

## **REPORT ON PERICONCEPTIONAL FOLIC ACID SUPPLEMENTATION FOR AUSTRIA**

Prof. Andrea Berghold, Prof Martin Haeusler

### **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 Pölten<sup>2</sup> 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.

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2. Zwiauer K, Groll D, Weissensteiner M **(2000)** "Folsaeuresubstitution bei Schwangeren: Ergebnisse einer regionalen Untersuchung im Raum St. Poelten" *Paediatric/Paedologie*, Vol 6, pp 14-17.

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## **REPORT ON PERICONCEPTIONAL FOLIC ACID SUPPLEMENTATION FOR BELGIUM**

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### **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)".

### **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.<sup>1</sup> 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**

	Flanders N= 104	Wallonia N= 71	Brussels N= 20	Total N= 195
Before and during pregnancy	26	21	25	24
Only before pregnancy	13	6	0	9
Only during pregnancy	52	44	40	48
Total	90	70	65	81

### **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.<sup>2</sup>

### **References**

1. Personal communication from Vera Nelen
2. Translation of the "Code pénal" , Titre VII, art. 350 , 4°

## **REPORT ON PERICONCEPTIONAL FOLIC ACID SUPPLEMENTATION FOR CROATIA**

Dr Visnja Tokic, Dr Ingeborg Barisic, Dr Romana Gjergja

### **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](http://www.klubtrudnica.net)

There are some useful Croatian sites on the Internet:

[www.poliklinika-harni.hr](http://www.poliklinika-harni.hr)

[www.mameibebe.net](http://www.mameibebe.net)

[www.vasezdravlje.com](http://www.vasezdravlje.com)

[www.iskon.hr/bebe](http://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 ( $\pm 3.7$ ). 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),<sup>1</sup> Pucarín-Cvetković et al looked at 100 women of childbearing-age (range 20-30 years), mean age  $24 \pm 3.7$ . 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  $156 \pm 72.2$   $\mu\text{g}/\text{day}$ . 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.

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## **REPORT ON PERICONCEPTIONAL FOLIC ACID SUPPLEMENTATION FOR DENMARK**

Dr Marianne Christiansen

### **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.<sup>1</sup> 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.<sup>2</sup>

### **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.<sup>5</sup> 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.

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## **REPORT ON PERICONCEPTIONAL FOLIC ACID SUPPLEMENTATION FOR FINLAND**

Dr Annukka Ritvanen

### **Folic Acid Supplementation Policy**

The randomised, international study published by the UK Medical Research Council (MRC) in 1991 confirmed the results of the previous non-randomised studies carried out in the UK in the 1980's that folic acid prevented the majority of recurrences of neural tube defects (NTD).<sup>1</sup> The Hungarian randomised intervention study of Czeizel and Dúdas in 1992 showed that periconceptional use of a folic acid supplement significantly reduced the occurrence of NTD.<sup>2</sup>

In light of these studies, 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.<sup>3</sup> The recommendations were also published in the leading Finnish scientific medical paper in 1996.<sup>4</sup> 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 new 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 or 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 or 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, coeliac 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:
  - the parents have had a common child or fetus with NTD.
  - either parent has had a child or fetus with NTD with another partner
  - 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 B<sub>12</sub> level should be checked in order to make sure that there is no deficiency of vitamin B<sub>12</sub>. The reason for this is that an amount of 1mg folic acid can conceal megaloblastic anaemia, associated with deficiency of vitamin B<sub>12</sub>, 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 12<sup>th</sup> week of pregnancy (i.e. starting 4 weeks before conception and continuing until the end of the 12<sup>th</sup> 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.<sup>5</sup>

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.<sup>6</sup>

### **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 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.<sup>7</sup>



## **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 women asked 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).<sup>8</sup>

## **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 spring 2000. 6 % of the women asked 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 life style in early pregnancy.

However, 75 % of the changes were made only after the woman found out about her pregnancy.<sup>9</sup>

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

	< 25	25-29	30-34	≥ 35	All
I wished to get pregnant as soon as possible	33	39	41	32	37
I thought the pregnancy may begin by its own time	48	53	47	45	49
I wished to get pregnant later	9	4	2	5	5
I didn't want to get pregnant	4	1	3	3	2
I didn't think about it	3	3	4	9	4
Getting pregnant or the time was not important	4	1	3	6	3

### Laws Regarding Termination of Pregnancy

Termination of pregnancy is allowed up to 12 weeks gestation for many indications by permission of one or two doctors and up to 20 weeks by special permission of the National Authority for Medicolegal Affairs. If the mother's life is in danger, the pregnancy can be terminated at any gestational age.

Termination for fetal abnormality can be done up to 24 weeks only by special permission of the National Authority for Medicolegal Affairs.

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## **REPORT ON PERICONCEPTIONAL FOLIC ACID SUPPLEMENTATION FOR FRANCE**

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### **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 Journal)

### **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).

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Dr Hubert Journal, (Cordinator of Groupe Folate France)  
personal communication

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

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# REPORT ON PERICONCEPTIONAL FOLIC ACID SUPPLEMENTATION FOR GERMANY

Dr. Simone Pöttsch, Prof. Volker Steinbicker (emeritus)

## 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)

Age groups	Folic acid (µg equivalent daily)
Infants	
0 – 4 months	60
4 – 12 months	80
Children	
1 – 4 years	200
4 – under 7 years	300
7 – under 10 years	300
10 – under 13 years	400
13 – under 15 years	400
Adolescents and adults	
15 – under 19 years	400
19 – under 25 years	400



15 – under 65 years	400
51 – under 65 years	400
65 years and elder	400
Pregnant women	600
Breastfeeding women	600

### **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](http://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; Pöttsch 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) (Bundesgesundheitsurvey 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 (Bundesgesundheitsurvey 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 Forsten 1997).

### Women's Sources of Information about Folic Acid

The German National Health Interview and Examination Survey (N = 562) (Bundesgesundheitsurvey 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)

Sources of information	Prior to pregnancy		During pregnancy	
	N = 227	Rate in per cent	N = 1,057	Rate in per cent
Physicians	137	60.4	784	74.2
Radio/ TV/ magazines	44	19.4	51	4.8
Books	33	14.5	61	5.7

Friends	30	13.2	47	4.4
Others	17	7.5	28	2.7
Partner	13	5.7	28	2.6
Relatives	13	5.7	25	2.4
Pharmacists	11	4.8	27	2.6
Information centre	0	0	6	0.6

### **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 (Bundesgesundheitsurvey 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.

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## **Report on Periconceptional Folic Acid Supplementation for Hungary**

By Janos Sandor

### **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.<sup>1</sup> 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 7<sup>th</sup> week of pregnancy. (45.85% start in 1<sup>st</sup> trimester, 41.68% in 2<sup>nd</sup> trimester, and 12.46% in 3<sup>rd</sup> trimester) The daily dose is under 0.5 mg for 85% of pregnant women.<sup>2</sup>

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.<sup>3</sup>

Daily folate intake ( $\mu\text{g/day}$ ) in Hungary among women

Age group	Mean	SD	N
18-34	132.3	47.5	176
35-59	132.3	47.5	176
60+	124.6	42.9	235
18+	131	46.9	587

## Proportion of Pregnancies that are Planned

67.4% of pregnancies in Hungary were found to be planned in a study published in 2006.<sup>4</sup> 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.<sup>5</sup>

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.

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## **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 is expected that mandatory fortification will be implemented in 2008.

In a 1998 report to the Minister for Health<sup>1</sup>, 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](http://www.folicacid.ie)).

In May 2006, the Report of the National Committee on Folic Acid Food Fortification<sup>2</sup> 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/publications/index.asp> . It is expected that mandatory fortification will actually become a reality in 2008.

### **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. In late 2000 and early 2001, there was a cross-border (between the Departments of Health in the Republic of Ireland and Northern Ireland) initiative promoting periconceptional folic acid. This was a media campaign lasting some months with prime-time television and radio advertisements, and also involved daily newspapers. At a more local level, health promotion units and public health departments in the regional health boards promote folic acid through a variety of channels, generally on an on-going basis. The Health Promotion Unit of the Irish Department of Health has undertaken much of this work at a national level. 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.<sup>2</sup>

### **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.<sup>3-9</sup> 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 periconceptual folic acid by 1998 and this had not changed by 2002.

