

## FERTILE WOMEN NEED TO TAKE MULTIVITAMINS WITH FOLIC ACID (MVF)

**N**EURAL TUBE DEFECTS (NTDs) are among the most serious and common birth defects. Approximately 4000 pregnancies in the United States are affected each year, one third of which are spontaneously lost or electively terminated.<sup>1</sup> This edition of the *CD Summary* reviews what can be done—and how we are doing—preventing NTDs and other birth defects.

### WHAT CAN BE DONE TO PREVENT NTDs AND OTHER BIRTH DEFECTS

Although the mechanism of action remains unknown, epidemiologic studies have shown that periconceptional use of multivitamins with folic acid (MVF) can prevent many birth defects, including at least 50% of NTDs.<sup>1-6</sup> Public health agencies recommend that all women capable of becoming pregnant consume 400 µg (0.4 mg) of folic acid daily in the form of fortified foods or dietary supplements.<sup>1</sup> Because NTDs occur just three to four weeks after conception, often before pregnancy is confirmed,<sup>7-8</sup> and because nearly half of pregnancies in the U.S. are unplanned,<sup>9</sup> it is important that women capable of becoming pregnant, regardless of pregnancy intention, take MVF before pregnancy and for their first month after conception.

### WHY DIETARY CHANGES AND FOLIC ACID FORTIFICATION OF GRAINS WON'T SOLVE THE PROBLEM

Poor diet does increase the risk of NTDs.<sup>10</sup> So why not just advocate for dietary change? Although observational studies suggest that dietary sources of folate confer some protection against NTDs, the experimental studies, which offer the strongest epidemiologic evidence, used supplementation.<sup>2</sup> Current intake of naturally-occurring folate, in fruits, vegetables and legumes, is so low that a dietary change of sufficient magnitude is impractical.<sup>11</sup> Furthermore, naturally-occurring folate is about half as bioavailable as supplemental folic acid and is easily inactivated with exposure to heat, ultraviolet light and even air.<sup>2</sup> As a result, dietary change has been found to be relatively ineffective and of much lower benefit than supplemental folic acid.

Because of the need for supplementation, the Food and Drug Administration ruled that, as of January 1998, all enriched grain products must contain folic acid fortification.<sup>12</sup> Unfortunately, the fortification level is probably insufficient, since the current estimated average daily folic acid intake from fortified grains is only 100 µg,<sup>8</sup> far short of the recommended 400 µg daily intake.<sup>13</sup> Although fortification remains vital (because it increases the folic acid intake of women), all women capable of becoming pregnant should take MVF to ensure adequate intake.

### HOW ARE WE DOING IN OREGON?

The primary source of information about how we are doing about compliance with folic acid supplementation recommendations in Oregon is the Pregnancy Risk Assessment Monitoring System (PRAMS), an ongoing population-based survey of postpartum women conducted by the Health Division. Oregon PRAMS began data collection in November 1998 and was modeled after the national PRAMS program initiated by the Centers for Disease Control and Prevention (CDC) in 1987.

PRAMS surveys Oregon mothers who have had a recent live birth. These mothers are identified using a random sample of birth certificates with oversampling of those who are African-American, Hispanic, Native American and Asian/Pacific Islander to ensure reliable data about these groups. Approximately 2,900 women receive the PRAMS questionnaire each year by mail with follow-up telephone calls to non-responders. For more information about PRAMS see the Health Division's web site (<http://www.oshd.org/pcah>).

### 1998-99 PRAMS RESULTS

PRAMS respondents were asked "Were you taking the vitamin folic acid most days in the month before you became pregnant?" Only 30% of mothers answered affirmatively.

Various maternal characteristics that might be associated with not taking folic acid are also assessed by PRAMS. Only

16% of Hispanic women and 20% of African-American women (compared to 36% of white women) were taking periconceptional folic acid. When entered into a multivariate analysis, these factors were significantly and independently associated with not taking periconceptional folic acid: not knowing that folic acid use can prevent some birth defects, pregnancy having been unintended, not having medical insurance and lower income (see table verso).<sup>14</sup>

### RECOMMENDATIONS AND SUMMARY

The fact that only 30% of recently pregnant women reported complying with the recommendations for MVF tells us that we have much work to do. Based on the estimated incidence of NTDs in Oregon and the effectiveness of MVF in preventing NTDs, we estimate that about 15 NTDs<sup>2</sup> (and probably 100–200 additional birth defects<sup>4</sup>) would be prevented each year if all Oregon women who got pregnant were taking MVF. The characteristics associated with non-compliance with MVF recommendations can help us identify women who need particular attention in this area.

