Folic Acid Supplementation Policy
Austria has no official government recommendation for periconceptional folic acid supplementation. But in 1988 the Austrian Pediatric Society and the Austrian Society for Prenatal and Perinatal Medicine recommended periconceptional folic acid supplementation (0.4 mg per day) for all women wishing to become pregnant. Women who were already pregnant should start folic acid supplementation during the first four weeks of gestation and continue until the 8th week. For women with a high risk for recurrence of a neural tube defect, periconceptional folic acid supplementation with 4 mg per day was recommended.

Food Fortification Policy
Austria has no official food fortification policy but, as in many other countries, food companies voluntarily fortify some breakfast cereals, malted drinks and some other foods.

The Austrian government is discussing a proposal for mandated folic acid fortification of flour. This may be decided in 2008. Problems to be solved beforehand include the permission of the European Union and technical requirements of flour mills.

Health Education Initiatives
Austria has undertaken no official health education initiatives on the role of folic acid in reducing the risk for neural tube defects. No such initiatives are planned for the near future in.

Knowledge and Uptake of Folic Acid
A study carried out in St Pölten² looked at maternal knowledge and periconceptional folic acid supplementation among women delivered between 1.12.1997 and 31.3.1998. Women were interviewed with a standardized questionnaire. 238 women participated in the study and 234 questionnaires were analysed. 57 (24%) women used folic acid; however 33 out of 57 did not start use until after 12 weeks’ gestation.
61 out of 161 (38%) who answered this question knew that folic acid prevented fetal neural tube defects.

**Proportion of Pregnancies that are Planned**

The proportion of pregnancies that are planned in Austria is unknown.

**Laws Regarding Termination of Pregnancy (TOP)**

“Termination of pregnancy is allowed irrespective of gestational age, if the pregnancy poses a serious threat to the pregnant woman’s physical or mental health, or if there is a serious possibility that the child will be mentally or physically handicapped”. However, in practice this is handled with caution to avoid the accusation of euthanasia. In the case of non-lethal malformations, MFM (maternal-fetal medicine) specialists in Austria agree to terminate pregnancies before viability (i.e. < 24 weeks gestational age). In rare cases of severe malformations diagnosed late they might agree to terminate pregnancies after viability after consulting an ethics committee. In the case of lethal malformations TOP is possible whenever the mother wishes. No medical doctor can be forced to perform TOP.

**References**

Austria (Styria): Total and Livebirth Prevalence Rates for Neural Tube Defects

Austria (Styria): Total and Livebirth Prevalence Rates for Spina Bifida
Austria (Styria): Total and Livebirth Prevalence Rates for Anencephaly

Prevalence per 10,000 births

Year
Report on Periconceptional Folic Acid Supplementation for Belgium
Prof Yves Gillerot, Andre Baguette and Vera Nelen

Folic Acid Supplementation Policy
In Belgium there is no official recommendation for periconceptional folic acid supplementation. However, the unofficial policy is for all women planning a pregnancy to take 0.4 mg folic acid daily and for women at high risk of having a pregnancy affected by a neural tube defect to take 4 mg of folic acid daily. This should be taken 2 or 3 weeks before conception and during the first 3 months of pregnancy.

Food Fortification Policy
There is no official folic acid food fortification policy in Belgium. However, fortified products such as breakfast cereals are available for consumption.

Health Education Initiatives
In 2005, the ONE (Office de la naissance et de l’enfance (Office of Birth and Childhood)) in association with the ASBBF (Association Spina Bifida Belge Francophone), ran a health education campaign which included leaflets, a website, and information on radio and television. Letters about the benefits of periconceptional folic acid were sent to family physicians and gynaecologists in the French speaking area of Belgium. Information on why and when to take periconceptional folic acid is also on the website of the Flemish counterpart of ONE “Kind en Gezin (Child and family)”.

In 2009 a health education campaign, including leaflets and posters, started in the province of Antwerp. The campaign was announced in the press and focused on gynecologists, family doctors, pharmacies, midwives and child welfare.

Knowledge and Uptake of Folic Acid
In 2006, a questionnaire regarding use of folic acid was administered to 195 breast feeding women in the first week after delivery. They had all delivered their first baby and had been recruited for a study on pollutants in mothers’ milk. The results are in Table 1.
Table 1  % of women using folic acid

<table>
<thead>
<tr>
<th></th>
<th>Flanders N= 104</th>
<th>Wallonia N= 71</th>
<th>Brussels N= 20</th>
<th>Total N= 195</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before and during pregnancy</td>
<td>26</td>
<td>21</td>
<td>25</td>
<td>24</td>
</tr>
<tr>
<td>Only before pregnancy</td>
<td>13</td>
<td>6</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Only during pregnancy</td>
<td>52</td>
<td>44</td>
<td>40</td>
<td>48</td>
</tr>
<tr>
<td>Total</td>
<td>90</td>
<td>70</td>
<td>65</td>
<td>81</td>
</tr>
</tbody>
</table>

Proportion of Pregnancies that are Planned
No information provided

Laws Regarding Termination of Pregnancy
Termination of pregnancy is legal up to the gestational age of 12 weeks. Beyond the period of twelve weeks, the termination of pregnancy may be practised only when the pursuit of the pregnancy severely endangers the health of the woman or when it is certain that the unborn child will be affected by a disorder of a particular gravity, recognized as incurable at the time of the diagnosis in which case there is no gestational age limit.²

References

1. Personal communication from Vera Nelen
2. Translation of the "Code pénal", Titre VII, art. 350, 4°
Belgium (Hainaut and Antwerp): Total and Livebirth Prevalence Rates for Anencephaly
(2 registries together)

Belgium (Hainaut and Antwerp): Total Prevalence Rates for Anencephaly
Folic Acid Supplementation Policy

There is no official folic acid supplementation policy in Croatia and none is being planned. Most gynaecologists and paediatricians in Croatia advise every woman to take folic acid (0.4 mg per day) at least 4 weeks before starting a pregnancy until the 12th week of pregnancy. For women who have had a previous pregnancy affected by a neural tube defect, the dosage is 4 mg per day for the above-mentioned period. There are few folic acid supplementation products: FOLIC PLUS – (400 μg in 3 tablets) Natural Wealth, FOLIC ACID CAPS (800 μg) - Twinlab, PRENATAL tablets (800 μg ) – Natural Wealth, PRE-NATAL caps (400 μg in 2 capsules), FOLACIN (5 mg) – Jadran Galenski Laboratorij. There is no funding for folic acid products during pregnancy; pregnant women have to pay for it themselves.

Food Fortification Policy

There is no mandatory food fortification in Croatia. Of course, one can get fortified food from other European countries, and it is not prohibited to have and to sell it in shops, but there are no statistics or studies on that issue.

