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Editorial

When screening is not enough

As in many countries, the prevalence rate of neural tube defects (NTDs) in the United Kingdom has declined since the 1970s. Morris and Wald estimated that 40% of the decline was due to antenatal screening and terminations of pregnancy, and 56% due to a decline in incidence.¹ There was a concomitant increase in dietary folate over this period.

The relationship between folic acid and NTDs is one of the few areas in public health where scientific evidence is unequivocal, but comprehensive policy development aimed at prevention has been tardy. During the 1980s and early 1990s, a variety of randomised controlled trials, case control, and cohort studies showed that increasing the intake of folic acid through supplementation prevents up to 70% of NTDs.

The USA responded in 1992 with a recommendation that all women of childbearing age should increase their intake of folic acid to at least 400 mcg per day. Subsequently, other countries also made recommendations, but these varied in focus (for example, all women, women planning a pregnancy), the level of daily consumption (for example, 0.4 mg, 0.8 mg), and the methods advised to increase consumption (for example, a daily supplement, folate rich foods).

Folate levels can be increased by three strategies: diet, supplementation, and fortification. It is not feasible to expect a woman to increase her folate level through diet alone, especially as the bioavailability of food folates is about 50%. Encouraging women to change their diet to consume more folate rich foods is commendable and needs to be regarded as an important part of improving nutrition, but such a strategy will have little impact on preventing NTDs if used on its own.

Dietary supplements—either folic acid or a multivitamin containing folic acid—have been shown to successfully increase folate levels and prevent NTDs. However, the widespread use of supplements is influenced by factors such as cost, availability and accuracy of the advice given to women, and compliance and acceptability of taking supplements during pregnancy.

In New Zealand only 3% of women aged 25 to 44 years, and 33% to 37% of pregnant women, had consumed a folic acid supplement (the exact level was unknown) in one year.^{2,3} Folic acid tablets are available in 300 mcg, 800 mcg, and 5 mg doses and cost about NZ\$30 to \$40 per year, while multivitamin tables have levels of folic acid ranging from 30 mcg to 350 mcg. Annual unit sales of folic acid declined by 24% during 1991 to 1996, but increased by 4% in 1997 and 7% in 1998, with peak sales occurring in November and December.

Therefore, in New Zealand, as in many countries, the daily consumption of folic acid supplements is insufficient to prevent NTDs. The high proportion of unplanned pregnancies is another impediment to improving folate levels by this strategy.

Integral to increasing the intake of dietary folate and the use of supplements is the level of knowledge that health professionals and the public have about the benefits of improving folate levels. The evidence suggests that most women are still not aware that folic acid prevents NTDs, the use of folic acid is still low, and women who do take supplements are usually not taking them periconceptionally. Mass media campaigns can increase awareness, but these need to be sustained over a period of time. Studies have also shown that health professionals are often not the primary sources of information about folic acid, and they are not aware of the correct timing and dose required for prevention.

Food fortification is a highly cost effective population strategy for improving folate status and preventing NTDs. It also has the advantage of not requiring active intervention or behavioural change. Implementing a fortification programme involves reconciling two conflicting positions: setting the level of fortification sufficiently high to prevent NTDs, but not exposing all members of a population group to folic acid in larger amounts than is usual.

The US food and drug administration stated that from 1 January 1998, enriched cereal grain products would be fortified with 140 mcg of folic acid per 100 g of flour. The debate continues over the adequacy of fortification at this level. In New Zealand, food regulations permit the fortification of food, including bread, with folic acid up to 285 mcg/100 g, but only a few foodstuffs are actually fortified to this level. Survey results indicate that the majority of New Zealanders have heard about fortification and believe they should also be able to have the choice of buying non-fortified bread. Currently, there is a proposal to voluntarily fortify breads at 140 mcg/100g. A recent report recommended encouraging manufacturers to increase the level of folic acid fortification in breakfast cereals and bread to the maximum permitted levels, as the first step towards either regulating folic acid fortification or increasing the level of permitted fortification.³

There is no evidence that increasing the intake of folic acid increases the risk of multiple births or conceptions, or affects zinc nutrition. The major concern with fortification—the so-called vitamin B12 masking effect—is more of a theoretical than real risk, based largely on historical data.

The debate about folic acid and NTDs is not about the science, but about when to implement a fortification programme and the level of fortification. Of concern to public health authorities is the indication that the prevalence of NTDs in the United Kingdom during the 1990s “appears to be remaining fairly constant”.¹ The challenge is to implement an integrated folic acid programme—that is, dietary advice, supplementation, and fortification—aimed at the primary prevention of NTDs. Screening will

remain an important, but nonetheless secondary, means of controlling the birth prevalence of NTDs.

Tragically, despite the availability of a highly effective and simple method of prevention, women continue to have pregnancies with NTDs, affected pregnancies continue to be terminated, and babies continue to be born with NTDs. Screening is not enough. The implementation of national fortification programmes should not be delayed.

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- 1 Morris JK, Wald NJ. Quantifying the decline in the birth prevalence of neural tube defects in England and Wales. *J Med Screen* 1999;6:182-5.
- 2 Schader I, Corwin P. How many pregnant women in Christchurch are using folic acid supplements in early pregnancy? *NZ Med J* 1999;112:463-5.
- 3 Borman B, Brown S. Voluntary fortification of bread with folic acid. A report for the Folate Replenishment-Plus Steering Committee, 1999.