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

<b>Year</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
Heard of folic acid	54%	76%	88%	91%	92%	94%	95%
Knew folic acid can prevent spina bifida / NTD	21%	44%	57%	64%	67%	83%	77%
Took folic acid periconceptionally	6%	16%	21%	22%	18%	24%	23%

**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.

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## **REPORT ON PERICONCEPTIONAL FOLIC ACID SUPPLEMENTATION FOR ITALY**

A J Neville, E Calzolari, S Bianca, G Scarrano, R Tenconi and F Bianchi

### **Folic Acid Supplementation Policy**

The Italian Network for the Promotion of Folic Acid for the Prevention of Congenital Defects was formed and held its first annual national conference in April 2004 hosted by the Superior Health Institute (ISS). 55 different organisations including registries, nutritionists, the federation of general practitioners, researchers and spina bifida parents' associations met together to propose and agree recommendations regarding folic acid supplementation. The recommendation, directed at the medical profession, received formal support from 70 organisations. The summary recommendation was approved in November 2004 and is as follows:

It was recommended that all fertile women that plan a pregnancy or do not actively exclude the possibility take at least 0.4mg a day of folic acid. It is fundamental that it is taken starting at least a month before conception and for all of the first trimester of pregnancy.

The recommendation, together with more details (why, how much, when, foot notes explaining the choice, and a list of scientific publications that support the recommendation) is accessible at <http://www.cnmr.iss.it/>

The recent meeting of the Network on 5 October 2007, endorsed the recommendations. There are now 173 organisations participating in the Network. The enormous amount of work done by the Network was illustrated to the Minister for Health who attended the meeting, and the need for even more work in the future was expressed. A request for a national policy and funding was made to the Minister by the Network.

### **Implementation**

At the 2004 meeting, 31 project abstracts in support of the folic acid supplementation policy were presented and published<sup>1</sup>: Fourteen projects were classed as promotion and information to the population, five projects were on surveillance, eleven were research and one was on training. Details can be found at <http://www.cnmr.iss.it/>

The current implementation program of work of the Network includes:

- ❖ Information and awareness campaign for the population

- ❖ health education in schools
- ❖ training for health workers
- ❖ surveys on folic acid use
- ❖ monitoring of the congenital anomalies that can be prevented by folic acid use
- ❖ research and evaluation of the risks of an excess intake of folic acid
- ❖ nutritional research
- ❖ analysis of the public health strategies for the prevention of congenital anomalies through folic acid use. (ref. Promozione e Diffusione della raccomandazione per la Riduzione del rischio di difetti congeniti in Italia. Salvo F et al)

### **Folic acid supplements on sale**

As a result of the work of the Italian Network for the Promotion of Folic Acid for the Prevention of Congenital Defects a 0.4mg tablet was registered, declared refundable (Class A) and marketed. Monitoring what proportion of women use each type of supplementation is difficult due to the fact that some are sold as prescription drugs, others as over the counter preparations and yet others as multi vitamins or food supplements. Results presented at the Network meeting in Rome on Oct 5 2007<sup>2</sup> report that while there is a positive trend towards the correct use of folic acid few patients and doctors are aware of the correct dosage and timing.

### **Food Fortification Policy**

The 'Common statement of representatives of national food safety agencies and institutions involved in nutrition in the European countries and Norway (13 January 2004)' presented to the Italian Folic Acid Network in April 2004, advocates voluntary rather than mandatory fortification. This is in line with Italian law regarding addition of vitamins to foods.

More recently, considerations for and against food fortification in Italy have been expressed with a tendency towards a voluntary fortification of foods policy. An important report has been published regarding the possible public health strategies in Italy.<sup>3</sup>

National characteristics have to be considered in risk benefit analysis of actions to promote folic acid intake. Given the genetic polymorphism and the

fact Italy is not a high risk country for NTD compulsory fortification seems inappropriate.

### **Health Education Initiatives**

The Italian Ministry of Health in the Drugs Bulletin <sup>4</sup> directed both to family practitioners and specialists published the draft recommendation and distributed 360,000 copies. The first “Prevention of Spina Bifida” week organised by the spina bifida parents’ association, with the support of the Ministry of Health was held in October 2004 to promote the recommendation and has become an annual event .

Many health education initiatives have operated at the regional level. Regional strategies and information packs have been produced and information regarding the initiatives being taken is exchanged through the Network newsletter. Many different organisations have web pages dedicated to folic acid e.g <http://www.ceveas.it/SaPeRiDoc>

The Italian Network for the promotion of Folic acid in congenital malformation prevention remains the coordinating body for health education initiatives. An intensive communication work program has included the production and distribution of brochures, posters and pamphlets at the national level, available at the Network’s website <http://www.iss.it/cnrmr> . In 2006-7 the National Centre for Rare Diseases (CNMR) has distributed 150,511 pamphlets and 4,000 posters on the recommendation and 11,400 pamphlets entitled ‘Folate and Health’

The Network’s recommendation regarding folic acid supplementation has been the subject of numerous presentations in Courses and Congresses at the national level. Of particular importance are the information campaigns targeted at Senior High school pupils<sup>5</sup>. A productive exchange regarding the initiatives taken by the individual associations and groups that make up the Network has also taken place.

### **Knowledge and Uptake about Folic Acid**

The current state of womens knowledge and uptake of Folic acid as revealed in regional and single hospital studies is summarised in Table 1. The move towards the use of folic acid periconceptionally is slow and as seen in other

countries more quickly adopted by better educated women. The immigrant population is a sector requiring special initiatives.

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### Table 1: Women's knowledge of and uptake of folic acid in Italy

from Abstracts presented to the Annual Workshop Network Italiano Promozione Acido Folico 2007 per la Prevenzione Primaria dei Difetti congeniti, ISS Rome Italy 5 October [www.iss.it/cnmr](http://www.iss.it/cnmr)

Abbreviations: FAP folic acid supplementation in the periconceptional period

Reference	Location	Study design	Study group	Results
Marco et al.	Genova	case control  prospective hospital based	133 patients  234 controls	3% NTD cases FAP, 26% during pregnancy 21% of controls FAP, 58% during pregnancy.
La Rocca et al.	Calabria	retrospective  population		Will measure increase in prescription of FA 0.4mg in 2007 and 2008 compared to 2006 (before health education initiative)
Salvatore et al	Rome	student questionnaire in schools	Pilot 108 14-20yr olds	Ongoing
Spina et al	Cagliari	Retrospective hospital based	498 women	20% of women presenting for prenatal screening had taken FAP 16% at the correct dose
Cocchi et al	Bologna	Retrospective  hospital based	651 women	88 women (13.6%) had taken FAP Significant increase compared to Previous study  Study bias reported
Guala et al	NE Piedmont	Retrospective  Multicentre Hospital based	561 women 2005 538 women 2007	7.3% had taken FAP in 2005  14.8% had taken FAP in 2007
Scarpa et al	Vicenza	Population	326 women	70% had taken FA during pregnancy  Dosage and timing need clarifying
Versino et al	Piedmont	retrospective preliminary	All women giving birth	2.9% had taken FAP in 2003 3.5% had taken FAP in 2005 after a Health education initiative

Versino et al	Piedmont	Prospective 2x2 factorial design randomised case control		Planned
Grandolfo	Trebisacce	Interveiw at birth 2005	All women giving birth	4% had taken FAP 95% had taken FA during pregnancy

from Abstracts presented to the Annual Workshop Network Italiano Promozione Acido Folico Dec 2006 per la Pevenzione Primaria dei Difetti congeniti, ISS Rome Italy 5 October [www.iss.it/cnmr](http://www.iss.it/cnmr)

Despite the considerable efforts dedicated to implementation and health education the level of uptake of the folic acid reccomendation is low. Whilst in many cases<sup>6</sup> women are taking folic acid during pregnancy the critical preconceptional period is often not covered. While there is a positive trend towards the correct use of folic acid change is slow and continued efforts are needed to improve womens knowledge and uptake of Folic acid.

### **Proportion of pregnancies which are planned**

A pilot study on 200 women in 2005 showed 61% had planned their pregnancies<sup>6</sup> This is in line with previously reported data giving 63% of pregnancies in Italy as planned.<sup>7</sup>

### **Laws Regarding Termination of Pregnancy**

Voluntary termination of pregnancy became legal in Italy in 1984. Termination due to a congenital anomaly can be performed until gestational age of 23-24 weeks. A psychiatric report is required. Termination of pregnancy is allowed only in NHS hospitals, not in private clinics.