Health Education Initiatives

There is no official health education initiative in Croatia, but there are many initiatives by the media (TV, Internet, journals, gynecologists and pediatricians, especially private ones). An example is in the Maternity Unit “Sveti Duh” in the city of Zagreb; there is a “Club of pregnant women” and they discuss their habits and nutrition during the pregnancy. A major function of that Club is to educate women about healthy nutrition, for instance, the importance of taking ample folic acid. The Internet page is: www.klubtrudnica.net

There are some useful Croatian sites on the Internet:

- www.poliklinika-harni.hr
- www.mameibebe.net
- www.vazezdravlje.com
- www.iskon.hr/bebe
Knowledge and Uptake of Folic Acid

The studies on dietary habits and folic acid supplementation in Croatia are limited; there are a few studies relating to anaemia in children, congenital heart diseases, neurological disease in children and arteriosclerosis. In 2003 we administered a questionnaire to pregnant women in “Sveti Duh Hospital” in Zagreb (unpublished data): 495 pregnant women completed the questionnaire during their attendance at the prenatal clinic. Median age was 30.8 years (± 3.7). 74% (368/495) of women were aware of the role of folic acid in the prevention of birth defects. The sources of the information were: the media (53%), health professionals (39%) and friends (9%). 64% of women were informed too late: 48% during the first pregnancy and 16% after the first pregnancy. 71% of women (349/495) expressed the need for more information on folic acid supplementation in pregnancy. 69% (343/495) of women were taking folic acid, but only 20% of them (70/343) during the appropriate periconceptional period. This was despite the fact that 75% (371/495) of the pregnancies were planned. Most of the women (71%) could not specify the daily dosage taken. As a group, women who were not taking folic acid were less educated than women who were taking it. 20% of women not taking folic acid had graduated from faculty or high school, while 41% of women who were taking it had graduated from faculty or high school. (p<0.01). Parity, marital and economic status did not influence folic acid intake. Out of 371 planned pregnancies, folic acid was taken during the appropriate time period by only 19% of women (70/371), while 27% (100/371) did not take folic acid supplementation at all.

In a more recent study (2006),¹ Pucarin-Cvetkovic et al looked at 100 women of childbearing-age (range 20-30 years), mean age 24±3.7. The subjects were residents of Zagreb and its surroundings. The results based on the data obtained through 24-h recall showed that the mean intake of naturally occurring food folate and folic acid from fortified cereals was 156±72.2 μg/day. The mean value of the serum folate was within the normal range: 7-28 nmol/L – no clinical deficit was identified. Differences were found (p<0.001) between the subjects who consumed folic acid supplements in drinks and tablets and subjects who did not. Differences were also found between subjects who took folic acid supplements in drinks or tablets and subjects who took folate only through foodstuffs, and did not consume folic acid supplements (p=0.040).
Proportion of Pregnancies that are Planned
In one small unpublished study, 75% of pregnancies were planned. No other information is available.

Laws Regarding Termination of Pregnancy
Termination of pregnancy for fetal abnormality is legal up to 24 weeks of gestation in Croatia. After 24 weeks gestation it is not legal, but if a life-threatening anomaly is found on ultrasound scan after 24 weeks, there is some possibility of termination of pregnancy if it is approved by the Hospital Commission.

References
Croatia (Zagreb): Total and Livebirth Prevalence Rates for Spina Bifida

Croatia (Zagreb): Total and Livebirth Prevalence Rates for Anencephaly
Folic Acid Supplementation Policy

The official folic acid supplementation policy in Denmark was introduced in March 1997 by the Danish Veterinary and Food Administration. It is as follows: Women planning a pregnancy are recommended to take a multivitamin tablet or a folic acid tablet containing 400 µg of folic acid per day, or to take in 400 µg of folic acid per day through diet, if possible. In the official recommendations, it is mentioned that for practical reasons the recommendation is to take a folic acid supplementation of 400 µg per day since achieving 400 µg of folic acid through the diet would require a change of diet for most women. The supplementation should begin when the pregnancy is planned and continue until 3 months of gestation. Women with increased risk of having a pregnancy with a neural tube defect due to malabsorption, long-term use of certain medications, diabetes mellitus or neural tube defects in relatives are recommended a folic acid supplement of 400 µg per day through multivitamin / folic acid tablets. Available preparations include Folsyre” 0.4 mg folic acid, “Gravitamin” containing 0.4mg folic acid amongst other vitamins, and “Gravid” containing 0.4mg folic acid amongst other vitamins.

Women who have previously had a fetus with a neural tube defect, who themselves have a neural tube defect or whose partner has a neural tube defect are recommended to take 5 mg of folic acid per day. This supplementation is recommended from when the pregnancy is planned and until 2 months of gestation. The available supplementation is “Folimet” 5 mg folic acid.

The official policy was declared by the Danish Veterinary and Food Administration after a working group had made a report on the issue.¹ The official policy differs slightly from the recommendations given in the report regarding the time period in which pregnant women should take supplementation. The policy is also stated in the Directives of Antenatal and Maternity Care given by the Danish National Board of Health 1998.²
Food Fortification Policy
In 2002 the Danish Veterinary and Food Administration established a working group to re-evaluate the issue of folic acid fortification of food. In April 2003 this group published a report recommending that the existing official recommendations regarding supplementation should be followed and that mandatory folic acid fortification of food should be introduced in Denmark. However, no action has been taken yet and the official policy established in 1997 remains unchanged; there is no mandatory folic acid fortification of food in Denmark.

Health Education Initiatives
There is an official health education initiative in Denmark to inform women about the role of folic acid in reducing the risk for neural tube defects: The Danish Veterinary and Food Administration have had press releases with information about the policy; the first was on March 3, 1997, another on June 11, 1999. Leaflets addressing women planning pregnancy have been published by the Danish Veterinary and Food Administration and distributed to general practitioners, specialists in gynaecology and obstetrics, gynaecological / obstetrical departments of the Danish hospitals, pharmacies and drugstores. The leaflets were first distributed in 1999 and again in 2001. In 2001 the number of leaflets distributed was 105,000 (the number of total births in Denmark per year is approximately 65,000). Publications from the National Board of Health addressing women planning a pregnancy and pregnant women also contain information about the official folic acid recommendations. There have been no paper or television advertisements, but the issue has been covered in some newspaper articles, television programs about health issues and in magazines concerning health, pregnancy and children. The Danish Veterinary and Food Administration has started an ongoing campaign with flyers, go-cards and posters to download from their website.

Knowledge and Uptake of Folic Acid
In 2004, a paper called "Low compliance with recommendations on folic acid use in relation to pregnancy: is there a need for fortification?" (4) was published in Public Health Nutrition. It was a cohort study on pregnant women in Denmark. 22,000 pregnant women were recruited for The Danish National Birth Cohort between November 2000 and February 2002. Use of dietary supplements was recorded. Compliance with the recommendation was related to the information campaign that
took place during the second half of 2001. An increase was seen in the proportion of women complying with the recommendation in the study period and this coincided with the information campaign events. However, even at the end of the period, only 22.3% of the women who had planned their pregnancy fully complied with the recommendation. No increase at all was seen in periconceptional folic acid use among women with unplanned pregnancies.

