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Over the past decade, improvements in folic acid intake and fortification have reduced the prevalence of neural tube defects by up 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.

LOW VITAMIN B₁₂ AT CONCEPTION AND DURING PREGNANCY RAISES RISK OF NEURAL TUBE DEFECTS

A study published in the March 2009 issue of the *Journal of Pediatrics* found that 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 three 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 five 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. The authors suggested that women have vitamin B₁₂ levels of at least 300 ng/L (221 pmol/L) before becoming pregnant.

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