

POSTER 1- CATEGORY:DATABASES IN EPIDEMIOLOGICAL STUDIES

FOLATE FORTIFICATION OF BREAD AND GRAINS: INTAKE OF THE ELDERLY IS AFFECTED BY FOOD SOURCES OF FOLATE. K.M. Koehler, S.L. Pareo-Tubbeh, L.J. Romero, R.N. Baumgartner, P.J. Garry, Univ. of New Mexico School of Medicine, Albuquerque, NM.

Folate fortification of breads & grains will be implemented to prevent neural tube birth defects. This could be a risk for the elderly by masking possible vitamin B-12 deficiency or a benefit by improving folate status & preventing elevated serum homocysteine, a vascular disease risk factor. The purpose of this study was 1) to examine folate food sources in the elderly, 2) to project the effect of fortification on mean folate intake. Subjects were 118 men & 190 women, volunteers, age 65-94y. A food frequency, the Health Habits & History Questionnaire (HHHQ), was interviewer administered and analyzed using VEGADJ & FRUITADJ options for each food item, mean folate intake was computed and items were ranked as folate sources. Effects of proposed regulations were estimated by increasing folate levels per 100g of bread & grains in the ranked folate sources. Mean folate intake from food was 299.6+5.8 (µg/d(SEM)). Foods providing 60% of folate were orange juice 15%, bran cereal 10%, highly-fortified cereal 8%, other cereal 7%, salad 6%, dark bread 5%, beans 3%, broccoli 3%, white bread 2.3%. Folate contributions of food groups were: breakfast cereals 26%, vegetables 23%, fruits 21%, refined breads & cereals 6.7%. Mean folate intake would increase 16.5% with fortification of white bread/grains. For NHANES II adults, age 19-74, white bread ranked higher and breakfast cereals lower as folate sources. Mean intake would increase 28.3% from fortification of breads/grains. A fortification policy can have different effects in population groups with different food sources. Supported by NIH AG-02049, AG-11049

POSTER 2- CATEGORY:DATABASES IN EPIDEMIOLOGICAL STUDIES

ASSESSMENT OF FISH CONSUMPTION AMONG ASIAN-ORIGIN SPORTFISHERS ON THE ST. LAWRENCE RIVER IN THE MONTREAL REGION. T. Kosatsky, B. Shatenstein, N. Kishchuk, M. Tapia, J-P Weber, S. Lussier-Cacan, Y. Marchand. Montreal Regional Public Health Board. Environmental Health Unit. Montreal, Quebec CANADA.

Freshwater sportfish consumption may contribute both to dietary benefit and hazardous chemical exposure. As recent Asian immigrants may consume relatively high levels of whole fresh and dried fish, a pilot study was conducted in a small sample of Montreal's Vietnamese and Bangladeshi immigrant sportfishers. Preparatory steps were undertaken to render existing questionnaires (developed for a concurrent risk-benefit sportfishers assessment study) culturally-relevant, and to prepare for the analysis of foods not found in the 1991 Canadian Nutrient File (CNF). A research dietitian worked with a resource person from each community on grocery and restaurant field studies of group-specific food purchasing and consumption habits, to provide data on food - especially fish - preferences and preparation practices. Such information was used to derive fish species lists for a "Brief Fish Frequency Questionnaire", incorporated into the main study instrument, and contributed to administration and interpretation of the two 24-hour recalls. Community resource people were on hand during interviews to help with possible language difficulties. Participants were loaned POLAROID™ cameras, and instructed to photograph all foods and beverages consumed on the days preceding interview and food recall visits. British and Asian nutrient databanks provided ancillary culture-specific food composition data, often obtained from researchers on the Internet. Recently published Chinese and Bangladeshi tables were a valuable source of food and nutrient data, added as required to the "user file" utility, an adjunct to the CNF database in the *NUTRIENT ANALYSIS PROGRAM*. Finally, a series of 26 fish models was designed to represent fish fillets and steaks sold in Montreal fish markets. Equations based on published fish density factors permitted calculation of the portion weight subsequently entered for nutrient analysis. Results indicate that these fishers maintain their cultural dietary habits, and that their fishing habits, fish preparation and consumption practices differ both from the general population of Montreal-area sportfishers, and from one another.

