

1. ABSTRACT: The evaluation of the National Folic Acid Campaign is intended to ascertain the effectiveness of current methods to 1) raise awareness about the benefits of folic acid for the prevention of neural tube defects (NTDs) and 2) increase consumption of folic acid to levels sufficient to prevent the majority of NTDs. National trends in awareness and folic acid consumption among women of reproductive age will track achievement of the campaign's objectives. This evaluation will collect data on exposures of women to folic acid information from campaign and non-campaign sources and measure the effects of exposure to campaign materials on awareness and practice. Exposure data will be collected from media channels, campaign partners, survey data, and the National Clearinghouse on folic acid activities. Outcomes will be ascertained from telephone surveys of distinct audiences of women of reproductive age, including women contemplating a pregnancy and Spanish-speaking women. These data will allow comparison of awareness and practices between contemplators and non-contemplators across high-exposure and low-exposure markets in order to determine whether campaign exposures appear to have influenced relevant outcomes. Since Hispanic women have a higher risk for having a pregnancy affected by an NTD, the impact of culturally-specific materials and media outreach oriented to Spanish-speakers will be separately evaluated. Baseline data on attitudes and practices relating to folic acid will also be collected for this important population group. In addition to a final outcome evaluation and recommendations for future health communication efforts, intermediate results will be used to refine efforts during the remainder of the campaign.

2. TITLE: Evaluation of Targeted Health Communication Messages: Folic Acid & NTDs

3. BACKGROUND: In September 1992, the Public Health Service recommended all women of reproductive age consume supplements containing 400 micrograms of folic acid. Studies suggest a 50 to 70% reduction in risk of neural tube birth defects if folic acid is consumed prior to and during early pregnancy. To prevent as many birth defects as possible, all women capable of becoming pregnant should consume folic acid. CDC's Government Performance and Results Act (GPRA) objective for folic acid is that 50% of women will consume 400 micrograms of folic acid per day by 2002, with intermediate targets of 35% in 1999, 40% in 2000, and 45% in 2001. In order to reach these goals, the Birth Defects Branch formed and partnered with the National Council on Folic Acid (NCFA) to launch a two-tiered national folic acid campaign. The first component seeks to educate women directly about the benefits of folic acid and to motivate them to consume adequate amounts. The second campaign component focuses on educating health care providers and motivating them to encourage female patients to consume folic acid. Extensive formative research undertaken by CDC has resulted in the development of health communication materials targeted to English-speaking women, Spanish-speaking women, and health care providers. Campaign materials will be distributed to Council members in January 1999 and then disseminated by members to their state and community affiliates. The national campaign will be launched in March 1999. The CDC currently supports a survey conducted by March of Dimes/Gallup (the MOD/Gallup survey) that tracks national trends in supplement use, but these data are not adequate to evaluate the effects of folic acid communication materials. No data are available for Spanish-speaking women. To evaluate the impact of the folic acid campaign on awareness and consumption of folic acid, it is necessary to collect information on exposure to

folic acid messages in various parts of the country and in different target groups (the Expanded Survey). The results of the evaluation will be disseminated to campaign partners and used to refine campaign efforts.

4. EVALUATION PURPOSE: The purpose of this evaluation is 1) to assess the “reach” of the folic acid education and outreach campaign through a process evaluation that measures level of exposure to folic acid messages from a variety of channels, 2) to link these process indicators to changes in reported knowledge, attitudes and behaviors through a comparison of the knowledge, attitudes and behaviors of women living in high and low exposure areas, 3) to expand our ability to assess the effectiveness of the campaign among Spanish-speaking Hispanic women through conducting baseline and follow-up surveys, and 4) to more closely link our evaluation efforts with the behavioral science concepts and research that were used to develop the campaign by focusing on two behaviorally-defined target groups (pregnancy contemplators and non-contemplators). This information may be used to redirect resources towards channels that appear to be most effective in reaching desired target groups. It may also be used to put more effort into achieving penetration for channels that have less effective exposure than expected. The results of the evaluation, together with other data, will be used to calculate the cost-effectiveness of the national campaign. Finally, because this will constitute the first large-scale quantitative evaluation of a CDC health communication campaign, it is anticipated that the results will be useful in designing future health communication campaigns for other CDC programs.

