Although neural tube defects can be prevented by a supplement of folic acid during the periconception period, however, women do not follow the advice of the authorities.

Neural tube defects can be prevented

Since 1998, the Norwegian health authorities have recommended that all women who plan to become pregnant should take 0.4 mg supplementary folic acid daily, starting from the last month before expected conception and continuing during the first 2–3 months of pregnancy (1). It has been well documented that supplementary folic acid prevents neural tube defects (2), but unfortunately equally well documented that Norwegian women do not follow the authorities' advice (2–5). Women who are at increased risk of delivering children with neural tube defects (users of certain antiepileptics or those with previous pregnancies affected by neural tube defects) are recommended to take a high dose of folic acid: 4 mg daily.

Data from the Norwegian Birth Registry show that the incidence of neural tube defects in Norway has not decreased since the folic acid recommendations appeared in 1998 (6). It is true that the number of live births of children with neural tube defects has gone down markedly since the middle of the 1990s, to about 15 per year, but there has been a simultaneous increase in the number of late abortions so that the total number of pregnancies with neural tube defects has remained constant at 60–70 per year (6).

If all the pregnant women in Norway had followed the recommendations on periconceptional use of folic acid, we believe that the number of pregnancies complicated by neural tube defects would have been reduced by at least 40 %, i.e. by about 30 cases per year (3). Correct periconceptional use of folic acid would prevent abortions because fewer fetuses would develop this malformation and fewer women would choose induced abortion. A larger number of healthy children could be born and there would be fewer children facing a life of disability and difficulties.

Data from Norway show that only 5–20 % of pregnant women in Norway take a correct dose of folic acid during the correct period (4, 5). Even pregnant women at high risk of neural tube defects neither follow the recommendations of a high intake of folic acid nor do they start at the correct time (4, 5). Many women start to take folic acid during pregnancy, but the majority start too late for this supplement to have any effect on the closure of the neural tube. The neural tube closes within day 30 of the pregnancy, i.e. about 16 days after fertilisation. If the woman starts to take folic acid after a positive pregnancy test, she is probably too late to prevent neural tube defects.

The health authorities have previously used substantial resources in an attempt to reach the target group with their recommendations. The slogan «Prepare your child's health in your body» played a prominent part in the 1998 folic acid campaign. This slogan was presented through a picture of a slim naked woman looking at her own shadow image as pregnant (with a large stomach) and it is not clear which message it is trying to convey. It is only when taken during the periconception period that folic acid supplement (or fortifying food with folic acid) has been shown to prevent neural tube defects. Information in the public campaign on healthy diet and eating food with high folate content may be misleading as the impression is given that «natural» consumption of high folate content food should be enough to prevent neural tube defects.

So why do pregnant women fail to take folic acid before they become pregnant? The answer is simple: 50 % of Norwegian women say that they do not plan their pregnancies (3).

Which new approaches should we use when promoting prophylaxis? Some countries, such as the USA, have chosen to fortify foods with folic acid in order to ensure a sufficiently high intake of this substance for fertile women. This strategy has not been chosen by Norwegian health authorities because of the uncertain cost-benefit effect on the rest of the population (apart from fertile women) (2). The target group for supplementary folic acid should probably be extended as many pregnant women say that they do not plan their pregnancies. This means including all fertile women (for example 15–45 years). It has not been documented that use of folic acid in recommended doses by fertile women has harmful effects, even when used over a long period.

Use of modern information campaigns directed at the whole population is probably effective, if the message is simple enough. A new campaign should focus on three simple points for pregnant and fertile women: folic acid, tobacco and alcohol. The message that it is important to take folic acid before becoming pregnant should be given priority, in addition to the better known health information that alcohol and tobacco are harmful during pregnancy. The campaign should be adapted to the everyday electronic data world of young women by using social media such as Facebook, Twitter and blogs. The authorities should also allow the recommended dose, 0.4 mg folic acid, to be on sale in ordinary shops, not only in pharmacies. The label instructions stating that the tablets are intended for pregnant women should be removed. This might help to ensure that more women start taking 0.4 mg tablets before they become fertilised, whether or not they plan to become pregnant. Those of us who work in the health services and have contact with fertile women should remind them of folic acid prophylaxis, for example when following up patients with epilepsy, on discharge from hospital after childbirth or when they attend public health centres to check the health of the baby (many mothers of small children will have more children).

The Spina Bifida and Hydrocephalus Association is working actively on bringing folic acid prophylaxis of neural tube defects onto the agenda again (7). It is high time that doctors and other health personnel collaborate with the health authorities and patient organisations and help to focus increased attention on a developmental defect that can be prevented. It is time to initiate new and effective information campaigns. Our mutual efforts could help to prevent 30–40 fetuses a year from developing neural tube defects. This prevention would help to reduce the numbers of late abortions and to promote the birth of more children that do not have to face great health challenges.

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References

1. Statens ernæringsråd. Anbefalinger og virkemidler for økt folatinntak blant kvinner i fertil alder. Rapport Nr. 1. Oslo: Statens ernæringsråd, 1998.
2. Smeland S, Holven KB, Løken EB et al. Helsemessige gevinster av økt folatinntak? Hvordan nå ut til ønsket målgruppe. Rapport nr 1. IS-1181. Oslo: Nasjonalt råd for ernæring, 2004.
3. Staff AC, Løken EB, Holven K et al. Effekt av offentlige tiltak for å forebygge nevralrørsdefekter. Tidsskr Nor Legeforen 2005; 125: 435–7.
4. Nilsen RM, Vollset SE, Gjessing HK et al. Patterns and predictors of folic acid supplement use among pregnant women: the Norwegian Mother and Child Cohort Study. Am J Clin Nutr 2006; 84: 1134–41.
5. Brække K, Staff AC. Periconceptional use of folic acid supplements in Oslo. Acta Obstet Gynecol Scand 2003; 82: 620–7.
6. Folkehelseinstituttet. www.fhi.no. (27.1.2011)
7. Ryggmargsbrokk- og hydrocephalusforeningen. Folat på dagsorden. www.ryggmargsbrokk.org/index.cfm?id=312360 (27.1.2011).