CFDR Letter of Intent

Area of support addressed:

Identification of vulnerable groups and their nutritional needs

Names and affiliation of all project investigators, as well as DC membership numbers:

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Title of project:

A comparison of dietary folate intake of older adults before and after mandatory fortification of grain products with folic acid in Canada

Research project objective:

To determine whether fortification of food with folic acid allows older adults in the KFL&A Health Unit area to obtain adequate amounts of folate from food sources.

Rationale why project is important:

In 1990, Health Canada recommended that older adults consume 195-230 mcg folate per day (1). In 1998, the recommendations for older adults increased substantially (2). The Recommended Dietary Allowance for individuals increased to 400 mcg dietary folate equivalents (DFE) and the Estimated Average Intake for older adults groups was set at 320 mcg DFE. In addition, the units of measure for folate changed from mcg to DFE, making analysis of dietary intake more complex.

Prior to mandatory fortification of food with folic acid, many older adults did not obtain 320 mcg dietary folate equivalents (DFE), the average requirement for this age group (2). Data from surveys conducted in Quebec and Nova Scotia show average folate intake for adults 65 years of age

and older to be 180-254 mcg per day (2). Average folate intake of a sample of older adults living in the KFL&A Health Unit area ranged from 232 to 280 mcg (3).

In 1998, Health Canada made addition of folic acid to flour and bread mandatory (4). Although addition of folic acid to cornmeal, pasta, and rice is optional, most brands of cornmeal, pasta, and pre-cooked rice available in Canada are fortified (Josie Deeks, personal communication). Commercial breakfast cereals may also be fortified with folic acid.

According to US estimates, mandatory fortification of foods with folic acid is expected to add an additional 70-120 mcg folic acid or 119-204 mcg DFE to the diet of middle-aged and older adults (5). If this estimate is true for older adults in Canada, average intakes may exceed the 320 mcg DFE recommended. But we have no data reporting actual intakes of older adults so whether or not these estimates of intake apply to older adults in Canada is not known. This proposed research will answer this question for a sample of older adults in the KFL&A Health Unit area.

Description of approach/methodology for project:

Food intake data were collected from a convenience sample of 103 community-dwelling older adults living in the area served by the KFL&A Health Unit between October 1997 and July 1998. Three 24-hour recalls were used to estimate usual dietary intake following the method described by Payette, Gray-Donald, Cyr, et al. (6). The first 24-hour recall was collected at a face-to face interview with a registered dietitian. The two remaining recalls were collected by the same dietitian by telephone within two weeks, including one weekday and one weekend day. Two-dimensional models were used to assist with portion-size estimation for both the face-to-face and telephone interviews (7).

Diet recalls were analyzed using Food Processor with the Canadian Nutrient File (CNF) (Version 7.2, ESHA Research, Salem, Oregon, 1998) and 3-day average folate intake determined. A dietitian analyzed all recalls. Substitution protocols were applied consistently to all recalls when the food consumed was not available in the database.

We propose re-analyzing the food recall data already collected from 103 older adults in the KFL&A Health Unit area. When the older adults consumed a food that was not previously fortified with folic acid but is now fortified, we will substitute the new value to estimate DFE. For this re-analysis, we will use the CNF that reflects folic acid fortification (Josie Deeks, personal communication). We will compare these intake data with data obtained when the food recalls were analyzed using values from the 1997 CNF (Version 7.2, ESHA Research, Salem, Oregon, 1998) that do not include mandatory folic acid fortification values. With the exception of commercial breakfast cereals, all folate in the 1997 CNF will be assumed to be in the form of food folate so that mcg folate will be equal to mcg DFE. Prior to 1998, some breakfast cereals were fortified with folic acid. For this reason, we will need to adjust existing data for those older adults in our sample who consumed commercial breakfast cereals fortified with folic acid to reflect the greater bioavailability of folic acid (Josie Deeks,

personal communication).

When folate intake data from the original analyses are converted to DFE, we will be able to make direct comparisons with re-analysis data reported in DFE. Our original data also include information about risk factors for poor dietary intake and demographic data. This will allow us to compare DFE intakes of various sub-groups in the sample.

How long project will take to complete, timelines for different phases of project:

July-August 2002

Analyze 24-hour recalls	80 hours
Mean DFE data entry and analysis	35 hours

July-December 2002

Principal and Co-Investigator will train research assistant, monitor data analysis, and prepare a final report for CFDR

June 2003

Principal or Co-Investigator will present results at the CFDR Research Event.

Proposed Budget:

Research assistant 115 hours @ $20.90 per hour	$2403.50
Computer software (Lotus 123, SPSS)	$400.00
Office supplies (paper, photocopying)	$50.00
CFDR research event in 2003	$300.00
Agency overhead @ 10%	$315.35
Total:	$3468.85

Significance /relevance of project findings to dietetic practice

Data available prior to mandatory food fortification with folic acid suggest many older adults consume inadequate amounts of folic acid. Dietitians need to know how much folic acid older adults are consuming now that more foods are fortified. If intakes are less than recommended, dietitians need to suggest ways for older adults to increase folate. Evidence that folic acid may reduce the risk for cardiovascular disease, certain types of cancer, and psychiatric and mental disorders serves to emphasize the importance of ensuring that older adults consume adequate amounts of folate.

Consumption of excess folic acid is a concern for older adults who have pernicious anaemia or vitamin B12 deficiency. The 1998 recommendation cautioned about intakes of folic acid exceeding 1000 mcg (2). While this level of intake is unlikely from food sources alone, it is possible from supplements or food in combination with supplements. Dietitians need to know how much folic acid

older adults are consuming in order to provide appropriate advice regarding supplement use.

References

1. Health and Welfare Canada. Nutrition recommendations. Report of the scientific review committee, 1990.

2. Institute of Medicine. Dietary reference intakes for thiamin, riboflavin, niacin, vitamin B6, folate, vitamin B12, pantothenic acid, biotin, and choline. Washington, DC: National Academy Press, 1998.

3. DeWolfe J, Millan K. Dietary intake of older adults in the Kingston, Frontenac and Lennox & Addington Health Unit Area. Can J Diet Prac Res (under review).

4. Health Canada. Regulations amending the Food and Drug Regulations (1066). (Internet). Ottawa, ON: Bureau of Food Regulatory, International and Interagency Affairs, 4 September 1998, 1-9. (Cited 11 October 2001). Available from: http://www.hc-sc.gc.ca/food-aliment/english/subjects/dietary_reference_intakes/folic_acid_fortification.htmlfortification

5. Jacques PF, Selhub J, Bostom AG, et al. The effect of folic acid fortification on plasma folate and total homocysteine concentrations. New Engl J Med 1999;340:1449-1454.

6. Payette H, Gray-Donald K, Cyr R, et al. Predictors of dietary intake in a functionally dependent elderly population in the community. Am J Public Health 1995;85:677-683.

7. Posner BM, Borman CL, Morgan JL, et al. The validity of a telephone-administered 24 hour recall methodology. Am J Clin Nutr 1982;36:546-553.