POSTER 3- CATEGORY: DATABASES IN EPIDEMIOLOGICAL STUDIES

ESTIMATED VITAMIN B-12 VALUES FOR FOODS ON A FOOD FREQUENCY, THE HEALTH HABITS AND HISTORY QUESTIONNAIRE. Shirley L. Pareo-Tubbeh, M.S., Richard N. Baumgartner, Ph.D., Linda J. Romero, M.D., Philip J. Garry Ph.D., Kathleen M. Koehler, Ph. D., Clinical Nutrition Program, University of New Mexico School of Medicine, Albuquerque, NM.

Assessment of vitamin B-12 intake is important in the elderly in light of malabsorption of vitamin B-12 due to atrophic gastritis and pernicious anemia. Food frequency questionnaires are valuable for assessing usual dietary intake with little respondent burden. A well-known food frequency, the Health Habits and History Questionnaire (HHHQ), does not provide vitamin B-12 values. The objectives of this study were 1. to estimate vitamin B-12 values for foods on the HHHQ and 2. to look at the performance of the estimated vitamin B-12 values. Vitamin B-12 content for each food in the HHHQ database was estimated from USDA databases. Weighted averages were taken when more than a single food was combined on the HHHQ. Food frequencies and 3-day diet records were collected from 297 elderly volunteers age 65-95 participating in the New Mexico Aging Process Study. The food frequencies were interviewer-administered and analyzed using version 3.7 HHHQ software; the 3-day diet records were analyzed using version 2.3 of the Food Intake Analysis System (FIAS). Each food from the HHHQ was ranked as a source of vitamin B-12. Top sources of vitamin B-12 were liver (19.8%), 2% milk (9.0%), skim milk (8.6%), and highly-fortified cereals (8.4%) of total vitamin B-12 intake. Mean intake from the HHHQ was $4.43 \pm 2.49 \mu\text{g}$ (SD) and from diet records was $5.21 \pm 6.21 \mu\text{g}$ (SD), not significantly different by paired t-test (Wilcoxon signed rank test), $p=0.88$. Vitamin B-12 intake from the HHHQ and from diet records were correlated significantly, Spearman's $r=0.34$ ($p<0.00001$). Our estimated values for vitamin B-12 on the HHHQ gave reasonable results for food sources and comparison with diet records. These estimates of vitamin B-12 intake will be useful in research on nutrition and aging. (NIH AG-02049 and AG-10149)

POSTER 4- CATEGORY: NUTRIENT VARIABILITY

FAT AND FATTY ACID CONTENT OF SELECTED FOODS CONTAINING TRANS-FATTY ACIDS. J. Exler, L. Lemar and J. Smith Nutrient Data Lab., ARS, USDA, Riverdale, MD 20737.

Selected foods were analyzed for fat and fatty acid content under contract with the Nutrient Data Laboratory. Samples were analyzed by capillary gas-liquid chromatography; the studies were monitored for quality control. Files containing the following information have been released on the Nutrient Data Laboratory Bulletin Board and the Internet: data sources, descriptions of 214 food items, listings of added fat as ingredients declared on the food labels, and nutrient values for total fat, individual fatty acids (including *trans*-fatty acids), other fatty acids not listed individually, and fatty acid classes. Comparisons of data for different brands of the same food, for the same food and brand analyzed by different labs or for the same lab at different times, and for similar products with different ingredients show data variability. Some suggestions for possible aggregation of the data and for its use in assessing the dietary intake of *trans*-fatty acids will be made.

POSTER 5- CATEGORY: NUTRIENT VARIABILITY

CARBOHYDRATE DATA FOR SELECTED FOODS IN USDA'S NATIONAL NUTRIENT DATA BASE. K. W. Andrews and P. R. Pehrsson. U.S. Department of Agriculture, Riverdale, Maryland 20737.

The Nutrient Data Laboratory (NDL), Agricultural Research Service, conducts food composition research to provide representative estimates for more than 50 nutrients for almost 7,500 foods. These data are disseminated in electronic form (USDA Nutrient Data Base for Standard Reference), in special purpose tables and in research reports. These data are also the basis of the USDA Survey Nutrient Data Base and are used for clinical and epidemiological research, product development, and government nutrition policy and regulation. Currently, total carbohydrate data are calculated by taking the difference between 100 and the sum of the values for water, protein, total fat and ash. Total dietary fiber (TDF) values are reported for most foods while individual sugar data are available for selected foods. In response to increased interest by database users in additional individual carbohydrate fractions, NDL is updating and expanding its carbohydrate database beginning with major nutrient contributors (Key Foods). Recently, over 50 Key Foods were analyzed for starch, total sugars and TDF--the major carbohydrate fractions. In addition, these foods were analyzed for individual sugars (mono- and disaccharides) and soluble and insoluble dietary fiber. In this presentation, the sampling plan and sample preparation procedure for each food type are described. Individual carbohydrate values are reported and their methods of analysis discussed.