Regarding the dietary habits of women of child bearing age, the working group under the Veterinary and Food Administration (1) have calculated the intake of folate in Denmark using data from the Danish Dietary Survey performed in 1995. The results were that women of child-bearing age in Denmark have a mean intake of 248 µg folate per day through the diet; only 5% get 400 µg or more.

**Proportion of Pregnancies which are Planned**

No national study has been published from Denmark on the proportion of pregnancies which are planned. In the Danish version of the report done by the working group under the Danish Veterinary and Food Administration (1) it is assumed that the number is a little higher than in the United States where approximately half of the pregnancies are planned, since compliance with contraception in Denmark is rather high. However a regional study in Denmark was published in 2001. The study population (n=3516) was recruited among pregnant women attending Odense University Hospital, Funen County (the region covered by the EUROCAT register), in the period November 1994-January 1996. In this study 68% of the women with accepted pregnancies stated that the pregnancy was planned. The representativity of this study sample was judged by comparing the age distribution and the parity profile of the women in the study population with the national figures. No pronounced difference was found, indicating that the study sample can be considered a representative sub sample of the Danish population.

**Laws Regarding Termination of Pregnancy**

Women in Denmark have the right to have a termination of pregnancy before 12 weeks of gestation. After 12 weeks a woman can have her pregnancy terminated after obtaining permission from a special committee of two doctors and an employee at the Social Centre (one committee in each County). If a severe congenital anomaly
is diagnosed, the upper gestational age for termination is usually 22 weeks. Termination may be permitted later, but only if the congenital anomaly is so severe that survival by birth would be impossible.

References


2. The Danish National Board of Health: Directives of Antenatal and Maternity Care (1998)


Denmark (Odense): Total and Livebirth Prevalence Rates for Neural Tube Defects

Denmark (Odense): Total and Livebirth Prevalence Rates for Spina Bifida

Prevalence per 10,000 births

Year

Total prevalence

Livebirth prevalence
Folic Acid Supplementation Policy

In 1994 the Finnish Ministry of Social Affairs and Health set up an expert group to prepare a National Recommendation on Periconceptional Use of Folic Acid. The recommendations, issued in 1995, were sent to all medical professionals, health care centres, hospitals and pharmaceutical companies. The recommendations were also published in the leading Finnish scientific medical paper in 1996. The recommendations were reviewed by an expert group of the Ministry of Social Affairs and Health in 2004, and in the autumn of 2004 the new recommendations on folic acid were published as part of a National Nutrition Recommendation for small children and pregnant and breast feeding mothers. The main changes in the new recommendations, compared with the old ones from 1995, are in the first section concerning ordinary pregnancies. The 1995 recommendation was purely dietary, while in the 2004 recommendation a supplement of a 0.4 mg folic acid tablet is recommended for those with an unbalanced diet poor in folate content.

The present official recommendation on folic acid supplementation has three sections:

1. Prevention of first occurrence of NTD in ordinary pregnancies

   The recommendation is to take 0.4 mg folate daily in diet periconceptionally.
   - A normal, balanced low-fat and low-sugar diet, with abundant fresh vegetables, berries and fruit as well as wholemeal products, rich in folate, is recommended for all women planning a pregnancy and in early pregnancy, in order to obtain folate equivalent to at least 0.4 mg folic acid daily.
   - A daily supplement of a 0.4 mg folic acid tablet, to be used periconceptionally, is recommended for all women planning a pregnancy and in early pregnancy, whose diet does not contain enough fresh vegetables, berries, fruit or wholemeal products.
   - A daily supplement of a 0.4 mg folic acid tablet can also be taken periconceptionally by women with balanced, folate-rich diet, if they want to make sure they will obtain an adequate amount of folic acid.
2. **Prevention of first occurrence of NTD in special situations**

The recommendation is to take a daily supplement of a 0.4 mg folic acid tablet periconceptionally.

- In addition to a balanced diet, a daily supplement of a 0.4 mg folic acid tablet, to be used periconceptionally, is recommended for women who are planning a pregnancy and who may, for various reasons, have potential folate deficiency in early pregnancy.
- Potential folate deficiency may occur, if the mother has a very unbalanced diet, treatment with antiepileptics (phenytoin and barbiturates), long-term treatment with sulphonamides, celiac disease or other severe intestinal malabsorption or heavy alcohol consumption.
- Folic acid supplementation may also be considered, if the mother has, insulin dependent diabetes, clomiphene treatment, valproate or carbamazepine treatment or neural tube defects among more distant relatives.

3. **Prevention of recurrence of NTD**

The recommendation is to take a 4 mg folic acid tablet daily, periconceptionally

- There is an increased risk (2–3%) of fetal NTD in the following situations:
  a) the parents have had a common child or fetus with NTD.
  b) either parent has had a child or fetus with NTD with another partner
  c) either the mother or the father has had NTD him/herself.
- The use of a 4 mg folic acid supplement as tablets should take place under the control of a doctor, and this supplement is only available with a doctor's prescription. Before starting this supplementation, or if needed also during the supplementation, the maternal serum B12 level should be checked in order to make sure that there is no deficiency of vitamin B12. The reason for this is that an amount of 1mg folic acid can conceal megaloblastic anaemia, associated with deficiency of vitamin B12, and thus prevent the detection of deficiency of this vitamin.
- Folic acid supplementation does not give complete protection against fetal NTD, so in pregnancies in high risk families, prenatal screening
and diagnosis should be offered to women. Women who want prenatal investigations should be referred to a prenatal diagnostic unit in a university hospital early in pregnancy.

- The Social Insurance Institution does not reimburse preventive folic acid supplementation.
- Folic acid supplementation is started, when contraception is stopped or at the latest, at the beginning of the menstrual period after which a pregnancy is hoped for, and the supplementation will be continued until the end of the 12th week of pregnancy (i.e. starting 4 weeks before conception and continuing until the end of the 12th week of pregnancy).

The expert group of STM still considered that the balanced diet, according to the National Nutrition Recommendation, usually guarantees an adequate supply of folate, and that routine folic acid supplementation is not needed. It has, however, been observed that the average intake of folate by Finnish women (224 μg) is less than the Finnish Nutrition Recommendation (400 μg for pregnant women and those planning a pregnancy and 300 μg for other women). The expert group considered that a minimum of 5 to 6 portions of vegetables, berries and fruit should be eaten daily. If the mother eats very few fresh vegetables, berries and fruit, she should be advised to increase her intake of them in order to improve the balance of her diet and to ensure intake of the recommended amount of folate.

The expert group also reported that the easiest way to implement supplementation of 0.4 mg folic acid is to use a multivitamin preparation with an adequate amount of folic acid. There are a few preparations in the Finnish market which, taken according to instructions, give a daily supply of 0.4 mg folic acid. Preparations with lower concentrations of folic acid are not recommended for use, as by increasing the dosage, the supply of other nutrients becomes too high.