5. EVALUATION DESIGN & METHODOLOGY:

Questions this evaluation seeks to answer, and major steps in the evaluation:

1) *To what extent were women potentially exposed to the folic acid campaign through media and non-media sources?* This question is the core of the process evaluation, and will be accomplished through a variety of mechanisms. Exposure to public service announcements (PSAs) on TV will be tracked through a sigma-encoded satellite tracking system, PSAs on radio through bounce-back cards and random telephone surveys of station managers, and print PSAs through a timed media clipping service. Reports on community and state-based activities will be collected from NCFAs members and from the National Folic Acid Clearinghouse (operated by CDC). The MOD/Gallup survey and the Expanded Survey on folic acid will also be used to assess exposure to non-media sources, such as health care providers, personal contacts and formal education. Budget for this component of the evaluation is \$45,000 for FY99 and \$50,000 in FY00. Initial process evaluation will be conducted during the 2nd-4th quarters of 1999, and as needed in 2000.

2) *What is the prevailing knowledge, attitudes and behaviors about pregnancy, folic acid and birth defects among Spanish-speaking women of childbearing age?* This question will be answered by translating the MOD/Gallup survey on folic acid (with back-translation and testing for cultural specificity), and conducting a random-digit dialed survey of a representative sample of Spanish-speaking women ages 18-35 (N=500). To ensure an adequate number of responses, this survey will be undertaken in communities with large Spanish-speaking populations. This survey will establish a baseline to measure the effectiveness of this campaign in influencing the knowledge, attitude and behaviors of these women. This survey will be similar to the expanded

survey described below in that it will contain questions regarding pregnancy intentions that will enable the population to be stratified into pregnancy contemplators and non-contemplators, and will also include questions regarding the sources of information about folic acid. The results of the process evaluation will be used to guide over-sampling in high and low exposure areas. Once the baseline has been established, the survey will be repeated 3 times following the release of campaign materials. The initial baseline survey will be undertaken as soon as possible in 1999, and a follow-up survey will take place later in 1999 and will be repeated in 2000 and 2001. Budget for this component of the evaluation is \$105,000 in FY99 and \$60,000 in FY00 and FY01.

3) What do women of reproductive age report as their sources of information about folic acid? What, if any, are the effects of the campaign on knowledge and/or reported behavior related to folic acid? What, if any, are the differences on reports of knowledge and behaviors between a) high and low campaign exposures, b) English- and Spanish-speaking populations, and c) pregnancy contemplators and non-contemplators? The Expanded Folic Acid Survey (N=2,000) containing questions regarding sources of information will be conducted in three consecutive years, concurrent with the folic acid campaign. These data can be compared with the baseline data from the MOD/Gallup survey as well as the baseline data from Spanish-speaking women gathered as part of this evaluation. The data regarding self-reported behavior will be adjusted for factors identified in a separate on-going study that compares self-reports of behavior with blood folate levels. In order to enhance the linkage of this evaluation with the underlying behavioral science concepts and research that were used to design the campaign, the Expanded Folic Acid Survey will also include questions about pregnancy intentions to allow for comparisons between pregnancy contemplators and non-contemplators. Changes in awareness are expected to have a more immediate effect on practice among contemplators. The results of the process evaluation will also be used to allow for over sampling of women residing in geographic areas with high and low exposure to the campaign messages to allow for comparisons based on exposure categories. The budget for this component of the evaluation will be \$100,000 in FY99, \$110,000 in FY00 and \$190,000 in FY01, with the latter amount including additional data analysis and report writing. The survey will be conducted in each year, concurrent with the campaign.

Standards of evidence: To judge the results of the process evaluation, the media tracking results will be compared to PRIZM and other geocoded media market databases tied to the National Census, and will be used to construct a standardized index of media exposure. Non-media exposures will be measured in part through reports from Council members regarding the activities of their state and local affiliates and through the National Clearinghouse. T-tests will be used to compare outcomes between the top and bottom quartiles of the exposure index. In addition, tests for linearity will be used to assess associations with exposure measured as continuous variables. Women who are aware of the folic acid message report the source(s) of that information through their survey responses. Analyses of differences in these reports will help identify which sources of information are more likely to be remembered by women in each of the various target audiences. The effects of reported exposure to folic acid information on awareness and behavior (self-reports of folic acid consumption) will be assessed by significance tests of differences in these outcomes relative to variation in exposures. Satisfactory performance of the campaign will be assessed by finding significant differences in folic acid awareness between high- and low-exposure markets

among all groups of women, and significant differences in behaviors among women contemplating a pregnancy.