Public health campaigns such as those sponsored by the March of Dimes (<http://www.modimes.org>) and the Oregon Health Division can increase awareness about the importance of periconceptional folic acid. But individual health care providers have a role to play as well. Advice from physicians and other providers can influence patient behavior. In the 1996 Healthstyles survey, CDC found that 65% of women age 18–45 reported being willing to take a vitamin if their provider encouraged them to, but only 16% had actually been so encouraged.<sup>15</sup> A recent national survey of obstetrician-gynecologists found that only 53% of doctors routinely screened non-pregnant patients of childbearing age for folic acid intake.<sup>16</sup> Each encounter with a woman of childbearing age represents an opportunity to promote the use of MVF. Providers can help by screening all women of childbearing age (including teens) for

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## CD SUMMARY

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vitamin use, whether in a private setting, a public health clinic, or a school-based health center. Vitamin use should be discussed whenever birth control is prescribed or a pregnancy test is given, especially if the pregnancy test is negative. WIC can further assist by educating postpartum women (or providing them with MVFs), regardless of their future pregnancy intention, so that they may be prepared for subsequent pregnancies.

We have the ability to improve maternal and child health in Oregon through this simple public health action. So remember, **folic acid is the “B-4” Vitamin: for the greatest benefit, it should be taken—in a multivitamin supplement—before pregnancy is recognized.**

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### Don't Delay—Vaccinate Today!

**T**HE STATE PUBLIC HEALTH Laboratory has confirmed 11 cases of influenza (10 of them type B) in Oregonians to date this season. Vaccine is available and by no means is it too late use it. Vaccine can be procured from Aventis Pasteur, Inc.: 800/720-8972 or at <http://www.vaccineshoppe.com>.

### 2000 CD Summary Topics (by issue)

- The Specter of Bioterrorism
- Syphilis Elimination; Expanded HIV Reporting
- Leading Causes of Death and Related Behaviors; Shigella in Bean Dip
- Recommended Childhood Immunization Schedule
- Asthma Treatment Guidelines
- Hepatitis C: History, Risk Factors, Prevention
- 1998 Oregon Child Fatalities; Flu Season Summary
- Oregon's Death With Dignity Act: Year Two
- Salmonellosis Associated with Baby Chicks; What's New for Flu 2000-01
- Much Ado About the OHD Web Site
- Newborn Hearing Screening
- Risk Behaviors in Persons Using HIV Counseling and Testing Sites; Oregon ALERT
- Managing Drug Resistance in Long-Term-Care Facilities
- Cancer Clusters: Common Cause or Chance?
- Meningococcal Vaccine and College Students; Flu Vaccine Delays
- Heptatitis C: Testing and Treatment
- STD Treatment; Reporting Abortion Complications
- Treating Depressed Patients
- Diabetes in Oregon; O157 Outbreak at Wendy's
- Flu Vaccine Contingency Guidelines; Fluvirin
- TB Elimination or Another Cycle of Neglect?
- Oregon Immunization Survey of Two-Year-Olds
- Health Care Providers Key to Helping Female Domestic Violence Victims
- Lead Poisoning
- Pneumococcal Conjugate Vaccine; Flu Update
- Periconceptional Use of Multivitamins With Folic Acid

### Independent Predictors of Not Taking Periconceptional Folic Acid, Oregon PRAMS, 1998-99 (weighted multivariate analysis)

Maternal Characteristic	Odds Ratio (95% CI)
Not knowing that folic acid use can prevent birth defects	9.09 (3.70, 20.0)
* Pregnancy unintended	3.70 (2.33, 5.88)
† Not having medical insurance	2.38 (1.35, 4.17)
‡ Family Income ≤\$30,000/yr	2.27 (1.47, 3.57)

\* Unintended pregnancy includes women who wanted to be pregnant later or not at all.  
 † Intended pregnancy includes women who wanted to be pregnant at the time of conception or sooner.  
 ‡ No insurance compared to any public or private medical insurance prior to pregnancy.  
 † Annual family income before pregnancy, comparing <\$30,000/yr to ≥\$30,000/yr  
 Maternal risk factors included in the multivariate analysis but excluded from the final model were source of income; marital status; maternal age, education, parity and race/ethnicity; and maternal alcohol and smoking prior to pregnancy.