POSTER 6- CATEGORY: NUTRIENT VARIABILITY

CONSUMPTION OF READY-TO-EAT CEREALS AND ITS EFFECT ON SELECTED NUTRIENTS AND FOOD GROUP INTAKE. N.K. Sinha, W.O. Song, S.H. Cash, and J.N.Cash, Dept. of Food Science and Human Nutrition, Michigan State University.

This study was to examine the consumption patterns of ready-to-eat (RTE) cereals and its effect on selected nutrients and food group intake. Dietary intake data of basic (all income, n = 2349) and low (n = 1133) income population completing 3 days recall from the 1990 Continuing Survey of Food Intakes by Individuals (CSFII-1990) were analyzed by age, gender and income. Intake of RTE was reported by 45% of population; > 80% of children (4-6 yrs), about 70% of young adolescent (11-14 yrs, male) and the lowest rate (32%) of adults (25-50 years, both gender). The average daily intake of RTE cereals (basic income) ranged from: 25 g to 29 g, 26 g to 30 g, and 38 g to 40 g for children (4-10 yrs), adult females and males, respectively. The average intake/meal (aggregated by age and gender) of food energy, fat, dietary fiber, folate, calcium and iron with RTE cereals was: 169 kcal, 2 g, 3 g, 168 µg, 33 mg, and 8 mg; and without RTE cereals: 130 kcal, 5 g, 1 g, 15 µg, 56 mg, and 1 mg, respectively. Correlation analyses showed low but significant associations (p<0.01) between RTE cereals consumption and meat group (r = 0.16), milk and milk products (r = 0.21) and total grain products (r = 0.10) intake. Little associations were observed between RTE cereals and fruits, and vegetables group intake. Individuals consuming RTE cereals had significantly higher intake of dietary fiber, folate and iron. Nutrient and food group intake patterns of various age, gender and income will be presented.

POSTER 7- CATEGORY: SURVEY METHODOLOGIES

NEW METHOD FOR PROCESSING FOODS WITHOUT SURVEY CODES IN THE 1994 CONTINUING SURVEY OF FOOD INTAKES BY INDIVIDUALS (CSFII). Linda A. Ingwersen, Amy L. Green, Amy Tong, Ellen Anderson, and Martha Berlin, USDA-ARS AND WESTAT, INC.

In the first year of data collection for the United States Department of Agriculture's (USDA) 1994-96 Continuing Survey of Food Intakes by Individuals (CSFII), 10,900 24-hour dietary recalls were reviewed, coded and electronically transmitted by Westat, Inc. to the Agricultural Research Service (ARS) of USDA. Food coders used a computer-assisted food coding system, Survey Net, to match survey respondents' reports of food descriptions and amounts eaten to the survey food coding data base. Survey Net accesses codes, recipes, and nutrient profiles of over 7,000 foods. However, foods reported in the survey did not always match food codes present in the data base. In the CSFII 1994, these foods were called unknowns. Unknowns were often foods new to the market, ethnic or brand-name foods, as well as one-of-a-kind food mixtures. To process unknown foods consistently and efficiently, ARS added a unique processing feature to Survey Net--a special holding file for unknown foods. Coders entered an unknown food's description and amount as reported on the 24-hour recall, along with the closest existing survey code, in this file. Survey Net assigned the entry a unique identification number that served as a temporary food code. Coders used this number if the same unknown food was reported again. Unknown foods were reviewed by Westat supervisors prior to being sent to ARS for resolution. ARS resolved unknowns by using existing food codes, by modifying survey recipes, or by creating new survey codes that were provided in data base updates. To resolve the unknown foods, ARS sometimes required additional information obtained from market checks conducted by CSFII interviewers. This new method of processing unknown foods was an improvement over time-consuming procedures used in past surveys and contributed to the prompt release of survey data.