A recommendation on folic acid supplementation published by the National Research and Development Centre for Welfare and Health STAKES in 1999 was approximately the same as the present recommendation.
Food Fortification Policy
Fortification of food products with folic acid was not considered justifiable in Finland (STM 1995). Fortification of food products with folic acid has been monitored by the Finnish Food Safety Authority (previously National Food Agency) with the support of the Ministry of Social Affairs and Health and under the direction of a broad-based group of experts. The report of the expert group, published in December 2001, did not recommend fortification of basic food products with folic acid.5

Health Education Initiatives
There has been no health education initiative on folic acid supplementation in Finland, but information is being given at schools and by the maternity clinics and child welfare clinics. The issue has been widely presented in women’s magazines.

Folic Acid Knowledge and Uptake
A study was carried out in the year 2000 in 114 public maternity clinics around Finland. Public Health nurses or midwives completed a questionnaire with the women during their first visit to the maternity clinic. 547 women participated in the study; 6% of the women refused. The women had their first antenatal visit on average during the ninth gestational week. 65% of respondents had heard about folic acid; young and less educated women had heard of it less often than others. The women had received information on the effect of folic acid on pregnancy and fetuses from newspapers and magazines, public maternity clinics and health care centres, and from schools and other educational institutions. Drug advertisements and friends were a more common source of information than were doctors and pharmacists. 10% of women knew about the effects of folic acid on pregnancy and the fetus. 29% of women could list at least one food product containing folic acid. 45% of women had used at least one preparation containing vitamins and / or trace elements before and / or in early pregnancy. 34% of women had consumed a folic acid supplement (19% of them before pregnancy and /or in early pregnancy).6

Proportion of Pregnancies which are Planned
547 women were interviewed by a midwife / nurse during their first prenatal care visit at approximately 9 weeks gestation. Data were collected over a one month period in 114 maternity centres in Finland in the year 2000. 6% of the women refused to participate. Between 37% and 86% of the pregnancies were planned, depending on
the interpretation of the concept of “planned”. 60 % of the women changed their lifestyle in early pregnancy. However, 75 % of these changes were made only after the woman found out about her pregnancy.7

What women thought about getting pregnant prior to the pregnancy, by age of mother (%)

<table>
<thead>
<tr>
<th></th>
<th>&lt;25</th>
<th>25-29</th>
<th>30-34</th>
<th>&gt;35</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>I wished to get pregnant as soon as possible</td>
<td>33</td>
<td>39</td>
<td>41</td>
<td>32</td>
<td>37</td>
</tr>
<tr>
<td>I thought the pregnancy may begin by its own time</td>
<td>48</td>
<td>53</td>
<td>47</td>
<td>45</td>
<td>49</td>
</tr>
<tr>
<td>I wished to get pregnant later</td>
<td>9</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>I did not want to get pregnant</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>I didn’t think about it</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Getting pregnant or the time was not important</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

According to a recent study in Northern Finland the percentage of wanted pregnancies seems to be high even among primiparous mothers.8

**Laws Regarding Termination of Pregnancy**

Termination of pregnancy is allowed up to 12 weeks gestation (12+0 gw) for many indications by permission of one or two doctors and up to 20 weeks (20+0 gw) by special permission of the National Supervisory Authority for Welfare and Health (Valvira). If the mother’s life is in danger, the pregnancy can be terminated at any gestational age. Termination for severe fetal abnormality can be done up to 24 weeks only by special permission of the National Supervisory Authority for Welfare and Health (Valvira).

**References**


Finland: Total and Livebirth Prevalence Rate for Spina Bifida

Finland: Total and Livebirth Prevalence Rates for Anencephaly
Policy on Folic Acid Supplementation
In 1995, the French Pediatric Society published a recommendation to pregnant women to take a daily dose of 0.2 mg daily of folic acid supplements. They also advised women of child-bearing age to increase folate intake through diet.

A second awareness was raised in 1997 by the National College of Obstetrics and Gynecology. They advised the same folic acid supplementation level of 0.2 mg daily during the periconceptional period, reinforcing the position of the French Pediatric Society. The folic acid status of the French women was considered to be good. However, encouragement was given for a multi-vitamin therapy at a daily dose of 400 µg of folic acid in high-risk situations (teenagers, discontinuation of oral contraception, alcoholic women, women of low social economic class).

In 1999, the State Secretary of Health set up an expert group to prepare national recommendations which were issued in August 2000. The advice for most women planning a pregnancy was a daily dose of 0.4 mg of folic acid from 4 weeks before conception to 8 weeks after conception. In February 2003, two pharmaceutical companies marketed the first tablets ever sold in France containing the exact dosage of 0.4 mg of folic acid alone. The Ministry of health agreed to refund women for 65% of the cost for these tablets when they are prescribed to prevent malformations.

For women with a previous NTD pregnancy and women taking antiepileptic medication, the recommendation was 5 mg folic acid daily; this dosage has been marketed for many years.

Food Fortification Policy
There is no mandatory food fortification. However, some fortified breakfast cereals are available (around 160-170 mg /100 g, more for “Cornflakes: 300 mg /100 g”) in most supermarkets.
Health Education Initiatives

In 2000, recommendations for a diet rich in folate, calcium, iodine and iron were made in an illustrated leaflet addressed to women of child-bearing age. In this booklet, there is a small paragraph for women planning pregnancy, saying that folic acid is needed to “prevent intra uterine growth retardation and various severe malformations of the baby “.

In 2004, the French “Association Spina Bifida” edited an information leaflet on folic acid, to be distributed all over the country and placed in waiting rooms of physicians, family planning centres, pharmacies, etc.

The pharmaceutical companies marketing 0.4 mg folic acid tablets have organized conferences and training programmes for gynaecologists across the country in order to stimulate prescription of folic acid by physicians.

Advice about periconceptional folic acid has been spread via TV and newspapers.

Knowledge and Uptake of Folic Acid

Two studies using the same protocol were done in public and private obstetric units in Paris in 1995 and 1999. The 1999 study (2) carried out on 735 women interviewed 2 or 3 days after the delivery showed that 55.1 % (405/735) had heard of folic acid but most often with no knowledge of its effect. 24.3% (177/728) reported the use of one of the products containing folic acid (with or without additional multivitamins or minerals) present on a list with the pictures of the boxes. But only 1.0% (8/735) took the folic acid in the recommended period. Even these results were better than those of the 1995 survey (1) in which only 0.5 % - 3/733- took folic acid during the recommended period. Clearly, the messages from the “non official” recommendations issued in the country in 1995 and 1997 were not heard.

In a recent study in Brittany, more than 200 women were surveyed after delivery. 10% reported taking periconceptional folic acid correctly. A further 30% took it during pregnancy only (personal communication Dr. Hubert Journel)
Proportion of pregnancies which are planned

No information is available.

Laws Regarding Termination of Pregnancy
There is no upper gestational age limit on termination of pregnancy for fetal abnormality with approval by experts if “there is a high probability that the fetus is affected by a particularly severe condition with no effective therapy available at the time of prenatal diagnosis” (law of July 1994).

