

Research shows that neural tube defects are much more likely to occur in women with inadequate vitamin B12 levels before and during pregnancy.

Low Vitamin B12 status during pregnancy increases risk of neural tube defects

Over the past decade, improvements in folic acid intake and fortification has reduced the prevalence of neural tube defects by 50% to 70%. Since it is unlikely that fortification levels will be increased, researchers sought to identify other modifiable risk factors. Vitamin B12 is metabolically related to folate, and previous studies have found low B12 status in mothers of children affected by neural tube defect.

A study published in the journal *Pediatrics* found that the children born to women who have low levels of vitamin B12 around the time of conception could have an increased risk of a neural tube defect.

Researchers analyzed vitamin B12 status from blood samples taken at an average of 15 weeks' gestation from 3 independent groups of Irish women. Group 1 blood samples were from 95 women during a neural tube defect-affected pregnancy. Group 2 included blood samples from 107 women who had a previous neural tube defect birth but whose current pregnancy was not affected. Group 3 samples were from 76 women during an affected pregnancy. Each group included control subjects.

Mothers of children affected by neural tube defects had significantly lower B12 status than controls. Women who had the lowest vitamin B12 levels had up to 5 times the risk of having a child with a neural tube defect than women with the highest levels. Pregnancy blood B12 concentrations of <250 ng/L (184 pmol/L) were associated with the highest risks.

Since Vitamin B12 is essential for the production of red blood cells and health of the nervous system, deficiencies of Vitamin B12 or folic acid could disrupt DNA synthesis and increase the risk of neural tube defects. Supplements that include significant vitamin B12 could help ensure that blood levels are adequate before becoming pregnant.

Molloy AM et al. Maternal vitamin B12 status and risk of neural tube defects in a population with high neural tube defect prevalence and no folic acid fortification. *Pediatrics* Vol. 123 No. 3 March 2009, pp. 917-923.