POSTER 8- CATEGORY: SURVEY METHODOLOGIES

COMPARISON OF FOOD AND NUTRIENT INTAKES AS MEASURED BY TWO SIMILAR FOOD FREQUENCY INSTRUMENTS IN AN HISPANIC POPULATION. Patricia Pillow, Rosie Gonzalez, Richard A Hajek, Sara A Gomez, Janice Chilton, Margaret Spitz, Lovell A Jones, UT M.D. Anderson Cancer Center, Houston, TX.

The diets of Hispanic populations in the U.S. differ in important ways from the diets of other groups. In response, food frequency instruments such as The National Cancer Institute's Health Habits and History Questionnaire (HHHQ) have been modified to accommodate regional Hispanic foods. The Arizona Cancer Center's Southwestern Food Frequency Questionnaire (ASFFQ) was initially based upon HHHQ and is currently being used in the Dietary Assessment in Hispanics and Breast Cancer Study in Houston. Another study conducted in the Houston area, Ecogenetics of Lung Cancer in Minorities (REQUEST), used a modified version of NCI's HHHQ questionnaire with additional foods popular among Hispanics in Texas. These foods were added to HHHQ based upon foods reported on twenty-four hour recalls of local Hispanics (a sample of convenience) and food intakes as reported in other studies conducted in Texas. Although both food frequency questionnaires were initially based upon the HHHQ questionnaire, certain foods are unique to each instrument. Dietary intakes of twenty-two Hispanic women in Houston, as measured by both the ASFFQ and REQUEST instruments will be compared. Similarities and differences in nutrient and food intake as measured by the two instruments will be explored.

21ST NATIONAL NUTRIENT DATABANK CONFERENCE POSTER ABSTRACTS

POSTER 9- CATEGORY: SURVEY METHODOLOGIES

NUTREINT DATA ACQUISITION AND QUALITY ASSURANCE INITIATIVE. Laura Winter Falk, M.S., R.D., The CBORD Group, Inc., Ithaca, New York, Carla C. Heiser, M.S., R.D., Indiana University School of Medicine GCRC Indianapolis, Indiana.

Responding to a need to develop a national food data clearinghouse, The CBORD Group has proposed to undertake a Small Business Innovation Research (SBIR) project, under the auspices of the USDA. The purpose of this project is to perfect the methodology for collection and dissemination of data to interested parties utilizing a data clearinghouse model. CBORD will develop standardized algorithms, rule sets and a computer system that will facilitate the acquisition, validation ("QA") and dissemination of nutrient data. Beginning with nutrient databases from the USDA, CBORD will build a master nutrient dataset incorporating quality assured data from manufacturers. The system will facilitate creation of database subsets that are currently available in the marketplace, including databases structured to meet the specific and diverse needs of nutritional researchers, food scientists and manufacturers. A metabolic database will be the beta test of the proposed methodologies and algorithms for quality assuring existing nutrient data and acquired analytic reports. Analytic values from SR10, PDS and provisional tables will be the foundation the metabolic database. Missing values will be completed by coordinating unpublished analytic data from manufacturers and academicians not available at the USDA, imputing nutrients from known values of similar foods and by calculating or interpolating data. Foods selected for the metabolic database will include raw food values, and foods selected as being universally accepted by diverse populations. The beta test would lay the foundation for an interactive database that will be made available on a worldwide network. This product will facilitate perpetual growth through academic, industry and government participation. This project will lower costs to manufacturers of distributing nutrient data, allow them to forward calculate, combined ingredients 'recipes' from analytic values, lower software developers database maintenance costs, and lower USDA's cost of keeping current.

POSTER 10- CATEGORY: SURVEY METHODOLOGIES

MODIFICATIONS TO VEGETABLE RECIPES IN THE CONTINUING SURVEY OF FOOD INTAKES BY INDIVIDUALS (CSFII) 1994. Islam, N., Steinfeldt, L., McPherson, R.S., Douglass, D., Anand, J., and Ingwersen, L., University Of Texas-Houston School of Public Health and USDA-ARS.