References

3. Dr Hubert Journel, (Coordinator of Groupe Folate France) personal communication

Additional Reading: Three chapters in books addressed to the French medical establishment have been written

France (Central East France, Isle de Reunion): Total and Livebirth Prevalence Rates for Neural Tube Defects

France (Strasbourg, Paris, Central East France, Isle de Reunion): Total and Livebirth Prevalence Rates for Spina Bifida (all 4 registries together)
Folic Acid Supplementation Policy

While many bodies have made recommendations regarding folic acid intake for women planning a pregnancy, there are no official governmental guidelines on this point in Germany.

In 1994/95 recommendations published by the German Nutrition Society, the German Society of Obstetrics and Gynaecology, the German Society of Human Genetics, the German Society of Paediatrics and Adolescent Medicine, and the German Society of Neuropaediatrics advised 0.4 mg folic acid daily for women planning a pregnancy, and 4 mg of folic acid daily for women with a previous pregnancy affected with a neural tube defect (NTD). The recommendations specified a period starting four weeks prior to pregnancy and lasting till the end of the first trimester (Koletzko 1994, Koletzko 1995).

In 2000 the Societies of Nutrition in Germany (DGE), Austria (ÖGE) and Switzerland (SVE, SGE) published the “Reference Values for Nutrient Intake” for the German speaking countries (Deutsche Gesellschaft für Ernährung 2000). The reference values for folic acid intake can be found in table 1.

Table 1: Reference values for folic acid intake (Deutsche Gesellschaft für Ernährung 2000)

<table>
<thead>
<tr>
<th>Age groups</th>
<th>Folic acid (μg equivalent daily)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants</td>
<td></td>
</tr>
<tr>
<td>0 – 4 months</td>
<td>60</td>
</tr>
<tr>
<td>4 – 12 months</td>
<td>80</td>
</tr>
<tr>
<td>Children</td>
<td></td>
</tr>
<tr>
<td>1 – 4 years</td>
<td>200</td>
</tr>
<tr>
<td>4 – under 7 years</td>
<td>300</td>
</tr>
<tr>
<td>7 – under 10 years</td>
<td>300</td>
</tr>
<tr>
<td>10 – under 13 years</td>
<td>400</td>
</tr>
<tr>
<td>13 – under 15 years</td>
<td>400</td>
</tr>
<tr>
<td>Group</td>
<td>Intake (mg/d)</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Adolescents and adults</td>
<td></td>
</tr>
<tr>
<td>15 – under 19 years</td>
<td>400</td>
</tr>
<tr>
<td>19 – under 25 years</td>
<td>400</td>
</tr>
<tr>
<td>15 – under 65 years</td>
<td>400</td>
</tr>
<tr>
<td>51 – under 65 years</td>
<td>400</td>
</tr>
<tr>
<td>65 years and elder</td>
<td>400</td>
</tr>
<tr>
<td>Pregnant women</td>
<td>600</td>
</tr>
<tr>
<td>Breastfeeding women</td>
<td>600</td>
</tr>
</tbody>
</table>

### Food Fortification Policy

In 2006 the German Society for Nutrition (DGE) published a position paper containing strategies to improve folic acid supplementation in Germany. Therein the DGE argues for the supplementation of flour with 0.15 mg folic acid/ 100 g flour to achieve an additional intake of 0.135 mg/d for men and 0.106 mg/d for women (Deutsche Gesellschaft für Ernährung 2006).

In Germany folic acid is classified as a supplementary food, and hence does not fall under drug approval requirements. The Nutritive Value Declaration Regulation (Nährwertkennzeichnungsverordnung) (Thamm 1999) claims that 100 g of flour should be fortified with up to 15 per cent of the recommended daily dose of 0.2 mg of folic acid. However, the maximum daily intake must not exceed three times the recommended daily dose (i.e. 0.6 mg folic acid).

In Germany no authorisation is required for the fortification of foods for general consumption with folic acid. As many manufacturers have used this option in recent years, there is now a wide range of foods enriched with folic acid brought on the market (Bundesinstitut für Risikoforschung 2005).

A major problem in marketing food enriched with folic acid is the fact that in Germany it is not allowed to refer to potentially beneficial effects on health for advertisement purposes, e.g. "... contributes to the prevention of NTD". (Law on Food and Articles of Consumption - Lebensmittel- und Bedarfsgegenstandsgesetz) (Thamm 1999).
Among the medical societies in Germany, only the Society of Paediatrics and Adolescent Medicine has published a recommendation for flour enriched with folate (Koletzko 2000). Some foodstuffs, such as bread, cereal grains and fruit juice, are fortified with folic acid. However, there is still no official list in Germany.

On 8 May 2000, a meeting of experts took place in Berlin where the necessity of improving the measures for preventing NTD was discussed. Participants in the meeting included physicians, representatives of malformation registries, politicians, representatives of the food industry, consumer federations, scientists, pharmaceutical companies, and others. However, this meeting failed to establish a common position regarding the fortification of food with folic acid. Instead, the participants decided to form a working group to this end.

In autumn 2003 the “Folic Acid and Health Working Group” (www.ak-folsaeure.de) was formed in which representatives of professional medical societies, scientific institutions, the food industry, parents’ initiatives and the Swiss Federal Commission for Nutrition work together. The German Federal Ministry for Health and the Federal Ministry of Consumer Protection, Food and Agriculture send their observers to meetings of this group. The work focuses on introducing folic acid fortification of basic food in Germany. As a first step, a consensus paper was published in the German medical journal "Deutsches Ärzteblatt" in 2004 (Koletzko 2004). The consensus paper is highly appreciated among German physicians.

In 2005, the Federal Institute for Risk Assessment (Bundesinstitut für Risikobewertung - BfR) published a final report referring to the provision of folic acid for the German population. Because of gaps in the knowledge about the risk assessment, the authors recommended that folic acid supplementation for women of childbearing age should be 0.4 mg/d. Furthermore the BfR postulated additional information campaigns in the population and highlighted the point that the effectiveness of supplementation of wheat or salt with folic acid has not been proven yet (Bundesinstitut für Risikobewertung 2005).

**Health Education Initiatives**

There has been no official health education initiative. Departments of the Federal Ministry of Health, Federal Ministry of Consumer Protection, Food and Agriculture,
and the German Nutrition Society are aiming to improve health knowledge and raise awareness of the population. Although they all have analysed the effects of folic acid intake, a concerted action for improving knowledge in this field has not been launched to date.

Knowledge and Uptake of Folic Acid in Women

- In 2000 a study in Munich was performed by Egen, comprising two inquiries: (i) during the first inquiry 346 women were interviewed after delivery in 1996, (ii) the second inquiry interviewing 402 women was performed in 1998.
- Between 1996 and 1998 an information campaign had taken place. The study results revealed a periconceptional folic acid intake of 400 μg per day in seven women (2%) in 1996, whereas this number was 20 (5%) in 1998 (Egen 1999).
- In the Federal State of Saxony-Anhalt an inquiry was made in maternity hospitals in 1998. A total of 567 women were interviewed after childbirth about whether they had taken folic acid prior to or after confirmed conception. Only 34 women (6%) reported to have taken folic acid prior to conception. A second inquiry was conducted in 2000, comprising a total of 1,224 women after delivery. The total number of women who had taken folic acid prior to conception amounted to only 53 (4.3%) (Heinz 2001).

