



Kellogg's Product 19[®]

CHEM-643 Intermediary Metabolism
Written by Harold B. White

Page 1 - Jane O'Connor's Dilemma

Jane O'Connor cried all night. "Why me?", she wailed over and over again. A routine blood test in her fourth month of pregnancy revealed elevated amounts of α -fetoprotein. A repetition of the test two weeks later confirmed the result. A follow up, high-resolution ultrasound examination of her fetus showed that it had a meningomyelocele, the most severe form of [spina bifida](#). Such neural tube defects occur about once in every 2000 births. To survive, infants with spina bifida require an operation within two days of birth and will have leg paralysis, loss of bladder and bowel control, and may be retarded. Medical care costs for affected individuals approaches \$300,000 over their lifetime. Jane was not ready to cope with all of this information and the decisions she and her husband suddenly had to make.

Like most young women, Jane had not been aware of the recommendation in 1992 by the [Centers for Disease Control and Prevention](#) that women of child-bearing age should consume several times more folic acid than the official [National Research Council's RDI](#) (recommended daily intake). Studies in several medical centers (e.g. [Lancet. 1991; 338:131-137](#)) indicated that perhaps 50 to 70% of all neural tube defects could be prevented by this simple dietary supplementation. Despite these results, the [U. S. Food and Drug Administration](#) concluded in 1993 ([revoked in 1996](#)) that, without further research, they could not endorse enrichment of all breakfast cereals with folic acid. They feared that certain individuals, such as those on antifolate drugs and not at risk for neural tube defects, might be harmed by supplementation. In addition, some results suggested that a genetically determined, folate-responsive metabolic defect conferred susceptibility to neural tube defects and thus supplementation would be unnecessary for the overwhelming majority of the population. Although some of these concerns persist, NIH and others recommend [folate supplements](#) for women.

If your group were appointed to a commission to review and evaluate the metabolism of folic acid in the context of neural tube defects, what would you want to find out? Make a list of learning issues to be pursued and discussed for the next class. Turn in a copy of your group's learning issues at the end of class.