nature of the information systems currently available will require studies to account for people whose status is unknown with descriptors such as "out of province" for the foreseeable future.

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