The use of a computer assisted food coding system, Survey Net, in the CSFII 1994 facilitated the coding of all foods reported by 5589 sample persons who contributed a total of 10,900 24-hour dietary recalls. A recipe modification feature in Survey Net allowed ingredients within predefined survey recipes to be changed to match the food reported by sample persons. Within the vegetable group, modifications were created if sample persons reported the use of a fat, milk, or cheese to cook or prepare the food that differed from the survey recipe. As modifications were created, a unique 6 digit code was assigned which linked to the 8-digit survey code modified. This procedure, in effect, expanded the food coding data base, the recipe data base, and the nutrient data base. About 800 different survey codes represented the variability in the consumption and preparation of vegetables among survey participants in the CSFII 1994. Of these, recipes for 180 survey codes were modified at least once, resulting in about 550 unique recipe modifications. The vegetable recipes most often coded as modifications of the survey recipe were mashed potatoes made with milk and fat, home fries, and green beans cooked with fat. The creation and coding of survey modifications provided an efficient way of reflecting differences in the preparation and cooking of vegetables, without the effort involved in the creation of 550 permanent 8-digit survey codes.

POSTER 11- CATEGORY: SURVEY METHODOLOGIES

DEVELOPMENT OF A PRICE DATABASE FOR THE CSFII 89-91 FOODS. S. A. Bowman and J. Hirschman. U.S. Department of Agriculture, Center for Nutrition Policy and Promotion, Washington, DC.

The USDA Continuing Survey of Food Intakes by Individuals (CSFII 1989-91) does not have information on the cost of individual foods items purchased and brought into homes. Therefore it is not possible to estimate how much a person spends on foods they consume. A methodology was developed to estimate the price of foods in the form as reported consumed in the survey. The foods reported consumed in the survey were identified. The foods were disaggregated to their final ingredient forms using the Survey Recipe File. The ingredients were converted to their "purchased" form. Foods such as milk, canned foods, soft drinks, fruit juices, ready-to-eat cereals, cookies, and spices that could be purchased in the form present in the recipe were separated from the other ingredients. Cooked foods such as boiled eggs, rice, pasta, meat, and vegetables were converted to their raw weight equivalents by using conversion factors. Information on yield and moisture content of foods needed to compute the conversion factors were compiled from Agriculture Handbooks No:8 and No:102 by the staff of Nutrition Policy and Analysis of the USDA Center for Nutrition Policy and Promotion. Two types of conversion factors were then computed using different sets of algorithms. The first conversion factor adjusted for loss or gain in weight due to cooking. For example steamed vegetables were converted to raw, prepared forms; and boiled eggs were converted to raw eggs without shell. The second conversion factor adjusted for the preparation waste. This factor converted peeled raw potatoes to potatoes with peel, and raw eggs to shell eggs. National average prices for the food ingredients in "purchased" form for the years 1989, 1990, and 1991 were assigned by the USDA Economic Research Service based upon data from A. C. Nielsen, Bureau of Labor Statistics, Agriculture Marketing Service and National Marine and Fisheries Databases. The prices were converted to a 1000 gram basis. The ingredients with prices were reaggregated back to foods in the form reported consumed to give foods with prices for the three years separately. This database is useful to study the cost of nutritious diets.

POSTER 12- CATEGORY: SURVEY METHODOLOGIES

CLASSROOM INSTRUCTION AND WRITTEN MATERIAL HELPED PARTICIPANTS KEEP 3-DAY DIET RECORDS. Rosemary S. Wold, M.S., R.D., Susan T. Lopez, B.S., Shirley L. Pareo-Tubbeh, M.S., Richard N. Baumgartner, Ph.D., Linda J. Romero, M.D., Philip J. Garry, Ph.D., Kathleen M. Koehler, Ph.D., Clinical Nutrition Program, University of New Mexico School of Medicine, Albuquerque, NM.

The participants in the New Mexico Aging Process Study are asked each year to keep 3-day diet records. Participants are given a one hour classroom instruction accompanied by written materials. The average class size is 6 participants. Instructional materials used in previous years were redesigned and updated for use with the Food Intake Analysis System (FIAS), version 2.3 (Univ. Of Texas Health Science Center, Houston). These changes included: 1) general instructions for recording food intake; 2) examples of completed Food Intake and Recipe Forms; 3) a food description flow chart. A survey was conducted to evaluate classroom instruction and written materials. Fifty evaluation surveys were distributed to participants during their yearly diet instruction class. Participants were provided a stamped self addressed return envelope and were asked to keep their comments anonymous. During the class, the research nutritionist discussed all materials with the participants. The survey queried the usefulness of specific sections of the instructional materials using a ranking scale. Also queried was a comparison of the revised materials to last year's , and verbal instruction ranking. Participant suggestions were also invited. At the time of this writing, 33 surveys had been returned. When examining various aspects of the written material, 66%-85% found the written materials to be "very useful", 6 %-18% "somewhat useful", 0%"not useful" and 100% found the verbal instruction to be "excellent" or "good". Materials presented this year were rated as more helpful than the previous year's by 96% of respondents. Providing clear concise diet instruction gives the participants a better understanding of what the research nutritionist is looking for on the completed diet record. The research nutritionist is able to shorten home visit times when records are completed in detail and is able to analyze the records in FIAS more efficiently and accurately. (Supported by NIH AG-02049 and AG-10149)