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## **REPORT ON PERICONCEPTIONAL FOLIC ACID SUPPLEMENTATION FOR MALTA**

Dr Miriam Gatt

### **Folic Acid Supplementation Policy**

In Malta an official policy regarding increasing folate in the diet was introduced in 1994. The policy advises that pregnant women and women intending to become pregnant should increase their intake of foods rich in folate. This is a Department of Health Circular No. 36/94

### **Food Fortification Policy**

There is no official food fortification policy and none is currently being planned. However, a wide variety of imported fortified cereals and malted drinks are available. Fortified breads are not readily available.

### **Health Education Initiatives**

No official Department of Health Promotion campaigns directed at periconceptional folic acid supplementation have been undertaken but GPs, gynecologists, midwives and organised antenatal courses inform women of the benefits of folic acid. The official dietary policy mentioned above was aimed to inform and educate health professionals.

### **Folic Acid Awareness and Uptake**

A study regarding folic acid awareness in Maltese mothers was undertaken between October 1999 and February 2000 (Gatt 2000). The results were published as a report from the Malta Congenital Anomalies Register. Of the mothers interviewed in the study, 72% had known that folic acid was important in pregnancy. 15% of mothers took folic acid supplementation prior to pregnancy; another 59% of mothers started folic acid after conception but before 12 weeks of gestation. 35% said that they had changed their diet during pregnancy, increasing their folate intake.

### **Proportion of pregnancies which are planned**

No information currently available



## Laws Regarding Termination of Pregnancy

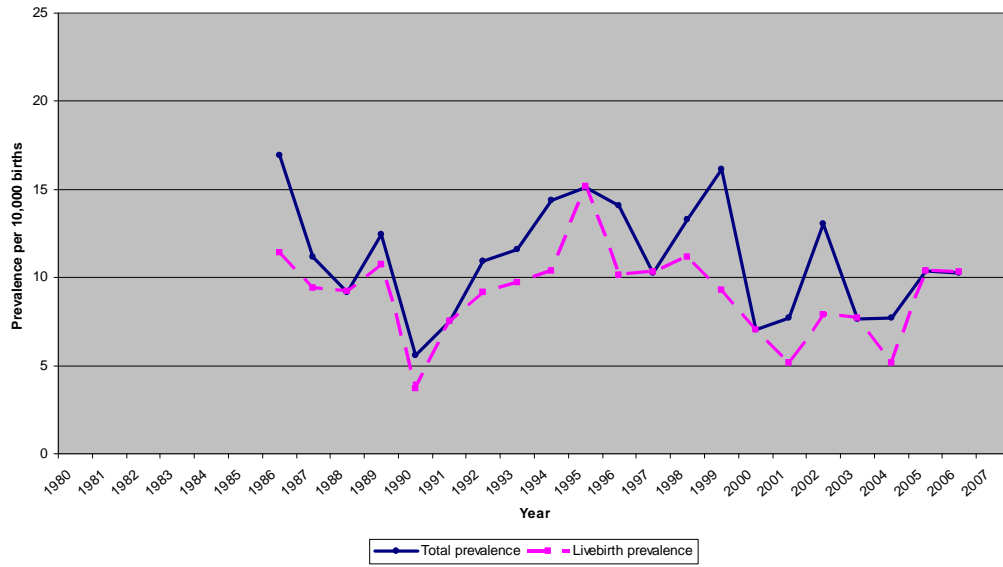
In Malta, termination of pregnancy is not legal.

### References:

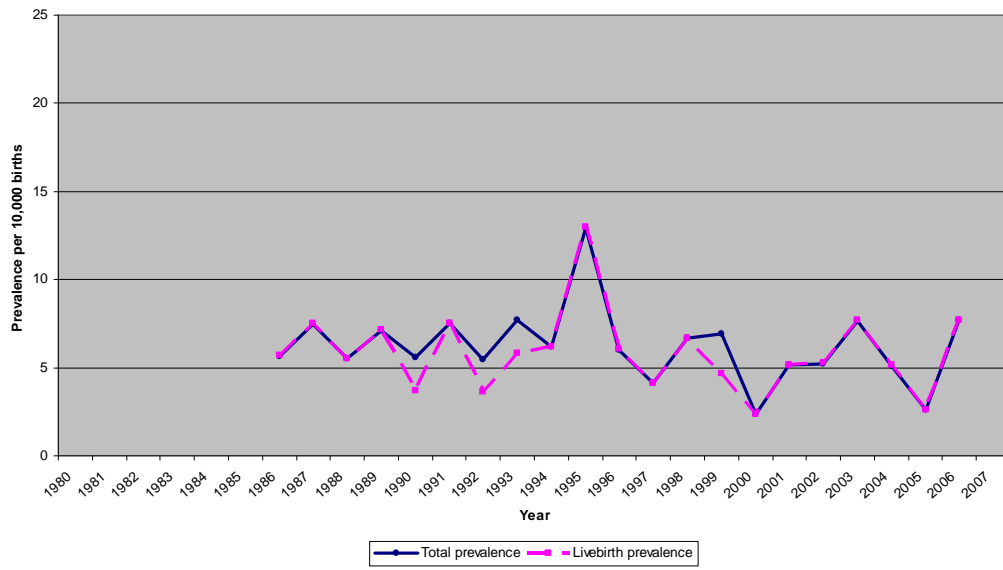
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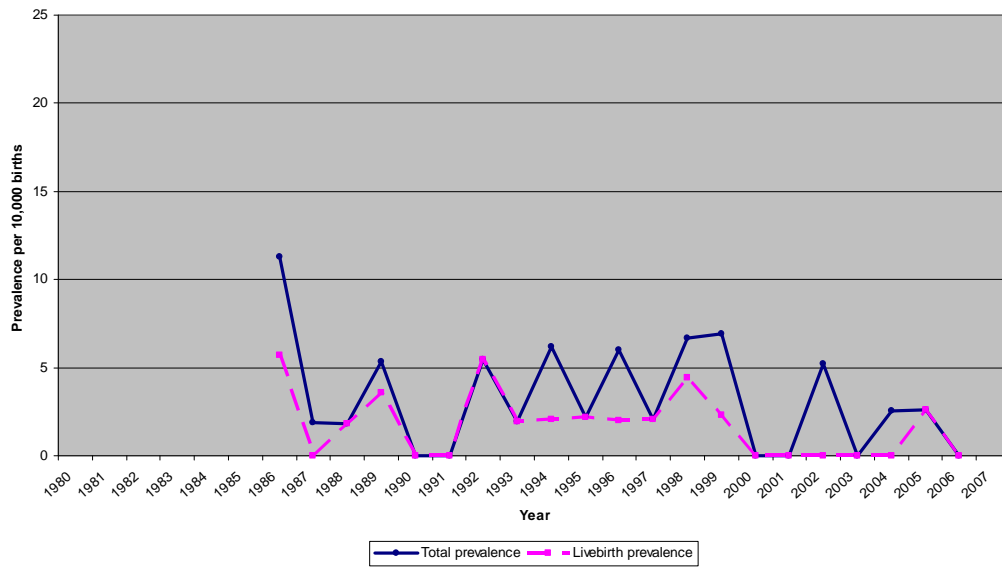
Malta: Total and Livebirth Prevalence Rates for Neural Tube Defects



Malta: Total and Livebirth Prevalence Rates for Spina Bifida



Malta: Total and Livebirth Prevalence Rates for Anencephaly



## **REPORT ON PERICONCEPTIONAL FOLIC ACID SUPPLEMENTATION FOR THE NETHERLANDS**

Dr HEK de Walle

### **Folic Acid Supplementation Policy**

In 1993 the official Dutch advice was that all women wishing to become pregnant should take a folic acid supplement of 0.5 mg per day. Women with a previous NTD affected pregnancy are advised to consume 5 mg per day. The official status for that policy was the Ministry of Health Welfare and Sports<sup>1</sup>.

### **Food Fortification Policy**

Since 1996 different types of food have been fortified with vitamins and minerals in the Netherlands. For example, extra calcium is added to milk and some vitamins are added to (expensive brands of) marmalade. Initially, folic acid was not one of the vitamins added to food because of the risk of masking a vitamin B<sub>12</sub> deficiency.

In 2001, the Dutch Health Council issued a report<sup>2</sup> which did not advise fortification of staple foods such as flour, but advised fortification of products that could be specifically aimed at the target population (ie. women who want to become pregnant). No suggestions were made as to what these products should be or what the recommended amount of folic acid to be added to these products would be.