Knowledge about Vitamins and the Nutritional Behaviour of Students

An inquiry about the nutritional behaviour and knowledge about vitamins among 4,332 students aged 16-21 in the Federal State of Saxony-Anhalt revealed that only 4.5% of those interviewed were aware that folic acid is a vitamin and only 0.7% of the students knew the function of folic acid in the organism. Boys and girls did not differ in their knowledge. In contrast, more than 95% of those interviewed knew that alcohol, nicotine and X-rays should be avoided during pregnancy, information, which is taught in school lessons. This suggests that information about folic acid and pregnancy should also be given at school (Seelig 2005; Pötzsch et al. 2006).

Knowledge and Practice of Health Care Professionals in Recommending a Supplementary Folic Acid Intake

From October 1997 to March 1999 the first German Health Survey was carried out (German National Health Interview and Examination Survey) (Bundesgesundheitssurvey 1999, Mensink 1998). One point of this study was
"Subjective Statements on the Daily Intake of Drugs from Selected Drug Groups".
For women between 18 and 45 years of age the following ranking of drug use was established: (i) in the western federal states 30% oral contraceptives, 11.5% thyroid drugs, 8.1% vitamins; (ii) in the eastern federal states 47% oral contraceptives, 10% thyroid drugs, 5.5% vitamins (Knopf 1999).

Gynaecologists

• In 1998 the Malformation Monitoring System Saxony-Anhalt performed an anonymous inquiry among 234 gynaecologists regarding pre- and post conceptional administration of folic acid. The questionnaire was returned by 104 gynaecologists (44.4%). 76.9% of them said they would supply folic acid after confirmation of conception, whereas 87.5% would recommend preconceptional intake.
• In 1996 a total of 27 gynaecologists in Munich were interviewed about their attitude towards prophylactic folic acid supplementation. Nine gynaecologists (38%) recommended taking folic acid preconceptionally, two (8%) recommended taking folic acid at the beginning of pregnancy, four (17%) recommended taking folic acid only in cases within a family history of NTD, whereas nine (37%) did not give any recommendation at all.
• Following an intervention campaign in 1998, 20 (74%) gynaecologists recommended taking preconceptional folic acid, four (15%) recommended taking folic acid with the beginning of pregnancy and three (11%) only in case of a family history of NTD (N = 27) (Egen 2000).

Pharmacists

• In 1996 Egen interviewed 21 pharmacists in Munich about their recommendations for prophylactic folic acid. Eight pharmacists (38%) recommended taking folic acid in the beginning of pregnancy, whereas five (24%) did not give any recommendation, and eight pharmacists (38%) recommended a periconceptional intake (Egen 2000).
• In 2000, Malformation Monitoring Saxony-Anhalt conducted an anonymous inquiry among 598 pharmacists with regard to prophylactic folic acid. Only 104 (17.4%) of the interviewed pharmacists returned the questionnaire, of which 82 (79%) recommended both a pre- and post-conceptional folic acid intake. Twelve pharmacists (11.5%) recommended taking folic acid preconceptionally, and eight
(7.7%) recommended it only in the post-conceptional phase. Two pharmacists (1.8%) did not give any recommendation at all (Kästner 2001).

**Nutritional Habits and Other Supplementary Vitamins**

A large part of the population in Germany does not reach the recommended folate intake.

- The German Nutrition Report 2004 stated that the daily intake of folic acid among women aged 19 to 24 years was 198 μg/d in the western and 184 μg/d in the eastern federal states. The average daily intake of 215 μg/d among all women is still below the reference value of 400 μg/d (Deutsche Gesellschaft für Ernährung 2004).

- In the German National Health Interview and Examination Survey (Bundesgesundheitssurvey 1999, Mensink 1998) a total of 1,266 women between 18 and 40 years of age were interviewed. The average daily folic acid intake was 119 μg free folic acid equivalents. In 80.6% of all women the daily intake of folic acid was less than 150 μg. 8.1% of the women in the western federal states (N = 1,231) and 5.5% of the women in the eastern federal states (N = 601) between 18 and 45 years of age were taking multivitamin tablets and 0.6% of them were taking folic acid tablets (Heinz 2001).

- The Bavarian Food Consumer Study (Bayerische Verzehrstudie 1995) found out that the average daily folic acid intake for women was 0.08 mg folic acid equivalents (Bayerisches Staatsministerium für Ernährung, Landwirtschaft und Forsten1997).

**Women’s Sources of Information about Folic Acid**

The German National Health Interview and Examination Survey (N = 562) (Bundesgesundheitssurvey 1999, Mensink 1999) found out that women received their information about folic acid from the following sources:

- 29.3% physicians
- 28.1% journals
- 14.8% TV
- 9.1% friends
- 8.5% newspaper
- 7.1% health insurance
- 3.1% radio
Egen (1999) interviewed 35 women and found they received their information from the following sources:

- 77% gynecologists
- 14% self-information
- 6% professionals
- 3% genetic counselling

Investigations in Saxony-Anhalt (2000) (Heinz 2001) found out that women received their information from the following sources (table 2):

Table 2: Women’s sources of information about folic acid in Saxony-Anhalt (Heinz 2001)

<table>
<thead>
<tr>
<th>Sources of information</th>
<th>Prior to pregnancy</th>
<th>During pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 227</td>
<td>Rate in per cent</td>
</tr>
<tr>
<td>Physicians</td>
<td>137</td>
<td>60.4</td>
</tr>
<tr>
<td>Radio/ TV/ magazines</td>
<td>44</td>
<td>19.4</td>
</tr>
<tr>
<td>Books</td>
<td>33</td>
<td>14.5</td>
</tr>
<tr>
<td>Friends</td>
<td>30</td>
<td>13.2</td>
</tr>
<tr>
<td>Others</td>
<td>17</td>
<td>7.5</td>
</tr>
<tr>
<td>Partner</td>
<td>13</td>
<td>5.7</td>
</tr>
<tr>
<td>Relatives</td>
<td>13</td>
<td>5.7</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>11</td>
<td>4.8</td>
</tr>
<tr>
<td>Information centre</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Proportion of Pregnancies which are planned

- Egen conducted a study comprising 131 women right after delivery, of which 94 (72%) confirmed that they had planned their pregnancy. In 1998 Egen again interviewed 118 women after delivery. 80 (68%) out of them had planned their pregnancy (Egen 1999).
In 1998 a study was performed in Saxony-Anhalt, comprising 567 women after delivery who were asked whether or not their pregnancy had been intended. A total of 391 (69%) of the women confirmed that their pregnancy had been planned. Again, in 2000 a study was conducted in Saxony-Anhalt in the course of which 1,224 newly delivered women were interviewed. 806 (66%) answered that their pregnancy had been planned.

Declaration of the final report of the Federal Institute for Risk Assessment (Bundesinstitut für Risikobewertung) referring to the supply of the German population with folic acid: 40-50% unplanned pregnancies are estimated (no source known).

