Folic Acid Supplementation Policy
An Italian Network for the Promotion of Folic Acid for the Prevention of Congenital Defects has been formed. It is hosted by the Superior Health Institute (ISS) and held its first national conference in April 2004. 55 different organisations including registries, nutritionalists, the federation of general practitioners, researchers and spina bifida parents’ associations met together to propose and agree recommendations regarding folic acid supplementation. 120 organisations are now part of the Network.

The recommendation, directed at the medical profession, has received formal support from 70 organisations. The summary recommendation was approved in November 2004 and is as follows:

It is 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 now freely accessible at http://www.cnmr.iss.it/

The recommendation will now be formally sent to the Minister of Health, President of the Superior Health Institute, President of the Medicines agency etc.

Implementation
At the April meeting, 31 project abstracts in support of the folic acid supplementation policy were presented and published: 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 Italian Ministry of Health in the Drugs Bulletin 2 directed both to family practitioners and specialists has 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 (2-10 October 2004) to promote the recommendation. There were also four scientific conventions on spina bifida. A leaflet on primary prevention was distributed to women at family clinics and through supermarkets. A television advertisement on primary prevention was shown on both national and local TV stations and a freephone helpline set up to provide information to interested women. A second Spina Bifida week is planned for next year.

The Network has identified issues to be addressed in the implementation phase.

- Given the numerous implementation initiatives launched by different organisations, many at a local level, the Network has a role to play in avoiding overlap and using financial resources most effectively.
- The effectiveness of different communication campaigns must be evaluated and the learning shared through the Network.
- Projects for training and widespread communications require a business plan to present the costs and benefits foreseen.
- The introduction of preventative medicine inside the health system is a new and difficult ground in Italy
- Whilst the Network provides a national forum, representation from the south of the country is less. Attention to advocacy and coverage is necessary.

**Folic acid supplements on sale**

Many of the preparations on sale in Italy are at high doses (5 to 15mg tablets), and for this reason the recommendation has a fall back position of 5mg per week, despite concerns regarding compliance. A 0.4mg tablet has now been registered and declared refundable (Class A) and once price negotiations have been concluded, it will be 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. An estimate has been made that a total 5 million packs of folic acid tablets are sold each year, but the use is unclear.

**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.

**Health Education Initiatives**

Many health education initiatives have been started 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. At the Network meeting in April 2004, a total of 14 projects on Promotion and Information to the population were presented. Many different organisations have web pages dedicated to folic acid e.g http://www.ceveas.it/SaPeRiDoc

At the national level FIMMG, the Italian Federation of General Practitioners is planning a training cascade regarding the correct use of folic acid and a dynamic web site and forum. A publicity spot on folic acid will be included in all other residential courses organised in the next 12 months.

**Knowledge and Uptake about Folic Acid**

To our knowledge no national epidemiological studies have been conducted. A summary of the Italian Birth defects and Folate Situation was published in 2003.

At a regional level the following studies have been reported:

*Folic acid in Tuscany, Italy: What do women know, think, and do?*

The effectiveness of periconceptional folic acid supplementation to prevent neural tube defects is well established, and some protection against other adverse pregnancy outcomes have been suggested. Italian families, because of their low
fertility, could substantially benefit from such prevention opportunity. Although data on use and knowledge are critically needed for planning and evaluating public health action, few are available.

Methods: We conducted a survey of knowledge, attitude, and use of folic acid among women who had recently given birth to a healthy newborn in Tuscany. This group was targeted because it would have been a premiere target for folic acid campaigns. We focused on one region to maximize the coverage of maternity wards. The questionnaire was based on questionnaires used in the United States, further modified and pilot tested in Tuscany. Trained interviewers (AC, SCGB, MS) visited maternity wards in and around Florence, Pisa and Siena (Tuscany, Italy). Eligible women were mothers present in maternity wards, within three days of delivery of an unaffected child. We categorized use in three groups: 1) Appropriate folic acid (AFA), defined as daily use of 400 mg or more of FA from before pregnancy through the first month of pregnancy (periconceptional period); 2) other folic acid use (OFA), defined as use during pregnancy but not during the periconceptional period; 3) No folic acid (NFA), defined as no use during pregnancy. We contrast AFA with the other two groups separately or combined (ONFA).

Results: We present findings on 1,066 respondents who were interviewed between February and April 2002.