For the last couple of years folic acid has been added to some cereals such as Kellogg's cornflakes and to some margarines. This has been made possible due to a recent change in regulations regarding micronutrients after the advocate-general of the European Court of Justice decided that fortification of special foods must be allowed in the Netherlands.

In 2008 a new group of the Dutch Health Council will look at the issue of fortification again. A point in favour of fortification is that 60-70% of all the people in the Netherlands do not reach the 200-300 micrograms of folate per day that is recommended.

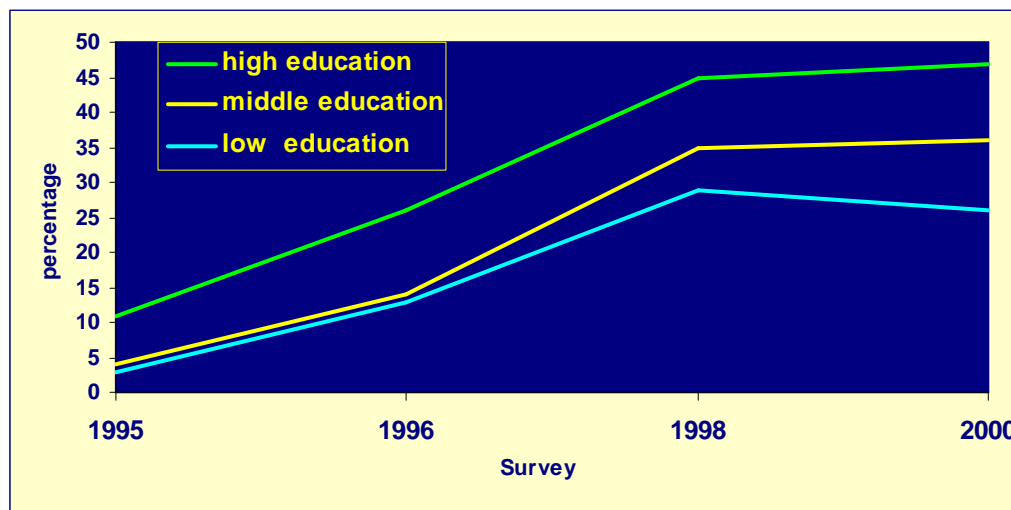
### Health Education Initiatives

A campaign was aimed at all women of childbearing age but with a special emphasis on reaching women with a low socio-economic status. General targets of the campaign were that 70% of women planning a pregnancy should know the recommended period to use folic acid and that 65% of women who knew of the advice before pregnancy should use folic acid during the entire recommended period<sup>3</sup>. This campaign was carried out in 1995.

Currently, the Dutch Ministry of Health are running four projects concerning folic acid. Three of them are interventions: in the pharmacy, via the midwives and ‘well baby clinics’. The fourth project is to give, on a large scale, as much information as possible about folic acid. This includes digital and written information and is carried out by the Dutch “Erfocentrum” (Centre for congenital and hereditary diseases). The website on folic acid is: <http://www.slikeerstoffoliumzuur.nl/>

### Folic Acid Awareness and Uptake

Figure 1 The use of folic acid during the entire advised period according to educational level



The level of knowledge about folic acid increased satisfactorily in the five years after the campaign. However, the percentage that used it in the advised period did not follow the same trend. Figure 1 shows how socio-economic status is related to use of folic acid during the last five years in which we did the four surveys<sup>4-8</sup>. It is clear that the goal of the campaign that the 65% of the women who were aware of the folic acid advice before their pregnancy should use folic acid during the entire recommended period is not reached in any of the surveys (36% of women surveyed in 1999 used folic acid during the entire recommended time). Socio-economic differences with respect to knowledge and use of folic acid remained statistically significant in all the surveys. This means that another goal of the public campaign, the reduction of socio-economic differences with respect to the use of folic acid, was not reached. It is disappointing to conclude this was also true in the regions where an extra intervention was made to reach women with a low education. Striking examples are the billboards with the folic acid message, which were placed in public areas and in buses. The more highly educated women remembered this information much better than the group for whom it was intended.

In a more recent study,<sup>9</sup> we evaluated women's awareness of and use of folic acid in 2003 and looked at the trend of folic acid use among pregnant Dutch women between 1995 and 2003 with regard to socio-economic status (SES). *Method:* We conducted 2-yearly cross-sectional studies among pregnant women who filled in a questionnaire during the first or second antenatal visit. The highest achieved level of education was taken as a proxy for SES. *Results:* In 2003 the general level of folic acid awareness was high but with significant differences relating to SES; a quarter of the lower educated women did not know about folic acid before pregnancy. Of the subjects with a lower SES, 20% knew the correct period of use compared with nearly 50% in the higher SES group. Worryingly, the reported correct use of folic acid among the lower educated women has actually decreased over the past 3 years (22% in 2003), while it has increased for the higher SES groups (59% in 2003), implying larger discrepancies in health between the lower and higher SES

groups. *Conclusion:* In 2003, 8 years after a mass media campaign, awareness and use of folic acid were increased considerably in comparison with the start of the campaign. However, differences in knowledge and use of folic acid with respect to the level of education had increased by 2003. A once-only campaign has a short-term effect especially for lower educated women. Strategies to promote folic acid use in daily structural health care systems are needed.

### **Pharmacists' role in folic acid education**

About 70% of Dutch women use oral contraceptives sometime before the first pregnancy. For this reason they visit their pharmacy regularly, which provides a great opportunity to educate them about folic acid. In 2002, a pilot study was performed to investigate the feasibility of a proactive intervention through pharmacies and the attitude of the target population towards this education<sup>10</sup>. The study showed the intervention was feasible and the target population was positive about the information received. Evaluation of the intervention showed that the use of folic acid was higher among women using the intervention pharmacies compared to those using the reference pharmacies. The difference was more marked among women with a first pregnancy<sup>11</sup>. In view of the success of this intervention, it was decided to implement it more widely.

### **Proportion of Pregnancies which are Planned**

The Netherlands has a high percentage of planned pregnancies<sup>12</sup>. In our surveys the percentage of planned pregnancies was high (around 85%) and it was not related to the socio-economic status of the respondents. However, the concept of "planned" in the way the respondents are using it might be different from the way it is interpreted by researchers.

Our study shows that in the Northern Netherlands, in 2000, women were aware of the importance and the correct time frame of using folic acid. However, not all of them took folic acid in the periconceptual period. This

was not because of a negative attitude towards taking folic acid but, according to the most often mentioned reason, because although the pregnancy was planned they conceived sooner than expected.

### **Laws Regarding Termination of Pregnancy**

In the Netherlands, termination of pregnancy for fetal abnormality is allowed until 24 weeks of pregnancy. Parents have to be informed about all the facts concerning their situation and have the sole power to decide whether to terminate the pregnancy in a controlled facility. After 24 weeks of pregnancy, termination is only permitted in the case of a fetus with a disorder not compatible with life and a woman who has major mental problems with carrying on with the pregnancy. The decision has to be reviewed by a multidisciplinary committee and has to be reported to the counsel for the prosecution.

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## **REPORT ON PERICONCEPTIONAL FOLIC ACID SUPPLEMENTATION IN NORWAY**

**Dr Anne Kjersti Daltveit**

### **Folic Acid Supplementation Policy**

The official folic acid supplementation policy in Norway, issued in the spring of 1998 by the National Council on Nutrition and Physical Activity, is that women who are planning a pregnancy or who may become pregnant are recommended to have a total intake of at least 400 µg of folic acid per day. Since an intake of 400 µg through the diet is unlikely to be achieved by many women, and since there are reasons to believe that supplementation is more efficient than diet in reducing the risk, the practical recommendation is to take a folic acid supplement of 400 µg per day. The supplementation should begin prior to the first month before conception and continue until 2-3 months of gestation.

Women with an increased need for folic acid due to disease or medication (eg anti-epileptic medication), and women with neural tube defects in their own or their partner's family, are recommended to confer with their doctor about a supplement of more than 400 µg per day. The supplementation should begin prior to the first month before conception and continue until 2-3 months of gestation.

Women who have previously had a fetus with a neural tube defect as well as women who themselves or their partner have a neural tube defect are recommended to take 4 mg of folic acid supplement per day. The supplementation should begin prior to the first month before conception and continue until 2-3 months of gestation.

After the first 2-3 months of pregnancy, pregnant and breastfeeding women are recommended to have a total intake of folic acid of 400 µg per day. It is suggested that a common level of dietary intake of folic acid among Norwegian women in the child-bearing age is about 200 µg per day. It is

therefore recommended that women continue with a folic acid supplement of 200 µg per day during the last 6 months of pregnancy and during the breastfeeding period.

