



## Research summary

# Are we adequately screening for vitamin B12 deficiency in high-risk patients?

## About the study

Eggs are an excellent source of vitamin B12, which is essential for maintaining neurological function and normal red blood cell formation. Due to large body stores, B12 deficiency occurs gradually but can lead to irreversible neurological damage if not detected early enough. Risk factors for B12 deficiency include advancing age, strict vegetarianism, gastrointestinal conditions, and poor nutritional intake. Clinical signs are often non-specific and can include anemia, numbness, fatigue, dementia, depression, and memory loss.

Unfortunately, diagnosing B12 deficiencies is not so straightforward. Often, B12 deficiencies are identified based on the appearance of macrocytosis, an enlarging of red blood cells. However, macrocytosis is easily corrected by high levels of folic acid, leaving B12 levels deficient and undiagnosed.

To explore how often patients—particularly high risk patients—have B12 deficiencies, this study sought to discover: what is the prevalence of B12 deficiency among high-risk hospitalized patients?

## Methods

From January 1, 2010 to December 31, 2012, a team of three research assistants reviewed electronic medical charts of adults admitted to Emergency, Critical Care/Trauma, Spinal Cord and Stroke Rehabilitation and Neurology units at two regional hospitals in Southwestern Ontario. Using a data abstraction tool to record relevant B12 information, they also gathered demographics and other clinical and biochemical data.

## Findings

Of the 710 high-risk patient charts that were reviewed, 62% (439 patients) had recorded B12 values. Of these, 30.5% (134) of high-risk patients were B12 deficient. Further, less than 1% of those with B12 deficiencies had macrocytosis, indicating that B12 deficiency frequently occurred independent of macrocytosis.

## Conclusions

Approximately one-third of high risk patients in this study were B12 deficient—a number that could be underestimated, given that not all patients had B12 levels recorded. As such, all patients considered to be at high risk for B12 deficiency at admission to hospital should have their levels carefully evaluated and treated, if deficient.

Health practitioners and those measuring B12 levels should take into account the fact that B12 deficiencies often occur independently of macrocytosis, making it, and its related measurements, an unreliable indicator of B12 deficiency.

Consuming sources of B12, such as eggs, can prevent B12 deficiency. Future research could explore how to produce eggs that contain higher amounts of B12, particularly as our aging population can benefit from additional B12 levels.

## About the researchers

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## Citation

O. Siswanto, K. Smeall, T. Watson, M. Donnelly-Vanderloo, C. O'Connor, N. Foley and J. Madill. *Examining the association between vitamin B12 deficiency and dementia in high-risk hospitalized patients.* Journal of Nutrition, Health and Aging, May 2015.



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