Use: 5.7% of women (n=61) used folic acid as recommended (AFA). 52% (n=546) took folic acid but not in the periconceptional period (OFA), and 43% (n=452) did not use folic acid (NFA)(for 7 subjects information was not sufficient to classify folic acid use). AFA was more frequent among women who were older, better educated, and had seen a doctor before conception. Common reasons for not taking vitamins included “not specifically recommended by doctor” (37%) and “no perceived need (I eat well)” (20%).

Knowledge and attitudes: more women in the AFA group reported knowing that folic acid could prevent birth defects (43% vs. 17% among ONFA), and that it should be taken from before conception (31% vs. 9%, respectively). Most women (91%) who did not use folic acid appropriately (ONFA) reported that they would be willing to use folic acid daily to improve pregnancy outcomes. All women, regardless of FA use, regarded the physician as the most authoritative source of health information and counseling (67%).
Comments and conclusions: We found that approximately 1 in 17 women (5.7%) who had just given birth to a baby had used folic acid periconceptionally. This percentage is low but similar to that found in some other European countries. The survey also suggests that information campaigns, directly to women but also through the primary physician and specialist, could lead to substantial increases in knowledge and possibly periconceptional use of folic acid supplements.

**PRIMARY PREVENTION OF NEURAL TUBE DEFECTS: LACK OF INFORMATION ABOUT FOLIC ACID SUPPLEMENTATION IN ITALY: EMILIA-ROMAGNA REGION**

A study was conducted at the Obstetric Clinic of Bologna on the percentage of women who had correctly consumed folic acid in the periconceptional period. In the early part of the study, 3.5% of women took folic acid correctly; a year later 5% did so.

Objective: To detect the level of knowledge of women of childbearing age about the ability of folic acid (FA) supplementation to reduce the risk of having a pregnancy affected by neural tube defects (NTD). To administer an ad hoc questionnaire prepared in relation to the goals of the BIOMED Project and conduct a survey in Bologna (one of the centres of the IMER Registry, Italy) on the policy of consuming FA before conception (at least 2 months) and in the first quarter after conception.

Design: An educational campaign about the health benefits of periconceptional consumption of FA and reduction of the risk of NTD. Participants: A sample of women in hospital for delivery during November and December 1999. Methods: The questionnaire, in Italian, was administered to 302 women with healthy babies who were randomly selected in the 2-month period. The same doctor interviewed all the women. The information collected included data about maternal age, parity, education, smoking use, knowledge of the effect of FA and of food intake, changes in diet during pregnancy, and consumption of FA or a FA-containing multivitamin, with details about the period of consumption. Main outcome measures: Number of women who were aware of the FA recommendations, number who were aware of what FA is, who advised them about the benefits of FA, and when FA should be taken. Results: Only 9 women (2.9%) took FA correctly, in the perinatal period. These 9 women were mainly informed by their gynaecologist about FA preventive effect for NTD, tended to have a higher educational level (university) (\( \chi^2=8.920; 2 \text{ gdl; } p=0.0012 \)) and tended to be older (> 30 years) (\( \chi^2=9.364; 2 \text{ gdl; } p=0.009 \)).
Conclusions: These results demonstrate the lack of medical information in Italy about the preventive effect of FA and the necessity of carrying out information campaigns addressed to gynaecologists, general practitioners and to all women in childbearing age.

**PERICONCEPTIONAL FOLIC ACID INTAKE BY SICILIAN COUPLES AT A RISK OF RECURRENCE OF NTD**

In Sicily a study was carried out on periconceptional folic acid intake by Sicilian couples at increased risk of NTD. The authors conclude that pregnant Sicilian women at risk for recurring NTD interviewed by the authors were not aware of the possible prevention of NTD using folic acid supplements during the periconceptional phase. In the study period, January 1997 until December 1998, 18 couples were identified as being at risk for recurring NTD. A further 15 couples showed a positive family history for NTD. Of 11 planned pregnancies, none of the pregnant women took folic acid during the periconceptional phase. Details of the study, “Periconceptional folic acid intake by Sicilian couples at a risk of recurrence of NTD”:

**AIMS:** The authors aimed to evaluate the frequency with which pregnant Sicilian women with a high risk of recurring neural tube defects (NTD) attending the Ultrasonography and Prenatal Diagnosis Clinic in the Department of Diagnosis and Treatment at Ospedale S. Bambino in Catania were aware of the preventive effect of folic acid supplements during the periconceptional period and whether they therefore took folic acid supplements before the next pregnancy. **METHODS:** All pregnant women undergoing ultrasonography between January 1997 and December 1998 were interviewed. It was noted whether any earlier offspring had suffered from NTD or whether relatives (sisters, brothers, parents) had suffered from a NTD. They were also asked whether they knew about the preventive effect of periconceptional folic acid supplements on the development of NTD, whether their pregnancy was planned and whether they had taken periconceptional folic acid supplements and, if so, at what dose. **RESULTS:** Eighteen couples were identified as being at risk for recurring NTD: 3 cases had an earlier pregnancy resulting in NTD (2 cases of spina bifida and 1 case of anencephaly) with a negative family history for NTD; a further 15 couples showed a positive family history for NTD. None of the women were aware of the preventive effect of folic acid supplements during the periconceptional period on the development of NTD. Out of 11 planned pregnancies, none of the pregnant
women took folic acid during the periconceptional phase. CONCLUSIONS: Pregnant Sicilian women at risk for recurring NTD interviewed by the authors were not aware of the possible prevention of NTD using folic acid supplements during the periconceptional phase.

A similar level of ignorance was found in a study conducted by the Emilia Romagna region (2)

**Proportion of pregnancies which are planned**

No information available.

**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.

**References:**


Acknowledgement

Data regarding the sales of folic acid preparations was provided courtesy of ITALFARMACO. Our thanks to FIMMG and the Italian Folic Acid Network for their contribution to this chapter.
Italy (Campania, Emilia Romagna, North East Italy, South East Sicily and Tuscany): Total Prevalence Rates for Neural Tube Defects

Prevalence rates per 10,000 births across five regions of Italy from 1980 to 2002.

- Tuscany
- Emilia Romagna
- NE Italy
- Sicily
- Campania

Italy (Campania, Emilia Romagna, North East Italy, South East Sicily and Tuscany): Livebirth Prevalence Rates for Neural Tube Defects

Prevalence rates per 10,000 births across five regions of Italy from 1980 to 2002.
Italy (Campania, Emilia Romagna, North East Italy, South East Sicily and Tuscany): Total Prevalence Rates for Anencephalus

![Graph showing prevalence rates for anencephalus over years for different regions in Italy.](image)

Italy (Campania, Emilia Romagna, North East Italy, South East Sicily and Tuscany): Livebirth Prevalence Rates for Anencephalus

![Graph showing livebirth prevalence rates for anencephalus over years for different regions in Italy.](image)
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 being planned. However, a wide variety of imported fortified cereals and malted drinks are available. Cereals are relatively expensive locally and may not be accessible to people of all income brackets. Fortified breads are not readily available.

Health Education Initiatives
No official Department of Health Promotion campaigns have been undertaken but one is being planned for the near future. 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.

No official Department of Health Promotion campaigns 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. In 2002, a health promotion officer presented his postgraduate research investigating the needs of a national health promotion campaign to raise awareness of the benefits of periconceptional folic acid supplementation among sexually active Maltese women of childbearing age. This research utilized the data collected during a folic acid survey conducted in 1999-2000 as part of the needs assessment. The results of this research will influence the health promotion campaign regarding periconceptional folic acid will be launched officially in Malta.
Folic Acid Awareness and Uptake

A study regarding folic acid awareness in Maltese mothers was undertaken between October 1999 and February 2000 (Gatt 1999). 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. It is hoped that a similar study will be carried out before any Health Promotion Campaigns are initiated and a repeat study will be done some time after the campaign.

Proportion of pregnancies which are planned

No information available

Laws Regarding Termination of Pregnancy

In Malta, termination of pregnancy is not legal.

References:

Malta: Total and Livebirth Prevalence Rates for Anencephalus

![Graph showing prevalence rates over years](image-url)
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\(^1\).

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 vitamins are added to (expensive brands of) marmalade. Folic acid was not on the list of vitamins because of the risk of masking a vitamin B\(_{12}\) deficiency; only restoration was possible.

The likelihood of appropriate fortification of food with folic acid in the Netherlands is further decreased after the publication of a recent report of the Dutch Health Council.\(^2\) They did not advise fortification of staple foods such as flour, but only products that can be specifically aimed at the target-population: women who want to become pregnant. No suggestions were made as to what these products could be or what the recommended amount of folic acid to be added to these products would be. For now, fortification with folic acid is officially not allowed for any product. However, for the past two years Kellogg’s has put cornflakes with extra folic acid on the Dutch market. Very recently the advocate-general of the European Court of Justice decided that fortification of special foods must be allowed in the Netherlands.