Women of child-bearing age are recommended to have a dietary intake of folic acid of 300 µg per day. With the exception of recommendations regarding pregnancy and breastfeeding, women of child-bearing age are not recommended to take folic acid supplementation.

The above recommendations were issued in the spring of 1998 by the National Council on Nutrition and Physical Activity (1998). Before 1998, the official recommendations were those issued by the Board of Health in February 1993. These first recommendations did not recommend the use of supplements for any women other than those at risk of recurrence, but stated that women of child-bearing age should consume 400 µg through their diet.

### **Food Fortification Policy**

A working group was established in 1997 by the National Council on Nutrition and Physical Activity to suggest recommendations and means of increasing the intake of folic acid among women of child bearing age. The working group's recommendation was that food fortification with folic acid should not be implemented; it maintained that women should be recommended to have a supplementary intake of folic acid in the periconceptual period (Rapport nr. 1/1998). This decision was reviewed by a working group appointed by the Norwegian Directorate for Health and Social Affairs. Their report was published in December 2004. It found that the policy of recommending periconceptual folic acid supplementation had not yielded satisfactory results. It recommended that consideration be given to mandatory fortification with folic acid of a staple food.

### **Health Education Initiatives**

An official Health Education Initiative began in Norway in autumn 1998 to inform women about the role of folic acid in reducing the risk for neural tube defects. The Norwegian Agency for Health and Social Welfare (formerly National Council on Nutrition and Physical Activity) has a public web site (1998). At the web site there is information on the occurrence of neural tube defects in Norway, recommended daily intake of folic acid, folate content in different foods, when to take supplementation of folic acid in connection with pregnancy, potential side effects related to high intake of vitamin A through multivitamin supplementation, and needs of special groups such as epileptic women.

Leaflets published by the Norwegian Agency for Health and Social Welfare (formerly National Council on Nutrition and Physical Activity) are distributed to women by general practitioners, specialists in gynaecology and obstetrics, midwives, health care centres for mother and child, drugstores, and pharmacies. Also posters and post cards are distributed, and there have been advertisements in women's magazines and other relevant magazines.

Health personnel are requested to inform women about folic acid and pregnancy at the time of giving guidance on contraceptive devices, doing pregnancy tests, removing an intrauterine device, selling of pregnancy tests, and selling of contraceptive devices. The Norwegian Agency for Health and Social Welfare has distributed a guide for health personnel with these items.

The national recommendations for periconceptional folic acid supplementation are now included in the updated official guidelines for antenatal care in Norway

### **Folic Acid Awareness and Uptake**

Following the recommendations issued in the spring of 1998, a random

sample of 1500 Norwegian women of reproductive age was selected for study of their awareness of recommendations regarding folic acid supplementation and of their uptake of the advice. Among the 1500 women, telephone interviews were carried out with 1146 women in the autumn of 1998. (Vollset & Lande 2000) The study was repeated in 2000. (Daltveit, Vollset, Lande, Oien, 2004)

The folic acid recommendation issued by the National Council on Nutrition and Physical Activity in March 1998 was known by 22% of women in 1998 increasing to 32% in 2000. Supplementation with folic acid before conception or early in pregnancy, when that pregnancy was less than one year ago, was reported by 10% of women in 1998 increasing to 46% in 2000. Intention to follow the recommendations on folic acid supplementation in a future pregnancy was reported by 56% of women in 1998 increasing to 68% in 2000. Intention to follow recommendations on consumption of folate rich food in a future pregnancy was reported by 75% of women in 1998 and again in 2000. The women were also asked about other vitamin supplementation. Supplementation of other vitamins or minerals before or early in pregnancy among women in whom the last pregnancy was less than one year ago, was reported by (numbers for 2000 in parenthesis) 57% (79%) for any vitamin or mineral supplementation, 29% (30%) for multivitamins, 5% (11%) for vitamin B, 28%(20%) for iron, and 21% (32%) for cod liver oil.

A further study of folic acid supplement use among pregnant women: the Norwegian Mother and Child Cohort Study was published in 2006 (Nilsen et al 2006). In addition to a description of use of folic acid supplementation before and throughout pregnancy, socio-demographic differences in use were studied. An important finding was that most women started folic acid supplementation too late with respect to the prevention of neural tube defects.

A study of epileptic women found that women of childbearing age treated with anti epileptic drugs received folic acid supplementation, particularly those who were taking P450-inducing anti epileptic drugs. (Kampman 2007)

### **Proportion of Pregnancies which are Planned**

There is little knowledge in Norway about the proportion of pregnancies that are planned. In the Norwegian Mother and Child Cohort Study ([www.fhi.no](http://www.fhi.no)), preliminary unpublished data suggest that 76% of the pregnancies were planned. However, the response rate was low, and the true proportion of pregnancies that were planned is thought to be somewhat lower, somewhere between 50% and 75%.

### **Laws Regarding Termination of Pregnancy**

Induced abortion is legal at a woman's request up to 12 completed weeks of gestation. Induced abortion is legal on specified medical and social indications above 12 completed weeks and up to 18 completed weeks, and the decision is made by an abortion board. After 18 completed weeks, induced abortion is legal if the pregnancy represents a serious risk to the mother, or if the fetus suffers from a condition incompatible with life. In those cases there is no gestational age limit.

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## **REPORT ON PERICONCEPTIONAL FOLIC ACID SUPPLEMENTATION FOR POLAND**

Dr Anna Latos-Bielenska

### **Folic Acid Supplementation Policy**

In 1997 there was a nation wide government program regarding periconceptional folic acid supplementation. The program "Primary Prophylaxis of Neural Tube Defects", was headed by Professor Zbigniew Brzezinski, from the Department of Epidemiology, Institute of Mother and Child, Warsaw. The original recommendation was that all women of child bearing age should take 0.4 mg of folic acid daily and that women planning a pregnancy should take 0.8 mg daily. The current recommendation is altered, and all women of child bearing age, including those planning a pregnancy, are advised to take 0.4 mg of folic acid daily.

### **Food Fortification Policy**

Food fortification is planned for the Lublin Province in which there are approximately 30,000 births per year.

### **Health Education Initiatives**

An educational program is aimed at women, health care professionals and children over fifteen years of age.

The Polish Registry of Congenital Malformations has arranged that mothers of children with congenital malformations are sent a letter with information about the indications for genetic counselling and about the benefit of folic acid.

Mothers delivering a child with a NTD are informed about the need to take 4 mg folic acid/day while trying to conceive a pregnancy.

There are web sites on folic acid:

[www.kwasfoliowy.pl/](http://www.kwasfoliowy.pl/)

[www.genetyka-ginekolog.pl](http://www.genetyka-ginekolog.pl)



### **Knowledge and Uptake of Folic Acid**

Folic acid supplementation was taken by 15% of women aged 18-45 in 1999 and by 19% of women aged 18-45 in 2000; by 11% of non-pregnant women aged 18-45 in 1999 and by 13% of non-pregnant women aged 18-45 in 2001; by 9% of women under 20 years of age in 1999 and by 16 % of women under 20 in 2001. Thus, folic acid supplementation rates had gone up for all three categories within the space of two years. 57% of women took other vitamin supplements. (Primary Prophylaxis 2000)

Data has since been collected by the Polish Registry of Congenital Malformations. It has been not published yet but has been presented at conferences in Poland. The proportion of women taking folic acid during pregnancy was found to be 64% in 2003, 63% in 2004 and 70% in 2005. The proportion of women taking folic acid before pregnancy was found to be 5.5% in 2003, 7.4% in 2004, 10.6% in 2005.

### **Proportion of Pregnancies which are Planned**

The proportion of pregnancies which are planned in Poland is low.

### **Laws regarding termination of pregnancy**

In Poland termination of pregnancy is allowed in the following instances:

1. the pregnancy is dangerous for the life of the mother (up to 12 weeks gestational age).
2. the pregnancy is the result of a crime (up to 12 weeks gestational age)
3. the fetus is seriously and irreversible damaged (up to 23 weeks gestational age)

The gestational age limit for termination of pregnancy is under 23 weeks.

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## **REPORT ON PERICONCEPTIONAL FOLIC ACID SUPPLEMENTATION FOR PORTUGAL**

Dr Paula Braz and Carlos Dias

### **Folic Acid Supplementation Policy**

In March 1998 there was a recommendation from the General Directorate of Health (guideline number 2/DSMIA) to all health care professionals, to inform the childbearing population about the importance of folic acid. There was no information about dosage.