Molecular-Genetic Investigations

Within the German National Health Interview and Examination Survey (Bundesgesundheitssurvey 1999) 994 women were checked for the presence of a C677T mutation. 421 women (42.4%) did not carry this mutation. 455 women (45.7%) were heterozygous and 118 (11.9%) were homozygous for the C677T mutation. These women exhibited a significantly higher homocysteine level (Thamm M – personal information).

Laws Regarding Termination of Pregnancy

In Germany, termination of pregnancy is allowed irrespective of gestational age, if the pregnancy implies a serious threat to the pregnant woman’s physical or mental health, or if the fetus is affected by malformations.
References


Additional Summary on folic acid/metafoline for Germany

Dr Annette Queißer-Luft and short explanation folic acid versus 5-Methyl-Tetrahydrofolat (from Prof. Dr. K. Pietrzik, Rheinische Frierich-Wilhelms-Universität, Bonn)

The intake of folate via normal foods and the folate status of (parts of) the European population are below the reference values. At the same time, the incidence of neural tube defects (NTD) in Europe is considered unacceptably high. Earlier studies have shown a preventive effect of folic acid on the occurrence of NTDs. Therefore, to increase the intake of folate/ folic acid is a major public health objective in Europe.

Up to now, women of childbearing age were advised to take supplements with a minimum of 400 µg folic acid from four weeks before to two to three months after conception. However, only a small percentage of women follow this advice. Therefore, in many European countries fortification of flour or another staple food with folic acid has been considered an alternative strategy.

The daily peri-conceptional intake of additional 400µg folic acid is recommended to prevent NTDs. Various studies showed risk reductions between 35 to 70% for NTDs. Multivitamins containing 800µg folic acid showed a close to 100% for NRD and a significant decrease for congenital heart defects and defects of the urinary tract. Concerning major birth defects prevention these products seem to be superior.
Taking into account the recent development (increasing use of folic acid i.e. by fortifying food like cereal and fruit juices) long term overdoses, more than 1mg tolerable upper intake level, have to be avoided due to the masking of haematological symptoms of a vitamin B12 deficiency. For this purpose natural folate [5-Methyl-Tetrahydrofolate (5-MTHF)] would be the best choice. At first a masking of a B12- deficiency is highly unlikely and second it is the biological active form of the vitamin in the human body. This is of main importance for people with an enzymatic polymorphism of the folate metabolism, resulting in a lower 5-MTHFR production. Approximately 10% of any population show a homozygote MTHFR 677C→T-polymorphism, resulting in a 75% decrease of MTHFR activity. Thus the supply of this “missing” substance would have the strongest impact in terms of a broad prevention strategy. As homozygote constellations do have a higher risk for NTDs and also the risk for heterozygote persons is slightly increased, a beneficial folate supply through 5-MTHF intake could be the optimal result for 50% of the population.

Well respected studies on bioavailability and reduction of Homocysteine levels proved 5-MTHF (Calcium L-Methylfolate) to be equivalent to folic acid. Long term studies on the elevation of the Erythrocytic folate levels even resulted in a significant superiority of the active form.

![Graph showing prevalence rates for neural tube defects](image-url)
Germany (Saxony Anhalt and Mainz): Total Prevalence Rates for Anencephaly

![Graph showing total prevalence rates for anencephaly in Saxony Anhalt and Mainz from 1980 to 2007. The x-axis represents the years, and the y-axis represents the prevalence per 10,000 births. The graph shows fluctuations in prevalence rates over the years.]

- Total prevalence Saxony Anhalt
- Total prevalence Mainz
Folic Acid Supplementation Policy
In 1996, the National Institute for Health Promotion released a recommendation for women planning a pregnancy. The recommendation was for women to take a supplement of 0.4 mg/day folic acid during the preparation for pregnancy.

In 1998, The National Board of Hungarian Gynaecologists issued guidelines for vitamin and mineral supplementation during pregnancy. They recommended 0.4 mg/day folic acid throughout pregnancy in order to prevent neural tube defects. They did not mention preconceptional folic acid.

Food Fortification Policy
There is no mandatory food fortification in Hungary, and the fortification of a staple food is not planned in the near future. The authorization and production of fortified foods is allowed and is under legal regulation, but there is no available database about fortified foods at the moment. A wide variety of imported breakfast cereals are available. In 1998 a special kind of bread fortified with folic acid became accessible with very limited success. In the absence of supporting health education, the lack of interest led to its disappearance it from the market.

Health Education Initiatives
In Hungary, public health nurses support women preparing for pregnancy, during pregnancy and after delivery. This service is provided free of charge and is financed by municipalities. Since the early 1980s, these nurses have been required to direct the attention of women to the fact that folic acid supplementation is effective in the prevention of anaemia. More recently, they have begun to tell women about the benefits of folic acid in helping to prevent congenital anomalies.

Knowledge and Uptake of Folic Acid
The most recent investigations on folic acid intake are the following: 69% of Hungarian pregnant women regularly take products containing folic acid (usually multivitamins). 93% of them start the intake after the 7th week of pregnancy.
(45.85% start in 1st trimester, 41.68% in 2nd trimester, and 12.46% in 3rd trimester)
The daily dose is under 0.5 mg for 85% of pregnant women.²

The Dietary survey in Hungary (2003-2004) investigated the nutritional habits of a representative sample. A nested sample was investigated according to vitamin intake as well. This sub-sample consisted of 587 women over 18.³

Daily folate intake (μg/day) in Hungary among women

<table>
<thead>
<tr>
<th>Age group</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-34</td>
<td>132.3</td>
<td>47.5</td>
<td>176</td>
</tr>
<tr>
<td>35-59</td>
<td>132.3</td>
<td>47.5</td>
<td>176</td>
</tr>
<tr>
<td>60+</td>
<td>124.6</td>
<td>42.9</td>
<td>235</td>
</tr>
<tr>
<td>18+</td>
<td>131</td>
<td>46.9</td>
<td>587</td>
</tr>
</tbody>
</table>

Proportion of Pregnancies that are Planned
67.4% of pregnancies in Hungary were found to be planned in a study published in 2006.⁴ The figures broken down by maternal age were as follows:

15-19 year: 48.3%
20-24 year: 54.2%
25-29 year: 62.5%
30-34 year: 67.1%
35-39 year: 67.4%
40-44 year: 66.1%
45-49 year: 64.6%

Laws Regarding Termination of Pregnancy
Induced abortion is regulated by the 1992 Act Number LXXIX on the protection of foetal life which modified the 1973 regulations. According to the 1992 act, a pregnancy may be interrupted if it seriously endangers the health of the mother or the foetus, if the pregnancy is the consequence of a crime or if the mother is in a grave crisis situation. According to the definition of the Decree of the Ministry of Health No 18/2000(June 29) a grave crisis situation occurs when it causes bodily or mental impairment or socially intolerable situation.⁵
If the probability of a genetic or congenital impairment is above 50%, then termination of pregnancy is allowed until a gestational age of 20 weeks. If the diagnosis requires more time, then this period can be extended until 24 weeks. Finally, if the intrauterine diagnosis is a disease or condition which is incompatible with life, there is no gestational age limit on termination of pregnancy.