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. This campaign was carried out in 1995.

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 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. 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. We recently did another survey in the Northern Netherlands, and the results will be published soon.

**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. 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. The pilot study is currently being reproduced on a regional scale and will be reproduced in the whole country.

**Proportion of Pregnancies which are Planned**

The Netherlands has a high percentage of planned pregnancies. 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 periconceptional 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.

References:


**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 (e.g., 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, child-bearing women 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 periconceptional 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 periconceptional 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, contents of folic acid 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 gynecology 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.

**Folic Acid Awareness and Uptake**

One paper was published in Norway concerning the awareness in the child bearing population of recommendations regarding folic acid supplementation and the uptake of advice regarding folic acid supplementation (Vollset & Lande 2000). After the recommendations were issued in the Spring of 1998, a random sample of 1500 Norwegian women of reproductive age was selected for study during the autumn 1998. Among the 1500 women, telephone interviews were carried out with 1146 women (Vollset & Lande 2000). A repeat study was done in 2000, in which telephone interviews were carried out with 1218 women. Results from this repeat study are not yet published, but some results are referred to here.

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 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.

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), 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.

References

Statens helsetilsyn (Norwegian Board of Health): Tiltak som kan redusere forekomst av nevralrørsdefekter. Rundskriv IK-4/93.


Folic Acid Supplementation Policy
Since 1997 there has been a nation wide government program regarding periconceptional folic acid supplementation. The program “Primary Prophylaxis of Neural Tube Defects”, is headed by Professor Zbigniew Brzezinski, from the Department of Epidemiology, Institute of Mother and Child, Warsaw.

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.

Knowledge and Uptake of Folic Acid
In 1999, folic acid supplementation was taken by 15% of women aged 18-45; by 11% of non-pregnant women between those ages; and by 9% of women under 20 years of age.
In 2001, folic acid supplementation was taken by 19% of women aged18-45; by 13% of non-pregnant women between those ages, and by 16% of women under 20 years of age. Thus, folic acid supplementation rates had gone up for all three categories within the space of two years. (Report on realization of program of primary prophylaxis of neural tube defects in 1997-2001, Institute of Mother and Child, Warsaw 2000). 57% of women took other vitamin supplements.

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

Laws regarding termination of pregnancy
Termination of pregnancy for fetal abnormality is permitted until viability. In the case of a lethal anomaly, there is no gestational age limit.
References


Program of primary prophylaxis of neural tube defects, Institute of Mother and Child, Warsaw, 2002.
Poland (Wielkopolska and remainder of Poland): Total Prevalence Rates for Neural Tube Defects

Poland (Wielkopolska and remainder of Poland): Livebirth Prevalence Rates for Neural Tube Defects
Folic Acid Supplementation Policy
There is a recommendation from the Directory of Health “Directory of Health guideline number 2/DSMIA” to all health care professionals, to inform the childbearing population about the importance of folic acid. There is no information about dosage. This policy was introduced in March 1998

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 three years ago to fortify milk with 50µg/100ml of folic acid.

Health Education Initiatives
There is no official health education initiative, but the recommendation from the Directory of Health in March 1998, suggested that general practitioners should inform their female patients about the importance of folic acid supplementation.

Knowledge and Uptake of Folic Acid
To our knowledge there are no studies in the Portuguese population.

Proportion of Pregnancies which are Planned
No information is available.
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.
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\(^1\). 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\(^2\). 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 webpage and also in all patient information leaflets for pregnant women, as well as medical record\(^3\).

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 is estimated to be 211.7 µg (108) by Aranceta et al, (1994) in the Basque Country and to be 392 µg (131) in Valencia Country (Vioque et al, 2000). 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 µg per day) were low (10% and 40% respectively). Also the observational study of Ballesteros et al (1999) 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) found that 12.9% women aged 18-34 years had sub optimal serum folate levels.

Studies of prophylaxis assessment

In addition to the study published in 2000 by Gilbert et al, six studies by Spanish authors were published in 2003 and 2004. Results of these studies are given below.