In January 2006, these recommendations were updated by the General Directorate of Health (guideline number 2/DSMIA). All health professionals are instructed to inform the childbearing population to start folic acid at least two months before stopping contraception.

Folic acid supplements are available on prescription in Portuguese pharmacies:

0.4mg dose - multivitamin pill (Centrum, Prenatal)

0.3mg -1mg dose – combination with ferritin

5mg dose - monopreparation pill (Folicil, Acfol, Lederfoline, Raycept)

### **Food Fortification Policy**

There is no food fortification policy, but one of the most important commercial firms in Portugal for milk products (Mimosa) decided five years ago to fortify milk with 50µg/100ml of folic acid.

### **Health Education Initiatives**

The Portuguese Association, Spina Bifida and Hydrocephalus, (ASBIHP) initiated an educational project to promote the importance of folic acid in the prevention of NTD. This project, which took place during 2003 and 2004, was targeted at universities and health professionals. The same association also conducts a project called “Olá Bebê” (Hello Baby) to support parents with a new baby with NTD.

The Internet site of ASBIHP has information on folic acid;

[www.asbihp.org](http://www.asbihp.org)

### **Knowledge and Uptake of Folic Acid**

Machado and Feijóo, in their study (2006)<sup>1</sup>, found that 77.5% of women aged 24-44 years old knew about folic acid, but only 20% were able to describe folic acid as an effective method to reduce NTD. 15.4% of all respondents knew that supplementation with folic acid should begin before conception.

In 2005, Braz<sup>2</sup> found an increase in the proportion of women taking folic acid prior to pregnancy since 1998. In 2005, 23.9% (CI 95% 14,0;33,8) of women in her study took folic acid prior to pregnancy. There was a significant association ( $p < 0,001$ ) between appropriate intake and the pregnancy being planned.

### **Proportion of Pregnancies which are Planned**

In one survey,<sup>3</sup> 54.5% of all women surveyed who had ever been pregnant reported having consulted an MD while preparing for their last pregnancy.

### **Laws Regarding Termination of Pregnancy**

Termination of pregnancy is legal in Portugal until 24 weeks gestation for major congenital anomalies, rape, and risk to the mother's health. It is legal up to term if an anomaly is incompatible with life. There is a technical committee in each obstetric unit in which terminations are performed which decides in each case if the procedure is legal.

In April 2007, a new law was passed allowing termination of pregnancy until 10 weeks of gestation if a woman does not wish to be pregnant. This law did not affect the regulations regarding termination of pregnancy due to major congenital anomalies, rape, and risk to the mother's health.

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# **REPORT ON PERICONCEPTIONAL FOLIC ACID SUPPLEMENTATION FOR SLOVENIA**

Dr Ksenija Ogrizek Pelkič

## **Folic Acid Supplementation Policy**

In Slovenia, there is no official government recommendation for periconceptional folic acid supplementation, but a recommendation was published by the Slovenian Association for Perinatal Medicine in 1998. They recommended that all women wishing to become pregnant should take periconceptional folic acid supplementation of 0.4 mg per day before conception. Women who were already pregnant should start taking folic acid supplementation during the first four weeks of gestation and continue until the 12<sup>th</sup> week. 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 4 mg per day until the end of pregnancy.

There is no funding for folic acid products during pregnancy; pregnant women have to pay for it themselves.

## **Food Fortification Policy**

There is no official food fortification policy in Slovenia. We have sent a letter to the Minister for Health requesting that action towards fortification of a staple food with folic acid be set in motion ( september 2007).

## **Health Education Initiatives**

There is no official health education initiative in Slovenia, but there are many initiatives by the Slovenian Association for Perinatal Medicine. Leaflets addressing women planning pregnancy have been published and distributed to general practitioners, specialists in gynaecology and obstetrics, and gynaecological/obstetrical departments of the Slovenian hospitals. There have been no paper or television advertisements, but the issue has been covered in some newspaper articles and in magazines concerning health, pregnancy and children.

Some Slovenian sites on the Internet are used to educate women about healthy nutrition and about the importance of taking ample folic acid ([www.med.over.net](http://www.med.over.net), [www.ringaraja.net](http://www.ringaraja.net)). The initiative is still ongoing.

### **Knowledge and Uptake of Folic Acid**

In Slovenia a study was carried out and published in 2001 (1). This study found that 79% of the pregnant women questioned knew about folic acid, but only 7% were aware of the benefits of supplementation. 52% of them were taking folic acid during the last pregnancy. 27% took it before conception. Only 14% of all pregnant women took folic acid correctly.

In 2007 we administered a questionnaire to pregnant women in a prenatal clinic in the Maribor teaching hospital (unpublished data): 350 pregnant women completed the questionnaire. 88% of the women were taking folic acid, but only 31.5% of them during the appropriate periconceptional period. 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.

### **Proportion of Pregnancies that are Planned**

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

### **Laws Regarding Termination of Pregnancy**

The national law is that up till 10 weeks of gestational age every woman may opt for termination of pregnancy without special permission. After 10<sup>th</sup> week termination of pregnancy for fetal anomaly can be performed after permission from a regional committee (two doctors and one employee at the Social centre). The upper gestation limit for fetal anomaly is not set.

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## **REPORT ON PERICONCEPTIONAL FOLIC ACID SUPPLEMENTATION FOR SPAIN**

Dr Isabel Portillo and Dr Blanca Gener

### **Folic Acid Supplementation Policy**

In 2003, the Ministry of Health updated its advice regarding use of periconceptional folic acid supplementation to reduce the risk of having a child affected with an NTD. This is available in the web and links with other National Recommendations<sup>(1)</sup>. These recommendations are in line with the policy introduced in 2001 advising the intake of folic acid prior to pregnancy: All women who are considering a pregnancy and have no previous pregnancy affected by NTD should take 0.4 mg per day of folic acid at least one month before conception and during the first three months of pregnancy; Women planning a pregnancy who have already had a pregnancy affected with NTD should take a dose of 4 mg per day of folic acid at least one month before conception and during the first three months of pregnancy<sup>(2)</sup>. However, the 2003 document advises that more emphasis should be placed on dissemination of information.

In the Basque Country, recommendations are included in the Health Promotion web-page and also in all patient information leaflets for pregnant women, as well as medical record<sup>(3)</sup>.

The Spanish Society of Gynaecology and Obstetrics (SEGO) continues the promotion of folic acid supplements in accord with international and national patterns (daily dose of 0.4 mg in low risk and 4mg in high risk taken periconceptionally). Also they recommend not using multivitamin tablets in order to achieve the desired doses of folic acid, because in order to do this an excess of other vitamins (e.g. vitamins A and D) might be taken, and this could be dangerous both for the fetus and the mother.

## Food Fortification Policy

At this time, there is no mandatory fortification of food with folic acid. However, there is voluntary fortification of most breakfast cereals.

## Knowledge and Uptake of Folic Acid

### Studies of Prevalence of folic acid intake

In Spain, the average daily intake of folic acid in the adult female population was estimated to be 211.7  $\mu\text{g}$  (108) by Aranceta et al, (1994)<sup>(4)</sup> in the Basque Country and to be 392  $\mu\text{g}$  (131) in Valencia Country (Vioque et al, 2000)<sup>(5)</sup>. These studies were based on the Nutritional Inquiry of 1994 and on blood tests. In the Basque and Valencia countries, percentages of women who took the appropriate amount of folate (400 $\mu\text{g}$  per day) were low (10% and 40% respectively). Also the observational study of Ballesteros et al (1999)<sup>(6)</sup> in Cantabria Community found that only 12% of pregnant women in the first trimester had optimum levels of serum folate. Population studies done in Catalonia by Garcia et al (2002)<sup>(7)</sup> found that 12.9% women aged 18-34 years had sub optimal serum folate levels. More recently, Martinez-Frias et al (2007) found that of 16,761 newly delivered women with non-malformed infants, 17% took folic acid prior to conception, while a further 71% took it after conception. <sup>(8)</sup>.