References


Hungary: Total and Livebirth Prevalence Rates for Anencephaly

![Graph showing prevalence per 10,000 births for total and livebirth prevalence from 1980 to 2010.](image)

- **Total prevalence**
- **Livebirth prevalence**
Report on Folic Acid Supplementation for Republic of Ireland

Dr Robert McDonnell

Folic Acid Supplementation Policy
Recommendations were made by the Irish Department of Health and Children in 1993 that if there is any possibility of pregnancy, a woman should take an additional 400 μg of folic acid daily prior to conception and during the first twelve weeks of pregnancy. The preferred means of supplementation is by a daily folic acid tablet. The policy is promoted through the Department’s Health Promotion Unit by way of leaflets and promotion campaigns.

Food Fortification Policy
Voluntary fortification of foods (particularly cereal and milk) by food producers has been in existence for a number of years, and it was expected that mandatory fortification will be implemented in 2008 (see below).

In a 1998 report to the Minister for Health¹, the Food Safety Advisory Board of Ireland (an official body) recommended that food fortification should be considered as a complimentary measure to supplementation (rather than an alternative).

In 2004, a report by the Nutrition Sub-committee of the Food Safety Authority of Ireland (which has replaced the Food Safety Advisory Board) undertook a risk benefit analysis of fortification in Ireland and concluded that folic acid fortification at 200μg /100g would have a significant effect in preventing NTD without resulting in an appreciable risk of adverse health effects from high intakes in any population subgroup. In 2005 the Department of Health and Children set up a national committee to examine folic acid food fortification (www.folicacid.ie).

In May 2006, the Report of the National Committee on Folic Acid Food Fortification² was launched by the Food Safety Authority of Ireland (FSAI) and the Irish Department of Health & Children (DoHC). This made a number of recommendations, the first of which was the fortification of all bread (with the exception of minor bread products) on a mandatory basis with folic acid at a level which provides 120 μg per 100g of bread as consumed. The report and its recommendations were adopted as government policy. Following this, the FSAI established a Folic Acid Implementation
Group in November 2006 to progress and implement the Report’s recommendations. The report is available via link: [http://www.fsai.ie/assets/0/86/204/ca0a6f81-e3a1-4e7c-8284-bc363f8ed091.pdf](http://www.fsai.ie/assets/0/86/204/ca0a6f81-e3a1-4e7c-8284-bc363f8ed091.pdf)

However, in 2008, the FSAI recommended postponement of fortification, following preparatory studies by the implementation group which showed that the rate of NTD affected births had decreased further. In addition, there had also been a significant increase in folic acid intake in the Irish diet as a result of increased voluntary fortification by food producers in recent years. In the interim period in which fortification is postponed, further monitoring of folic acid supplement intake and rate of NTD would take place to see if the situation had further changed. The report of the implementation group is available via the link: [http://www.fsai.ie/assets/0/86/204/cc3c2261-7dc8-4225-bf79-9a47fbc2287b.pdf](http://www.fsai.ie/assets/0/86/204/cc3c2261-7dc8-4225-bf79-9a47fbc2287b.pdf)

**Health Education Initiatives**

The Health Promotion Unit of the Irish Department of Health and Children has undertaken much of this work at a national level. A folic acid promotional campaign has been in operation since the official recommendations on folic acid came into being in 1993. There are periodic national media campaigns prompting folic acid supplement intake in women of child-bearing age. The Health Promotion Unit of the Irish Department of Health has undertaken much of this work at a national level. At a more local level, health promotion units and public health departments in the regions promote folic acid through a variety of channels, generally on an on-going basis. The 2006 Report of the National Committee on Folic Acid Food Fortification recommended the launch of a National Health Promotion Programme in relation to all aspects of folic acid promotion. The details are available in the Report.²

**Folic Acid Knowledge and Uptake**

There have been studies on folic acid awareness and uptake since 1995. The table below summarizes the results of studies of women attending their first ante-natal visit in maternity hospitals in Dublin.³⁻⁹ The sample sizes in the studies from 1996-2000 were of 300 respondents each, using the same questionnaire, with core questions as shown in the table. These studies mainly asked about daily folic acid tablet intake, without explicitly asking about vitamin intake. The table below shows that since 1998, almost all mothers have heard of folic acid; and by 2002, more than three
quarters knew that it could prevent NTD. However, less than 25% of women were taking periconceptional folic acid by 1998 and this had not changed by 2002.

**Studies of Folic Acid Knowledge and Uptake in Ireland 1996-2002**

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Heard of folic acid</td>
<td>54%</td>
<td>76%</td>
<td>88%</td>
<td>91%</td>
<td>92%</td>
<td>94%</td>
<td>95%</td>
</tr>
<tr>
<td>Knew folic acid can prevent spina bifida / NTD</td>
<td>21%</td>
<td>44%</td>
<td>57%</td>
<td>64%</td>
<td>67%</td>
<td>83%</td>
<td>77%</td>
</tr>
<tr>
<td>Took folic acid periconceptionally</td>
<td>6%</td>
<td>16%</td>
<td>21%</td>
<td>22%</td>
<td>18%</td>
<td>24%</td>
<td>23%</td>
</tr>
</tbody>
</table>

As it was expected that fortification would take place by 2008, further studies were deferred. However, with the postponement of fortification in 2008, new studies of folic acid supplement intake were planned with the first taking place in mid-2009.

**Health Care Professionals**

Although there has not been a survey among health care professionals, it is likely that virtually all are aware of the recommendations considering the high profile folic acid promotion campaigns that have taken place, and the high level of knowledge among women of child-bearing age, the source of which is frequently a health professional.

**Proportion of Pregnancies which are Planned**

The studies quoted in the above table have found that the proportion of women planning their pregnancy has been stable from 1996-2002 at 40-45%.

**Laws Regarding Termination of Pregnancy**

Termination of pregnancy is not legal in Ireland except in the most extreme circumstances. It is never allowed because of fetal abnormality. The number of women who may go abroad for terminations because of fetal abnormality is not known.
References


2. Food Safety Authority of Ireland, Department of Health and Children (2006) Report of the National Committee on Folic Acid Food Fortification, Food Safety Authority of Ireland, Dublin,


Ireland (Dublin and Cork & Kerry and SE Ireland): Total and Livebirth Prevalence Rates for Spina Bifida (all 3 registries together)

Year
Prevalence per 10,000 births

Total prevalence
Livebirth prevalence

Ireland (Dublin and Cork & Kerry and SE Ireland): Total and Livebirth Prevalence Rates for Spina Bifida
Ireland (Dublin and Cork/Kerry and SE Ireland): Total and Livebirth Prevalence Rates for Anencephaly (all 3 registries together)

Ireland (Dublin and Cork/Kerry and SE Ireland): Total Prevalence Rates for Anencephaly