<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Intake of periconceptional folic acid supplements</th>
<th>Knowledge of benefits of folic acid</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gilbert et al (2000)</td>
<td>Retrospective</td>
<td>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).</td>
<td>85.2% of midwives and 45.7% of gynaecologists recommended prophylaxis when the mother first attended the antenatal clinic or before (p&lt;0.001).</td>
<td>Involvement of Gynaecologists, midwives, and Public institutions</td>
</tr>
<tr>
<td>Study</td>
<td>Type</td>
<td>Population</td>
<td>Key Findings</td>
<td>Implications</td>
</tr>
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<tr>
<td>Martínez-Frias et al (2003)</td>
<td>Retrospective</td>
<td>Mothers of controls ECEM database (1980-2002): 28522 Mothers of controls 2001 and first trimester 2002: 1338. Spanish hospitals</td>
<td>Increased intake of folic acid since 1992 (80%). 2002 10.62% of women took folic acid prior to pregnancy. Dosage higher (&gt;4.5mg per day) than recommendations. 100% mothers with low educational level did not take any supplementation More than 15% of mothers with high educational level took supplements of folic acid</td>
<td>Primary Care physician to be involved in prevention of NTD. Cultural and social barriers to be addressed Fortification of staple food such as flour.</td>
</tr>
<tr>
<td>García et al (2003)</td>
<td>Observational</td>
<td>346 pregnant women in Madrid referred to hospital for delivery 1999-2000</td>
<td>17% (CI 95% 13.2-21.4) of women took periconceptional folic acid. Appropriate intake was significantly associated with marital status and with prescription by primary care physician no association with social or educational level</td>
<td>34% (CI 95% 29.2-40.1) of women were able to describe folic acid as efficacious method to reduce NTD The role of Primary Care physician to prevent NTD</td>
</tr>
<tr>
<td>Gutiérrez et al (2003)</td>
<td>Observational</td>
<td>Sample of 928 pregnant women &lt;35 years. Economic analysis of prescription in 101 women Zaragoza Unknown period</td>
<td>15.4% of women took supplementation with folic acid correctly. There was significant association (p&lt;0.001) between appropriate intake and planned pregnancy. 2.4% of women took supplementation of multivitamins not recommended. 32% of women did not take any folic acid supplementation no association with social or educational level.</td>
<td>72.6% of women knew that periconceptional folic acid supplementation can prevent NTD Prescription of commercial folic acid (400u) supplement with sufficient B12 to prevent deficit of B12</td>
</tr>
<tr>
<td>Perez-Vázquez et al (2003)</td>
<td>Observational</td>
<td>148 pregnant women in Pontevedra Unknown period</td>
<td>15.5% (CI 95% 10.3-22.1%) of women took appropriate dosage. 86% (CI 95% 73-86%) were planned pregnancies</td>
<td>41% (CI 95% 33-50%) of women did not know benefits of folic acid Information campaigns to care providers and general population</td>
</tr>
</tbody>
</table>
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. Three references should be mentioned: Madueño and Muñoz (2001)(14), Capitán and Carrera (2001)(15) and Carrera (2003)(16). All of them stress the need to improve information to care providers and the general population.

Aranceta et al (2001)(17) and Ortega et al (2001)(18) 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(19).

Proportion of pregnancies that are planned

There are no reliable figures about the number that are 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 4 compounds with Acid Folic: ACFOL (5 Mg); Acido Folico ASPOL (10 mg), ZOLICO (400 Łg) and FOLI DOCE (400 Łg + 2 Łg B12). The price per day ranges from 0.04 to 0.13 € and is 60% subsidized by Health System. Some Levofolinic Acid compounds are licensed for sale but are not recommended for pregnant women. The price for these is 9 times more than for folic acid and is subsidized by more than 60% by the Health System. In 1999 the Basque Society of Gynaecology with the Health Department issued recommendations about periconceptional intake of folic acid and also discouraged gynaecologists from prescribing Levofolinic acid. Nevertheless, it would be advisable to monitor the use of Levofolinic Acid for periconceptional care.

References


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\(^1\) and again in 2001.\(^2\) Women who are planning a pregnancy or who may become pregnant are recommended to have a total intake of at least 400 \(\mu\)g of folate per day. Since an intake of 400 \(\mu\)g through the diet is unlikely to be achieved by many women, the official recommendation is to take a folic acid supplement of 400 \(\mu\)g 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.\(^3\)

Food Fortification Policy
There is no policy in Sweden to fortify food with folic acid. A working group was established in 1996 by the Medical Products Agency to suggest recommendations and means of increasing the intake of folic acid among women of childbearing age.
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.