### Studies of prophylaxis assessment

Study	Design	Intake of periconceptual folic acid supplements	Knowledge of benefits of folic acid	Recommendations
Gilbert et al (2000) <sup>(9)</sup>	Retrospective 651 mothers attended in Hospital Mallorca 1998	4.5% of the prescribed preventions were sufficient and they were more frequent in private medicine (12%) than in public medicine (3.4%) (p= 0.036).	85.2 % of midwives and 45.7% of gynaecologists recommended prophylaxis when the mother first attended the antenatal clinic or before (p<0.001).	Involvement of Gynaecologists, midwives, and Public institutions

<p>Martínez-Frías et al<sup>(10)</sup> (2003)</p>	<p>Retrospective</p> <p>Mothers of controls ECEMC database (1980-2002): 28522</p> <p>Mothers of controls 2001 and first trimester 2002: 1338.</p> <p>Spanish hospitals</p>	<p>Increased intake of folic acid since 1992 (80%).</p> <p>2002 10.62% of women took folic acid prior to pregnancy.</p> <p>Dosage higher (&gt;4.5mg per day) than recommendations.</p> <p>100% mothers with low educational level did not take any supplementation</p> <p>More than 15% of mothers with high educational level took supplements of folic acid</p>		<p>Primary Care physician to be involved in prevention of NTD.</p> <p>Cultural and social barriers to be addressed</p> <p>Fortification of staple food such as flour.</p>
<p>García et al<sup>(11)</sup> (2003)</p>	<p>Observational</p> <p>346 pregnant women in Madrid referred to hospital for delivery</p> <p>1999-2000</p>	<p>17% (CI 95% 13.2-21.4) of women took periconceptional folic acid.</p> <p>Appropriate intake was significantly associated with marital status and with prescription by primary care physician</p> <p>no association with social or educational level</p>	<p>34% (CI 95% 29.2-40.1) of women were able to describe folic acid as efficacious method to reduce NTD</p>	<p>The role of Primary Care physician to prevent NTD</p>
<p>Gutierrez et al<sup>(12)</sup> (2003)</p>	<p>Observational</p> <p>Sample of 928 pregnant women &lt;35 years.</p> <p>Economic analysis of prescription in 101 women</p> <p>Zaragoza</p> <p>Unknown period</p>	<p>15,4% of women took supplementation with folic acid correctly.</p> <p>There was significant association (p&lt;0,001) between appropriate intake and planned pregnancy.</p> <p>2.4% of women took supplementation of multivitamins not recommended.</p> <p>32% of women did not take any folic acid supplementation</p> <p>no association with social or educational level.</p>	<p>72, 6% of women knew that periconceptional folic acid supplementation can prevent NTD</p>	<p>Prescription of commercial folic acid (400µ) supplement with sufficient B12 to prevent deficit of B12</p>
<p>Perez-Vázquez et al<sup>(13)</sup> (2003)</p>	<p>Observational</p> <p>148 pregnant women in Pontevedra</p> <p>Unknown period</p>	<p>15.5% (CI 95% 10.3-22.1%) of women took appropriate dosage.</p> <p>86% (CI 95% 73-86%) were planned pregnancies</p>	<p>41% (CI 95% 33-50%) of women did not know benefits of folic acid</p>	<p>Information campaigns to care providers and general population</p>

Coll et al (2004) <sup>(14)</sup>	Retrospective 1000 consecutive women who delivered in Hospital in Barcelona 2000	6.9% of women took appropriate dosage	85.7% of women had not been informed by care providers 50.6% were aware of benefits of folic acid.	Information about folic acid should be given in primary care and preconceptional counselling
Martinez-Frias et al 2007 <sup>8)</sup>	Retrospective 16,761 recently delivered mothers of non-malformed infants	17.% took FA prior to conception. 71% took FA once pregnant. Most of them took high dose (>=/4mg)		

### **Reviews by Spanish authors**

In recent years, some authors have published articles referring to folic acid supplementation and the need to strengthen policies to improve intake. Four references should be mentioned: Madueño and Muñoz (2001)<sup>(15)</sup>, Capitán and Carrera (2001)<sup>(16)</sup> and Carrera (2003)<sup>(17)</sup>, Martinez-Frias (2007)<sup>(18)</sup> All of them stress the need to improve information to care providers and the general population.

Aranceta et al (2001)<sup>(19)</sup> and Ortega et al (2001)<sup>(20)</sup> carried out reviews at an international level.

### **Health Education Initiatives**

Since 2001 pharmaceutical companies and Public Health departments have carried out health campaigns to inform health professionals about the recommendations for periconceptional folic acid supplementation (Madrid, Valencia, Navarra, Murcia, Extremadura and the Basque Country).

A new official centre was created in 2002 at the Carlos III Institute which is a part of Ministry of Health, “Centro de Investigación de Anomalías Congénitas (CIAC)”, connected to the ECEMC project (Estudio Colaborativo Español de

Malformaciones Congenitas). Some pamphlets for the general population about prevention of NTDs with folic acid are available from the web<sup>(21)</sup>.

In some autonomous communities the Public Health Departments have been making “records” about recommendations (internal papers, webs) for doctors and nurses and also local campaigns and leaflets for general people.

### **Proportion of pregnancies that are planned**

There are no reliable national figures about the number that are planned.

A survey in Barcelona from 1994 to 2006 found that between half and two thirds of pregnancies surveyed were planned.

### **Laws Regarding Termination of Pregnancy**

Termination of pregnancy in Spain is allowed up to 22 weeks of gestation if the fetus is expected to be born with severe physical or intellectual defects (unspecified). Two doctors must sign that any of those indications is present. This gestational age limit was confirmed in 2004 by the Spanish Governmental Authorities.

### **Authorised compounds of Folic Acid**

There are a total of 23 proprietary preparations with folic acid (3 with folic acid only, and the rest in combination with other vitamins or minerals), containing varying dosages between 75 micrograms and 5 milligrams of folic acid. The price per day ranges from 0.04 to 0.13 € and is 60% subsidized by the Health System. A further 18 folinic acid compounds (calcic folinate or levofolate) are also licensed for sale, and their use during pregnancy is accepted (even with the higher dosages, varying between 1.08 and 350 milligrams). The price for these is 9 times higher than for folic acid and is

subsidized by more than 60% by the Health System. In 1999 the Basque Society of Gynaecology together with the Health Department issued recommendations about periconceptional intake of folic acid and also discouraged gynaecologists from prescribing levofolinic acid. It would be advisable to monitor the use of levofolinic acid for periconceptional care.

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## **REPORT ON PERICONCEPTIONAL FOLIC ACID SUPPLEMENTATION FOR SWEDEN**

Göran Annerén and Birgitta Ollars

### **Folic Acid Supplementation Policy**

The National Board of Health and Welfare issued recommendations regarding dietary folate and periconceptional folic acid supplementation in 1996<sup>1</sup> and again in 2001.<sup>2</sup> Women who are planning a pregnancy or who may become pregnant are recommended to have a total intake of at least 400 µg of folate per day. Since an intake of 400 µg through the diet is unlikely to be achieved by many women, the official recommendation is to take a folic acid supplement of 400 µg per day. The supplementation should begin one month prior to conception and continue until the end of the first trimester.

Women who have previously had a foetus with a neural tube defect (NTD), women who themselves or whose partner have a NTD or a close relative with a NTD, women with an increased need for folic acid due to disease or medication, such as anti-epileptic medication, are recommended to take 4-5 mg of folic acid supplement per day. The supplementation should begin one month prior to conception and continue until 2-3 months of gestation. This recommendation for women at high risk was issued in 1991.<sup>3</sup>

In September 2007, The Board of the National Food Administration, in Sweden, made the strategic decision to distribute folic acid supplements free of charge to women in the age range 18-45 years, plus complementary information measures. The decision involves, in the first instance, activities during a five-year period. The first year will be taken up with planning and detailed decisions concerning the activities. Thereafter, all women in the age range 18-45 years will be sent an annual letter with information on the link between folic acid and the risk of spina bifida, plus the offer of free folic acid tablets. The results will be continuously assessed.

## **Food Fortification Policy**

The Board of National Food Administration reached a decision in 2007 that compulsory enrichment would be inappropriate in view of the uncertainty regarding the increased risk of cancer due to high intake of folic acid. The National Food Administration will continue to monitor the scientific discussion on folic acid in the future. The European Food Safety Authority (EFSA) together with the National Food Administration will arrange a scientific meeting on the question of folic acid and cancer in Sweden in the beginning of 2008.

## **Health Education Initiatives**

No official Health Education Initiative has been performed in Sweden to inform women about the role of folic acid in reducing the risk for neural tube defects. However, this is about to change since the 2007 decision by the Board of the National Food Administration means that all women in the age range 18-45 years will be sent an annual letter with information on the link between folic acid and the risk of spina bifida, plus the offer of free folic acid tablets.

