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# Vitamin B12 and the risk of neural tube defects in a folic-acid-fortified population.

Ray JG, Wyatt PR, Thompson MD, Vermeulen MJ, Meier C, Wong PY, Farrell SA, Cole DE.

Department of Medicine, St. Michael's Hospital, University of Toronto, Toronto, Ontario, Canada. rayj@smh.toronto.on.ca

## Abstract

### Background
Low maternal vitamin B(12) status may be a risk factor for neural tube defects (NTDs). Prior studies used relatively insensitive measures of B(12), did not adjust for folate levels, and were conducted in countries without folic acid food fortification. In Canada, flour has been fortified with folic acid since mid-1997.

### Methods
We completed a population-based case-control study in Ontario. We measured serum holotranscobalamin (holoTC), a sensitive indicator of B(12) status, at 15 to 20 weeks' gestation. There were 89 women with an NTD and 422 unaffected pregnant controls. A low serum holoTC was defined as less than 55.3 pmol/L, the bottom quartile value in the controls.

### Results
The geometric mean serum holoTC levels were 67.8 pmol/L in cases and 81.2 pmol/L in controls. There was a trend of increasing risk with lower levels of holoTC, reaching an adjusted odds ratio of 2.9 (95% confidence interval = 1.2-6.9) when comparing the lowest versus highest quartile.

### Conclusions
There was almost a tripling in the risk for NTD in the presence of low maternal B(12) status, measured by holoTC. The benefits of adding synthetic B(12) to current recommendations for periconceptional folic acid tablet supplements or folic-acid-fortified foods need to be considered. It remains to be determined what fraction of NTD cases in a universally folate-fortified environment might be prevented by higher periconceptional intake of B(12).

### Comment in
1 Epidemiology. 2007 May;18(3):367-8.

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