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.4

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.

References
2. NATIONAL BOARD OF HEALTH AND WELFARE 2001, FOLSYRA I SAMBAND MED GRaviditet. HTTP://WWW.SOS.SE/SOS/PUBL/MEDBLAD/Mb0101.HTM
Sweden: Total and Livebirth Prevalence Rates for Neural Tube Defects

Sweden: Total and Livebirth Prevalence Rates for Spina Bifida
REPORT ON PERICONCEPTIONAL FOLIC ACID SUPPLEMENTATION FOR SWITZERLAND

Dr Marie-Claude Addor

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 current 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 ≤ 8000 UI)

Food Fortification Policy

Voluntary fortification of food with folic acid is legal now, but mandatory fortification is still under consideration. 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.

Since 2000, the Federal Office of Public Health has been studying the folate situation in Switzerland (3) and a working group of the Swiss Nutrition Council has submitted a report for the Federal Government with scientific recommendations, published in 2002(4).

The current recommendation regarding fortification is 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. This is the most efficacious, sure and economic way to prevent NTD. This recommendation is supported by the Swiss Nutrition Council but not yet by the Federal Office of Public Health.

The fortification with folic acid of other foods is under re-evaluation. The potential benefits of folic acid in the Swiss population have now been evaluated and this knowledge will influence the official federal policy for folic acid fortification in Switzerland. At the moment the Federal Office of Public Health is considering the next steps to be taken.

Health Education Initiatives

A working group of the Federal Office of Public Health is preparing a booklet and a leaflet for women in childbearing age. Some booklets, edited by pharmacists "vitamin info" are available in waiting rooms of gynaecologists.

Uptake and Knowledge of Folic Acid.

According to recent market research, awareness of folic acid in the population has increased from 38% in 1999 to 58% in 2003.

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 very low, and there are very few “preconceptional consultations”.

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 24th week of gestation.

References


Switzerland (Vaud): Total and Livebirth Prevalence Rates for Anencephalus

Year

Prevalence per 10,000 births

Total prevalence
Livebirth prevalence


0 1 2 3 4 5 6 7

0 1 2 3 4 5 6 7
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.\(^1\) 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.\(^2\) These recommendations are still in place.

Food Fortification Policy
There is no mandatory fortification of food in the United Kingdom. However, 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.

The Committee on Medical Aspects of Food and Nutrition (COMA) report in 2000 concluded that by fortifying flour with folic acid, a significant proportion of neural tube defect affected births could be prevented.\(^3\) The report looked at both the benefits and possible risks of folic acid intake and concluded that:

- Universal fortification of flour with folic acid at 240 µg per 100 grams in food products as consumed would reduce the risk of a neural tube defect in unborn babies and children by 41% without resulting in unacceptably high intakes in any group of the population.
- Women who could become pregnant should continue to be advised to take a diet rich in folate and take folic acid supplementation.
A public consultation was undertaken in the United Kingdom and the issue was considered by the Food Standards Agency (FSA). There was no consensus on the introduction of a food fortification programme without a controlled field trial, as there were concerns about the possibility of adverse effects. The main concern of the FSA was that fortification might mask megaloblastic anaemia in people with vitamin B12 deficiency. In May 2002, the Food Standards Agency (FSA) recommended that mandatory fortification should not be implemented. To date, the FSA decision stands.

**Health Education Initiatives**

In 1995 a 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.

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.
Some work has been undertaken in the United Kingdom to measure the changes in dietary folate consumption. 12,13 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. 14 These findings were supported by research in Merseyside, England where forty percent of women reported that their pregnancies were unplanned 15 and by research in other parts of Britain 6

**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. There is now 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.

**References**


Thanks to Margaret Slane of the Health Promotion Agency in Northern Ireland and Margaret Boyle, Senior Medical Officer, Department of Health, Social Services and Personal Safety Northern Ireland for their input about the situation in Northern Ireland.
UK (Glasgow, Merseyside, NW Thames, Northern Regions, Oxford, Trent, Wales and Wessex): Total Prevalence Rates for Neural Tube Defects

UK (Glasgow, Merseyside, NW Thames, Northern Regions, Oxford, Trent, Wales and Wessex): Livebirth Prevalence Rates for Neural Tube Defects