## **Knowledge and Uptake about Folic Acid**

To our knowledge no national epidemiological studies have been conducted. About 8% of pregnant women used periconceptional supplementation in 1997 but this figure is probably an under estimate.<sup>4</sup>

Dietary studies in Sweden indicate that only a small group of women of childbearing age achieve the daily recommended intake of 400 micrograms of folic acid or dietary equivalent at present.

## **Proportion of Pregnancies that are Planned**

There is little knowledge in Sweden about the proportion of pregnancies that are planned. Probably the situation in Sweden is similar to that in Norway where they reported that between 50 and 75% of all pregnancies were planned.

### **Laws Regarding Termination of Pregnancy**

Induced abortion is legal at a woman's request up to 18 completed weeks of gestation. Induced abortion is legal on specified medical and social indications between 18 and 22 completed weeks, and the decision is made by an ethical committee at the National Board of Health and Welfare.

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## **REPORT ON PERICONCEPTIONAL FOLIC ACID SUPPLEMENTATION FOR SWITZERLAND**

Dr Marie-Claude Addor and Monika Eichholzer

Switzerland is a federal country comprising 26 cantons. Most responsibilities in the health field are vested in the Cantonal Public Health Services. On the federal level, there is a Federal Office of Public Health whose guidelines now have a large audience and are used as the legal basis.

### **Folic Acid Supplementation Policy**

In the early 1990s, the Public Health Officer for the canton of Vaud, at the request of the University Department of Gynecology and Obstetrics, asked the Federal Office of Public Health to support the idea of a national recommendation concerning folic acid and the prevention of neural tube defects (NTD).

The recommendations for primary prevention, issued in 2002, are as follows:

- 0.4 mg folic acid supplementation (with or without other vitamins) should be taken daily from four weeks before conception until twelve weeks after.
- All women of child bearing age without safe contraception should consume a folate rich diet (fresh fruits and vegetables, whole grain products and fortified food eg cereals and breakfast beverages).
- Women who have had a previous pregnancy affected by a neural tube defect are advised to take the following supplements periconceptionally:
  - 4-5 mg folic acid daily, monopreparation (Folvite, Ac. Folicum, Foli-Rivo)
  - polyvitamins = 0.4-1 mg folic acid (vit A  $\leq$  8000 UI)

## **Food Fortification Policy**

Voluntary fortification of food with folic acid is legal, but mandatory fortification has not been introduced.

In 1997, Wiederkehr et al submitted to the Swiss representative assembly a proposal for the mandatory fortification of flour with folic acid for the prevention of neural tube defects. In 2000, the Federal Office of Public Health began studying the folate situation in Switzerland (4) and in 2002 a working group of the Swiss Nutrition Council submitted a report for the Federal Government with scientific recommendations(5). They recommended that flour should be fortified on a mandatory basis by 3 mg folic acid and 10 micrograms of vitamin B12 per kg of flour in order to obtain a supplementary daily intake of folic acid of 275 micrograms and about 1 microgram of B12 per day and said this was the most efficacious, sure and economic way to prevent NTD. This recommendation was supported by the Swiss Nutrition Council but not by the Federal Office of Public Health.

A further report was issued in November 2006 saying that there is no legal basis for mandatory fortification in the Swiss law (6)

## **Health Education Initiatives**

In 2005, a working group of the Federal Office of Public Health prepared a booklet and a leaflet for women in childbearing age. Some booklets, edited by pharmacists "vitamin info" will be available in waiting rooms of gynaecologists in 2008.

## **Uptake and Knowledge of Folic Acid.**

According to market research, awareness of folic acid in the population increased from 38% in 1999 to 58% in 2003. Jans-Ruggli and Baerlocher looked at a sample of 505 pregnant women in three hospitals in Eastern

Switzerland between September 2002 and October 2003. (7) They found that 97.5% of women in their study women took a folic acid supplement during pregnancy, but only 37% took it at the correct time to prevent NTDs. Women of Western European origin were better informed about folic acid than were women from Eastern countries (Balcan and Turkey). Older women were better informed than younger women.

In Switzerland, the daily dietary intake of folate has been estimated to be 275 µg or less.

### **Proportion of pregnancies that are planned**

The percentage of pregnancies that are planned in Switzerland is thought to be very low, and there are very few “preconceptional consultations”.

However, in the Jans-Ruggli, Baerlocher study, 80% of the pregnancies were said to be planned.

### **Laws Regarding Termination of Pregnancy**

According to the Swiss penal code, there is no gestational age limit for termination of pregnancy. However, in practice it is performed until the 24<sup>th</sup> week of gestation.

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## **REPORT ON PERICONCEPTIONAL FOLIC ACID SUPPLEMENTATION FOR THE UNITED KINGDOM**

Dr Grace Edwards and Lenore Abramsky

### **Folic Acid Supplementation Policy**

The Medical Research Council Vitamin Study confirmed the role of periconceptional folic acid supplementation in reducing the risk of a fetal neural tube defect.<sup>1</sup> As a result, in 1992 the Department of Health in conjunction with the Scottish Office, the Welsh Office and the Northern Ireland office produced a report recommending that folic acid supplementation should be taken by all women contemplating pregnancy. The report recommended that all women take 400 µg of folic acid per day when planning a pregnancy. Women who had had a baby with a previous neural tube defect were advised to take 5 mg per day before conception and until 12 weeks of pregnancy.<sup>2</sup> These recommendations are still in place.

### **Food Fortification Policy**

Mandatory fortification of flour in the United Kingdom has been recommended by the Food Standards Agency but not yet implemented. It is expected to be implemented in 2008. Most breakfast cereals have been voluntarily fortified for many years with vitamins such as B vitamins, including folic acid, and minerals such as iron. There is no standardized amount and there are varying levels of fortification with folic acid.

### **Health Education Initiatives**

In 1995 a three year UK campaign led by the Health Education Authority (HEA) was launched to improve folate status awareness in women of child bearing age. This campaign highlighted ways of improving folate status before conception and up to 12 weeks of pregnancy by increasing folic acid intake from foods and supplements. This was a large and expensive campaign with advertisements on television, in newspaper, magazines and professional journals. Although the campaign raised awareness in women



from 9% in 1995 to 68% in 1998, only 38% of women surveyed in 1998 took folic acid around the time of conception.<sup>3</sup>

It should be noted that Northern Ireland was not covered by the television advertising campaign launched by the HEA in 1995. However, a Northern Ireland television advertising campaign was broadcast as part of a public information initiative developed by the Health Promotion Agency for Northern Ireland and launched in 1998.

### **Knowledge and Uptake of Folic Acid**

Numerous studies have been undertaken in the UK and Ireland and all have shown that while the majority of women have now heard of folic acid and know something about its protective effect, fewer than half of them take it prior to conception. Most of the studies have looked at the association of demographic and lifestyle variables with uptake and have found that uptake is lower among young women, smokers, those with less formal education, of lower social class, and from ethnic minorities.<sup>4-9</sup>

Some work has been undertaken in the United Kingdom to measure the changes in dietary folate consumption.<sup>10,11</sup> Murphy et al found that dietary folate consumption had increased by 1.6% per annum in Scotland and 1.4% in England from 1980 to 1996. This increase was thought to have been linked with the introduction of folate fortification of cereals.

In Northern Ireland anecdotal evidence from antenatal clinics indicates an increase in uptake of folic acid supplements.

### **Proportion of pregnancies which are planned**

A study by While found that up to one live birth out of every three was unplanned.<sup>12</sup> These findings were supported by research in Merseyside, England where forty percent of women reported that their pregnancies were unplanned<sup>13</sup> and by research in other parts of Britain<sup>6</sup>

### **Laws Regarding Termination of Pregnancy**

Under the 1967 Abortion Act (amended in 1990) abortion is legal in England, Scotland and Wales at gestational age up to 24 weeks provided that two doctors certify that a woman's mental or physical health (or that of her children) is at greater risk if she continues with the pregnancy than if she has a termination. At the time of writing (October 2007), the UK parliament is considering the possibility of removing the need for two doctors to certify that the criteria for permitting a termination are met and is also considering the possibility of lowering the gestational age limit to 22 weeks. There is no gestational age limit for termination of pregnancy because of serious fetal abnormality or because there is a risk of permanent injury to a woman's health or life. The 1967 Abortion act does not apply in Northern Ireland.

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