INTERNATIONAL FEDERATION
FOR SPINA BIFIDA AND HYDROCEPHALUS

Consultative status special category with Economic and Social Council of the United Nations
Participatory status, Council of Europe

IF POLICY STATEMENT ON PREVENTION OF NEURAL TUBE DEFECTS AND MANDATORY FOOD FORTIFICATION

Adopted by the IF Annual General Meeting on 28 June 2005 in Minneapolis

IF calls for action to:

1. Promote the health benefits of the vitamin folic acid.
2. Ratify a policy calling on all countries to fortify staple food with the vitamin folic acid to reduce the incidence of neural tube defects (NTDs).
3. Encourage further research into the prevention of neural tube defects (including spina bifida).

Primary Prevention and folic acid

Maternal periconceptional use of folic acid has been found to reduce the risk of both recurrent and occurent NTDs (Locksminth and Diff, 1998; Watkins, 1998, Czeizel et al. 1999). This reduction occurs both in regions of high NTD rates and in regions of low NTD rates (Berr et al. 1999). [1] Lumley et al. found that reductions of up to 70% can be achieved with the correct dosage.[2]

Folic acid is the synthetic form of the vitamin folate, which is naturally found in foods. It is a simple, inexpensive supplement which reduces the incidence of NTDs in the foetus if taken by women prior to conception and for the first three months of pregnancy.

The recommended folate intake is 0.6mg per day[3] **,** but as a normal diet cannot provide this level, an extra 0.4mg per day is required through folic acid supplements. This should be taken for at least a month before becoming pregnant and for the first three months of pregnancy.

Increasingly, research shows that folate may be important not only in the prevention of spina bifida. Folate may reap unexpected benefits in the reduction of the incidence of other birth defects such as congenital anomalies of the heart, face, limbs and of cardiovascular diseases. [4] [5]

Further research on the nutritional habits of other regions of the world is needed to ensure that all levels of the society can benefit from the effects of food fortification.

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[1] Texas Birth Defect Monitoring Division, Texas Department of Health. March 2002.

[2] Lumley J, Watson L, Watson M, Bower C. Periconceptional supplementation with folate and/or multivitamins to prevent neural tube defects (Cochrane Review) [substantive update]. In: The Cochrane Library, Issue 3, 2001, Oxford: Update Software

[3] DGE (Deutsche Gesellschaft für Ernährung), Östereichische Gesellschaft für Ernährung, Schweizerische Gesellschaft für Ernährungsforschung, Schweizerische Vereinigung für Ernährung (Eds.). Referenzwerte für Nährstoffzufuhr. Umschau Braus Verlag, Frankfurt am Main, 2000.

[4] Lorenzo D. Botto, M.D., Cynthia A. More, M.D., Ph.D., et al. Neural Tube Defects. *The New England Journal of Medicine*. 1999; volume 341: 1509-1519.

[5] Hall J., Solehdin F. Folic Acid for the prevention of congenital anomalies. Eur J Pediatr. 1998; 157: 445-450. (Medline)

Why Fortification?
Estimates suggest that over 300,000 babies[6] per year are developing a neural tube defect.

For more than twenty years it has been known that the vitamin folic acid can reduce significantly the incidence of neural tube defects.

Voluntary consumption of supplements of folic acid by couples planning a pregnancy is reaching only small part of the population.

Prevention through folic acid supplements alone is not enough, because large numbers of pregnancies are unplanned.

Health promotion and voluntary fortification are not reaching all segments of the target population, and it is very unlikely that any further gains can be made with health promotion of supplement use and dietary change[7]. The latter is notoriously difficult at the population level, and evidence worldwide is that it does not seem possible to increase periconceptional supplement use beyond about 40% of women.[8]

Voluntary Fortification
Voluntary fortification of products such as breakfast cereals is more expensive and will mostly reach the population that is also reached by prevention campaigns that promote supplements (i.e., educated western middle class families).

Mandatory Fortification
Food fortification with folic acid is the way of maximising the consumption of extra folate in the entire population.

Legislation for mandatory fortification of flour already exists in over 50 countries, including the U.S.A. and Canada.[9]

Mandatory fortification does not discriminate.

Follow-up studies in the U.S.A and Canada [10], [11] show the effect of mandatory flour fortification with folic acid.

IF proposes the creation of an international policy for mandatory food fortification to actively encourage all countries to adopt this measure.

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[6] CDC Atlanta

[7] Bower C, Blum L, O'Daly K, Higgins C, Loutsky F, Kosky C (1997). Promotion of folate for the prevention of neural tube defects: knowledge and use of periconceptional folic acid supplements in Western Australia, 1992-1995. *Aust NZ Journal Public Health* 1997;21:716-721, plus Erratum *Aust NZ Journal Public Health* 1998;22:72.

[8]

a) de Walle HEK, de Jong-van den Berg LTW. Insufficient folic acid intake in the Netherlands: What about the future? Teratology 2002;66:40-43.
b) CDC. Use of folic acid-containing supplements among women of childbearing age - United States 1997. MMWR 1998;47:131-134.
c) Schader I, Corwin P. How many pregnant women in Christchurch are using folic acid supplements in early pregnancy? NZ Med J 1999;112:463-465.
d) Mathews F, Yudkin P, Neil A. Folates in the periconceptional period - are women getting enough? Br J Obstet Gynaecol 1998;105:954-959.
e) Henry A, Crowther CA. Universal periconceptional folate supplementation: chasing a dream? Med J Aust 2000;172:407-408.

[9] Maberley,G et al.
http://www.sph.emory.edu/wheatflour/Training/Data_Evaluation/Tracking.html

[10] Honein MA, Paulozzi LJ, MATHEWS TJ, Erickson JD, Wong LY. Impact of folic acid fortification of the US food supply on the occurrence of neural tube defects. JAMA 2001; 285:2981-6

[11] Ray JG, Meire C, Vermeulen MJ, Boss S, Wyatt PR, Cole DE. Association of neural tube defects and folic acid food fortification in Canada. Lancet 2002;360:2047-8