POSTER 13- CATEGORY: SURVEY METHODOLOGIES

COMPARISONS OF IRON STATUS, PHYSICAL ACTIVITY, AND NUTRITIONAL INTAKE OF WOMEN ENTERING ARMY OFFICER AND ENLISTED BASIC TRAINING. A.D. Cline and A. E. Pusateri. U.S. Army Research Institute of Environmental Medicine, Natick, MA 01760.

In women, participation in long-term physical training has been shown to compromise iron status. This is of concern because evidence suggests that iron deficiency is associated with reduced aerobic and endurance abilities. The present study was conducted to evaluate reported nutritional intake, iron status and physical activity levels of women as they enter initial Army basic training. We examined blood indices of iron status, current physical activity levels by questionnaire, and reported nutritional intake by food frequency questionnaire in 57 female officers (mean +SD: age 25.4+4.2 y, weight 60.5+8.5 kg, height 163.6+6.4 cm), and 53 enlisted women (mean + SD: age 20.4+3.5, weight 63.8+10.6, height 162.9+7.4). Mean reported nutritional intake was below the Recommended Dietary Allowances (RDA) for energy, folic acid, and iron in both groups. Mean serum ferritin for officers and enlisted women was 34.9+22.9 µg/L and 34.6+28.4 µg/L, with 17.5 and 17.1 percent of the women having iron depletion (ferritin <12.0); mean hemoglobin was 13.4+0.8 g/dL and 13.2+1.0 g/dL, with 13.7 and 8.3 percent of the women having iron deficiency (hemoglobin <12.0). These women were physically active prior to entry into training, as indicated by a reported activity expenditure of 2355.9 kcal/wk and 2588.1 kcal/wk. No significant differences were seen between the two groups in iron status, physical activity, or nutritional intake. Evaluation of the data suggests that women entering the Army may be more physically active than their civilian counterparts, and may have a higher prevalence of iron deficiency. (Supported by DWHRP Grant # W4168021)

POSTER 14- CATEGORY: SURVEY METHODOLOGIES

ESTIMATING NUTRIENT CONTRIBUTIONS FROM RED MEATS IN THE U.S. FOOD SUPPLY SERIES. S.A. Gerrior and L. Bente. U.S. Department of Agriculture, Center for Nutrition Policy and Promotion, Washington, DC.

The U.S. Food Supply Series is a historical data series, beginning with 1909, that measures the amount of food for consumption in the United States. It includes per capita estimates on several hundred foods and the nutrients available in these foods. The basic source of nutrient data used to calculate nutrient per capita values is the Primary Data Nutrient Data Set (PDS) from USDA's National Nutrient Data Bank. To more accurately reflect the nutrient contributions from red meat associated with the closer trimming of fat to one-eighth inch, and greater removal of bone at the market place and to account for leaner animal production, adjustments have been made to both quantity and nutrient databases used to estimate red meat in the food supply. Factors used to convert carcass weight to retail weight for beef, pork and veal have been revised over the series beginning in the mid-1950's and to boneless weight for beef since the mid-1970's. Revised quantities of red meat calculated from these factors were applied to their respective PDS nutrient values. In this way, food supply estimates of red meat uniquely reflect year-to-year changes in nutrient contributions overtime. A comparison made of quantity and nutrient estimates calculated prior to and after adjustment to the red meat databases will be illustrated using data for the years 1970, 1990 and 1994. Revised quantities and their nutrient contributions from energy, total fat, fatty acids, cholesterol and vitamin E are lower after adjustment because of the greater amount of fat and bone removed prior to retail sale reflected by the revised factors. The closer trim of fat is generally associated with increased nutrient contributions per pound of edible portion of lean red meat to the food supply from thiamin and magnesium. The adjustments made to the food supply red meat databases correct for quantity overestimates and reflect up-to-date nutrient information.