Parties expected to use the information: The primary users of the information from this evaluation will be the members of the NCFA (see attached membership list and letters of support), who will use this information to revise and refine efforts. Identification of potential areas for improving results can be used to recruit additional partners who can help provide needed expertise. As is indicated in the letters of the support, the members of the NCFA are already involved in the development of this proposal. Feedback will be solicited during all phases of the evaluation through regular discussions conducted by mail, phone, fax, e-mail and via a web site, in addition to regular NCFA meetings and conferences. Additional users of the information include: state and local health departments, CDC-supported Centers for Birth Defects Prevention and Research, and members of the Birth Defects Prevention Network. Information will be provided to these users through CDC's National Clearinghouse on folic acid and birth defects prevention. CDC will also undertake a cost-effectiveness analysis of the campaign on the basis of evaluation results, cost data collected from partners and contractors, and previous research on costs of spina bifida and the effectiveness of folic acid in preventing NTDs. Other programs at CDC may also want to take advantage of the information gathered through this evaluation, and information will be shared through CDC's Office of Communication's use of this evaluation as a case study, and directly with CDC groups such as the Behavior and Social Science Working Group and the Communicators Roundtable. To ensure that findings can be used and applied in other settings, results will also be published in peer-reviewed journals in the behavioral science and health communications fields, and presented at conferences and meetings. The women who participate in the evaluation will also benefit from their participation; in addition to receiving all information about the evaluation, they will be provided with a toll-free number in English and/or Spanish to call for additional information about folic acid and birth defects prevention.

6. EVALUATION MANAGEMENT:

- a. Because the outreach and education campaign is national, this evaluation will use a nationally representative sample. Results of the process evaluation will allow identification of high and low exposure, and these areas will be over-sampled to allow for comparisons between the two groups.
- b. NCEH does not have the personnel resources required to conduct this evaluation, which requires special expertise in evaluation of communications-based interventions and survey research. For the Spanish-language component of the evaluation, a Hispanic-owned and operated contractor will be involved to ensure cultural competence. NCEH staff will serve as technical monitors of the evaluation contract, and on-going NCEH research will be incorporated into the evaluation as appropriate (for example, the results of an on-going study comparing self-reports of folic acid consumption with measurement of blood folate levels will be used to adjust and validate self-reported data gathered in this evaluation).
- c. This evaluation will be carried out by a contractor with specific expertise in the evaluation of health communications campaigns. As mentioned above, a Hispanic-owned and operated market research firm will be involved.

d. Staff from CDC's Office of Communication will play an integral role in this evaluation. Members of the NCFA will be involved in all aspects of the evaluation. USDA is another Federal agency who is a member of the NCFA; invitations have also been issued to the FDA and HRSA.

e. This evaluation is the logical next step in the folic acid education and outreach campaign, and builds on existing MOD/Gallup survey data that can be used to assess national trends in knowledge, attitudes and behaviors related to folic acid and birth defect prevention. On-going efforts to correlate self-reports of folic acid with blood folate measures will also be incorporated.

f. OMB approval will be necessary for the expanded survey, as well as for the follow-up surveys of Hispanic women.

g. There is no need for pre-rulemaking activity.

h. Katherine Lyon Daniel, Ph.D., Division of Birth Defects & Developmental Disabilities, (770) 488-7182.

7. PROJECT COST:

Table 7a & 7b. Extramural expenditures FY 1999-2000--1% evaluation funds and NCEH funds*

Extramural	Personnel	Travel	Other costs	Total
FY 1999	\$84,940 (1%)	\$9,000 (1%)	\$156,020 (1%) \$100,000 (NCEH)	\$249,960 (1%) \$100,000 (NCEH)
FY 2000	\$77,315 (1%)	\$5,000 (1%)	\$135,920 (1%) \$100,000 (NCEH)	\$218,240 (1%) \$100,000 (NCEH)
FY 2001	\$87,050 (1%)	\$9,000 (1%)	\$153,000 (1%) \$100,000 (NCEH)	\$249,050 (1%) \$100,000 (NCEH)

*NCEH funds support ongoing March of Dimes-Gallup national telephone folic acid survey

Table 7c. NCEH in-house resources for FY 1999

Project Manager (0.2 FTE, \$16,888)	Statistician (0.05 FTE, \$3,931)
ATPM Fellow (1.0 FTE equivalent, \$49,000)	Support Staff (0.05 FTE, \$1,919)

Total NCEH in-house resources for FY 1999, 1.3 FTEs and \$71,738.

8. LETTERS OF SUPPORT: See attachments

Attachment:

1998 Members of the National Council on Folic Acid:

American Academy of Family Physicians
American Academy of Pediatrics
American College of Obstetricians and Gynecologists
American College of Physicians-American Society of Internal Medicine
American Dietetic Association (*as of 12/98*)
American Nurses Association
American Pharmaceutical Association
Association of Maternal and Child Health Programs
Association of State and Territorial Health Officials
Association of State and Territorial Public Health Nutrition Directors
Association of Women's Health, Obstetric, and Neonatal Nurses
Centers for Disease Control and Prevention
March of Dimes Birth Defects Foundation
National Coalition of Hispanic Health and Human Services Organizations
National Healthy Mothers, Healthy Babies Coalition
Shriners Hospitals for Children
Spina Bifida Association of America
United States Department of Agriculture