POSTER 15- CATEGORY: SURVEY METHODOLOGIES

COMPARISON OF ACCEPTABILITY SCORES OF MODIFIED RECIPES AMONG TEST SETTINGS. A. Hunt, A.Cline, C.Champagne, K.Patrick and D.H. Ryan. Louisiana Tech University, Ruston, La 71272, USARIEM-MND, Natick, MA 01760, and Pennington Biomedical Research Center, Baton Rouge, LA 70808.

As part of a Menu Modification Project to lower fat, cholesterol and sodium in soldiers' diets, new ethnic and breakfast menu items were developed and standardized for 100 portions. Acceptability data were collected after initial recipe development, during recipe validation at a collaborating university, and in an actual Army garrison. Acceptability was determined using a 9-point hedonic scale and products rating 6.0 or better in initial tests were prepared in an actual garrison setting. Acceptability data were compared among the test settings, ethnic categories, and food type. We found ratings varied most between the development and validation settings (7.2 vs 6.6, $p < 0.05$), and least between the validation and actual Army setting (6.6 vs 6.6, ns). Since acceptability ratings were so similar between validation and Army garrison, we anticipate that future recipe development can continue without additional testing at an actual Army garrison allowing for considerable cost savings and more timely additions to the Armed Forces Recipe File.

POSTER 16- CATEGORY: CLINICAL APPLICATION OF DATABASES

ADDITION OF OXALIC ACID TO THE NCC NUTRIENT DATABASE. Alison L. Eldridge, PhD, RD, and Sally Schakel, RD, Nutrition Coordinating Center, University of Minnesota, Minneapolis, MN.

Kidney stone formation is a painful disease with an annual incidence of seven to 21 cases per 10,000 Americans each year. Most suffers are men, with peak age of onset between the ages of 20 to 30. The majority of kidney stones, 70 to 80%, are composed primarily of calcium oxalate crystals. In patients with calcium oxalate stones, it may be necessary to monitor dietary intake of calcium, sodium, vitamin C and oxalates. To aid clinicians and researchers interested in monitoring dietary intake of oxalates and other dietary factors that may contribute to calcium oxalate stone formation, the Nutrition Coordinating Center has added oxalates to the NCC Nutrient Database. Oxalic acid is a dicarboxylic acid found in most plant tissues, mostly in the form of soluble oxalates. An extensive literature search was conducted to identify published reports of the oxalate content of foods. Papers citing the use of HPLC or enzymatic methods for analysis were selected. Where analytical data were not available, oxalic acid values were estimated using the following standard techniques: 1) substitution of oxalic acid values from a similar food; 2) calculation of oxalic acid values from a different form of the same food (e.g., the value for a cooked or dried food was calculated from the value from a raw food using retention factors or moisture content); or 3) calculation of oxalic acid values by summing the values of all ingredient foods. Oxalic acid values were entered into the database in milligrams (mg) per 100g of food. To convert micromols to mg, the following calculation was used: mg oxalic acid = micromol oxalic acid x 0.09001. Food sources of oxalic acid will be presented.

POSTER 17- CATEGORY: CLINICAL APPLICATION OF DATABASES

IDENTIFICATION OF KEY FOODS AS MAJOR CONTRIBUTORS OF ANTIOXIDANT VITAMINS. P.R. Pehrsson and D.B. Haytowitz. Nutrient Data Laboratory, USDA-ARS. Riverdale, MD 20737

The Nutrient Data Laboratory (NDL) develops authoritative and extensive food composition databases for the nation's food supply. Comprehensive data for approximately 7,500 foods are used by researchers in the food, nutrition and medical communities. NDL identifies Key Foods as single- and multi-ingredient foods that contribute significantly to the intake of nutrients cited in the "Third Scientific Report on Nutrition Monitoring in the United States" as being of public health concern (e.g., antioxidant vitamins A, C, E, and carotenoids). Key Foods, recently updated to reflect Phase I (1994) of the 1994-96 Continuing Survey of Food Intake by Individuals (CSFII), are identified: 1) using food-specific consumption data; 2) multiplying the reported intake by the concentrations of selected nutrients in the food; and 3) listing foods that contribute over 80% of the intakes of those nutrients in the U.S. population. The current Key Foods List of 677 foods and additional distribution information on the antioxidant vitamins are presented. The Key Foods database is a valuable tool for prioritizing foods to be analyzed and monitoring food composition. Components in existing databases and other components which researchers are discovering to be of concern in disease prevention can also be evaluated using the Key Foods concept.